FIELD MEDICAL SERVICE TECHNICIAN

STUDENT HANDBOOK

"THE BEST FORM OF TROOP WELFARE IS TOUGH, REALISTIC TRAINING"

VERSION 4.0

Command Philosophy

My philosophy is basic…provide the highest quality service possible to every person you encounter. We are an institution of higher learning; we need to be the best with everything we do.

We are preparing the next generation of heroes for the greatest fighting force on the planet - the 8404 Hospital Corpsman assigned to the United States Marine Corps. They operate at the tip-of-the-spear providing combat medicine to our operational forces; they are critical to the success of the Navy & Marine Corps Medicine Team.

What each one of us does on a daily basis matters, regardless of our job. We all contribute to the mission. No one job is more important than the other. If just one link (team member) in this chain fails to perform a portion of the mission to standard, we all fail. You have the ability to make a positive difference in peoples' lives every day. Every member of this team should ask themselves, "Am I living by our core values and making decisions that are consistent with these values when I interact with students, staff and the American public."

Key points:

- Know your chain of command and how to use it. You have not exhausted your chain of command at FMTB-West until the issue reaches me.
- If you are lacking something to perform your mission, bring it to the attention of leadership so we can promptly address it.
- Any safety issue should immediately be brought to leadership.
- Continually strive to improve processes; ask for help before it's too late (in all aspects of your life and career).
- If you see a problem, fix it or bring it to the attention of someone who can. Don't ignore it.
- Supporting each other is just as important as supporting the mission.
- Continue the relentless pursuit of customer satisfaction; feedback is a valuable tool in life and career.
- Basic military courtesy should be a part of everyday life.
- Always strive to do the right thing, even when no one is looking or when tempted to take the "easy" wrong.

As a leader, I believe all members of the team are important. Our civilian shipmates are essential to the success of our mission. As a military leader, I believe, as the Sailor creed says, "I proudly serve my country's Navy combat team with Honor, Courage and Commitment. I am committed to excellence and the fair treatment of all".

I cannot over emphasize the importance of leadership from E-1 to O-6, everyone has a part; I expect officers to lead from the front by setting the example. Be sure that regularly scheduled performance counseling sessions are conducted for military and civilian employees. Cover the good which should be sustained as well as the areas which need improvement. Although I like to be informed, I believe in allowing leaders to lead, managers to manage. A big part of my job is to provide you the support systems necessary for you to accomplish your mission. Tell me what you need and don't worry how it will be resourced. Let me worry about that.

Expectations of leaders at all levels:

- Take care of your people.
- Set the example of how the team should think and act because all will be watching you to model your behavior.
- Know your people - keep them informed, be sensitive to their needs, make their lives as predictable as possible.
- Develop your subordinates, military and civilian, so that they will be ready to lead others with high quality, effective leadership skills.
- Don't ask your staff to do anything you aren't willing to do yourself.
- Set the example in military bearing: weight, uniform, physical fitness or civilian professional appearance.
- Live the Navy Core Values: honor, courage, commitment.
- Reward individuals for going above and beyond; we do not thank our people enough.
- Work hard, but don't forget to have fun, too.

I have my "pet peeves" like anyone else. These are the things that will cause an emotional response on my part. In fairness, I'll share those with you now. My trigger points include:

- Inconsistent and/or unfair treatment of others.
- Rudeness/Disrespect/Inconsiderate/Taking Advantage
- Not giving the chain of command the opportunity to fix a problem before you take it outside the facility.
- Answering with, "Because we've always done it that way," when there is no understanding as to the rationale for a process/action. This usually indicates lack of motivation or no consideration of potential improvements.
- Trying to cover up an honest mistake rather than admit to it and learn from it.
- Blaming others for your mistakes or errors.
- Having no initiative to improve your work area. You should strive to leave an area better than you found it.

Take pride in your profession. We are all here as volunteers; let's strive to do our very best. I am honored to be here, to lead you, to serve with you; I promise to give you my best.

DAN CORNWELL
CAPT/MSC/USN
COMMANDING OFFICER

Vision

To be the best training command within the United States Marine Corps; producing the best trained, best prepared, and battle ready Fleet Marine Force Hospital Corpsman. He will be prepared to meet the challenges of present and future operational environments.

Mission

Develop, coordinate, resource, execute and evaluate training and education concepts, policies, plans and programs to ensure the Fleet Marine Force Hospital Corpsman is prepared for assignment with the operational forces.

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

IN REPLY REFER TO
BnO 1050.4B
S-3/234
SEP 3 2013

BATTALION ORDER 1050.4B

From: Commanding Officer, Field Medical Training Battalion-West, Camp Pendleton, CA
To: Distribution List B

Subj: STANDARD OPERATING PROCEDURES FOR STUDENT PERSONNEL ASSIGNED TO FIELD MEDICAL TRAINING BATTALION-WEST

Ref: (a) BnO 1700.3D, Substance Abuse Program
(b) MARADMIN 291/13
(c) NAVPERS 156651, U. S. Navy Uniform Regulations
(d) BnO 11000.1, Standard Operating Procedures for Student Barracks
(e) MILPERSMAN 1050-030
(f) BnO 1050.3, Force Preservation Policy
(g) TRNGCMD Policy Letter 6-13
(h) BnO 6110.1, Physical Readiness Program
(i) BO 5101.7E, Base Motorcycle Operation Policy

Encl: (1) Overnight Liberty Request Form
(2) FMST Student Phase Liberty Matrix

1. Situation. This Order contains a substantial number of changes and must be reviewed in its entirety.

2. Cancellation. BnO 1050.4A

3. Mission. To set forth the Standard Operating Procedures (SOP) for Students assigned to Field Medical Training Battalion-West (FMTB-W), Camp Pendleton. This order is to clearly establish the rules, regulations, and standards of conduct applicable to all students, regardless of training status. Any violation of the provisions set forth in this order may, at the discretion of the Commanding Officer, subject the violator to punitive action as set forth in the Manual for Courts Martial and in accordance with the Uniform Code of Military Justice (UCMJ).

4. Execution

a. Standards of Conduct. All students assigned to FMTB-W will conduct themselves in a mature and professional manner. Their conduct and attitude will exemplify the highest standards and core values of the Navy and Marine Corps.

(1) Accountability. Daily formations will be conducted in order to maintain accountability. All students will be present for every formation, unless excused by FMTB-W staff chain of command.

(2) Consumption of Alcohol. Consumption or storage of alcoholic beverages by students is prohibited in or around all FMTB-W facilities, to include the BEQ. The legal drinking age in the state of California, as well as Marine Corps Base (MCB) Camp Pendleton, is 21 years of age. All establishments whose primary business is the sale of alcohol (i.e. bars) are off limits to students under the age of 21. Students are not allowed to consume alcohol while in a duty status. Consumption of alcohol less than eight (8) hours prior to assuming duty or beginning training is prohibited. Students must be fit for duty at all times.

(3) Controlled Substances (Drugs). The use, possession, sale or distribution of: prescribed medications, illegal drugs, steroids, synthetic drugs, or controlled substances are prohibited in the U.S. Military. It is detrimental to operational readiness and is inconsistent with Navy-Marine Corps core values and will not be tolerated. FMTB-W maintains an aggressive Substance Abuse Program, in accordance with reference (a).

(4) Use of Tobacco Products. Students will not use tobacco products during the training day, to include night study and duty. Tobacco products are defined as: cigars, cigarettes, snuff, or chewing tobacco. Designated tobacco use areas for student use after normal working hours is behind building 210825 (FMTB-W Student Barracks). Use of tobacco products in TA-6577 will only be authorized by the Range Safety Officer (RSO) and allowed at the discretion of the Platoon Advisors. Smoking will only be allowed in the designated smoking area while in TA-6577. Violation of this order is punishable under the UCMJ.

(5) Weapons. Personal weapons of any type are not authorized. A weapon is defined as anything that is expressly manufactured to enable one to cause bodily harm to another

individual, this includes knives with a blade of over three (3) inches. If a student reports on board with a personal weapon, it must be registered with the S-4 department, where it will be locked and stored until their departure from FMTB-W. All firearms will be registered with the base Provost Marshalls Office (PMO) and turned over to the armory. Students who turn in a personal weapon will receive a receipt for their weapon. While in the field for training, a knife with a blade less than three (3) inches is authorized.

(a) Weapon safety is paramount at FMTB-W. Weapon safety handling rules will be enforced at all times.

(b) Horseplay with any weapon while assigned to FMTB-W will not be tolerated.

(c) Violation of the weapon safety handling rules is punishable under the UCMJ.

(6) Pornography. Pornographic material is prohibited in all FMTB-W facilities. All pornographic material found will be confiscated in accordance with reference (b) and destroyed.

b. Uniform Regulations. Students will adhere to uniform regulations as per reference (c), to include the following:

(1) Uniforms will be kept clean and worn appropriately.

(2) Boots will be scrubbed or polished daily.

(3) Dog tags will be worn and military identification cards will be carried at all times.

(4) Navy grooming standards will be strictly enforced.

(a) Hair will be worn neatly and closely trimmed. Hair will be cut on a weekly basis, typically on the day prior to the work week commencing.

(b) The face will be clean-shaven every morning after reveille, to include non-duty and non-training days.

(5) A combination of Navy Working Uniforms and Marine Corps Combat Utility Uniform Marine Pattern (MARPAT) will be authorized while in a training status.

c. Civilian Attire. Civilian attire is authorized for those students in Phase III or Phase III Alpha liberty status. While on liberty, all students will abide by the Civilian Attire Policy as set forth by MCB Camp Pendleton. The following dress code will also apply:

(1) All articles of clothing will be in good condition.

(2) Clothing will fit appropriately and not expose underwear. Sagging pants will not be worn under any circumstance.

(3) Clothing with rude or offensive slogans will not be worn.

(4) Physical Training (PT) gear is not authorized to be worn as liberty attire (exceptions are when in the barracks area, while out exercising or when traveling to or from the gym).

(5) Body piercings are prohibited per reference (c).

(6) Students will not wear earrings while on base.

d. Barracks. Students are reminded that their actions and standard of conduct in such close quarters impacts those around them. Inconsiderate, sloppy, and unsanitary behavior/conditions will not be tolerated. Students will refer to Standard Operating Procedures for Student Barracks, reference (d), for rules and regulations.

e. Leave

(1) Annual Leave. Normally annual leave will not be granted to students while they are in a training status. Annual leave may be granted on a case-by-case basis by the Commanding Officer if sufficient justification exists.

(2) Emergency Leave. Students will be authorized emergency leave per reference (e). The office of the American Red Cross must officially verify the facts regarding any circumstances requiring a student’s immediate presence. The party requesting the student’s presence initiates this verification through their local Red Cross Office. The Red Cross Office will contact FMTB-W, who will then relay the request and any pertinent information to the student. Once

verification is received, the Commanding Officer will adjudicate the emergency leave request.

(3) Missed Training. Missing more than two training days, cumulative, will result in a recommendation to the Commanding Officer for recycle into the next convening Field Medical Service Technician (FMST) class.

f. Liberty. The Commanding Officer has the authority to modify a student's liberty status at any time. The Operations Officer has by-direction authority to place students on Phase I, II or III liberty based on criteria as set forth in this order.

(1) Force Preservation Program. All Students will be assigned a "Force Preservation Buddy," in writing, per reference (f). This is to ensure the safety, accountability and policing of each other while on liberty.

(2) Liberty Buddy. A "Liberty Buddy" is defined as another student in the current class that agrees to check out/in on liberty together and remain together for the duration of the liberty period. If a student's "Liberty Buddy" is not in the same phase of liberty, both will adhere to the lower phase liberty guidelines.

(3) Mexico. Liberty in Mexico is prohibited for all student personnel at FMTB-W regardless of rank or liberty status.

(4) Brown Bagger Status. Students with a local off-base residence, within a 50 mile radius of FMTB-W, may be given "Brown Bagger" status upon approval by the Commanding Officer, or delegated authority, on a case-by-case basis. This status is for those students who meet criteria for Phase III or Phase III Alpha liberty. Students who are approved to reside off base during training are not required to have a "Liberty Buddy," but are still required to meet all requirements for muster and maintain a "Force Preservation Buddy."

(5) Phases of Liberty. All students will be placed into one of three phases of liberty, with a subcategory for personnel E-4 and below with less than two years of active service in accordance with reference (g).

(a) Phase I. Phase I liberty is limited to Pacific View Plaza and Camp Del Mar (20 and 21 Area) of MCB Camp Pendleton. This liberty status is for students who demonstrated

behavior that has a potential to place themselves or others at risk in accordance with reference (f). This phase of liberty will only be assigned by the Commanding Officer, or delegated authority, on a case by case basis. The guidelines for Phase I Liberty are:

1. Utility uniform must be worn.

2. All students will to sign out/in the liberty log book with the Officer of the Day (OOD). They are required to be aware of their "Force Preservation Buddy," as well as his location, and will be required to make phone contact with him by noon on non-training days. If they are unable to contact their buddy, they must immediately notify the OOD.

3. The student may visit anywhere aboard Pacific View Plaza (20 Area) and Camp Del Mar (21 Area).

4. The student will not leave the 20 or 21 Area for any reason without an approved request chit from the Operations Officer, or delegated authority. Examples of acceptable reasons to leave the 20 or 21 Area, with an approved request chit, are medical appointments or legal appointments.

5. Liberty will expire at 2030 Sunday through Thursday. Students will remain in the barracks, BLDG 210825, until the morning muster.

6. Liberty will expire at 2200 Fridays, Saturdays, and holidays. Students will remain in the barracks, BLDG 210825, until the 0800 morning muster.

7. Musters will be conducted at commencement and expiration of liberty by the OOD.

(b) Phase II. Phase II liberty is limited to MCB Camp Pendleton. The purpose of Phase II liberty is for students to focus on successfully completing this course. All students who check into the command will initially be placed in Phase II liberty. The criteria and guidelines for Phase II liberty are:

1. Criteria. Beyond the initial check in, students will automatically be placed in Phase II liberty status for any one of the following criteria:

a. Failure to pass an academic test or practical application.

b. Failure to pass either component of the Physical Fitness Assessment (PFA).

c. Failure to complete any hike.

2. Guidelines

a. Utility uniform must be worn.

b. The student may visit anywhere onboard MCB Camp Pendleton.

c. All students will sign out/in the liberty log book with the Officer of the Day (OOD). They are required to be aware of their "Force Preservation Buddy," as well as his location, and will be required to make phone contact with him by noon on non-training days. If they are unable to contact their buddy, they must immediately notify the OOD.

d. Liberty will expire at 2030 Sunday through Thursday. Students will remain in the barracks, BLDG 210825, until the morning muster.

e. Liberty will expire at 2200 Fridays, Saturdays, and holidays. Students will remain in the barracks, BLDG 210825, until the 0800 morning muster.

f. Musters will be conducted at the commencement and expiration of liberty by the OOD.

(c) Phase III. This liberty status is for students with acceptable conduct and performance. Phase III liberty commences at the end of the training day and expires at muster of the next training day. The criteria and guidelines for Phase III liberty are:

1. Criteria

a. Must not be on academic probation.

b. Must pass both components of the PFA.

c. Must pass all hikes.

d. No disciplinary infractions.

2. Guidelines

a. Liberty will only commence when secured by S-3 staff.

b. Students will adhere and report for all required musters.

c. Students E-3 and below leaving MCB Camp Pendleton need to sign out/in the liberty log book with the OOD accompanied by a "Liberty Buddy." No "Liberty Buddy" is required on board MCB Camp Pendleton, however, must still sign out/in with the OOD. They are required to be aware of their "Force Preservation Buddy," as well as his location, and will be required to make phone contact with him by noon on non-training days. If they are unable to contact their buddy, they must immediately notify the OOD.

d. Students E-4 and above, and those students approved as "Brown Baggers," leaving 21 Area or MCB Camp Pendleton need to sign out/in the liberty log book with the OOD. They are required to be aware of their "Force Preservation Buddy," as well as his location, and will be required to make phone contact with him by noon on non-training days. If they are unable to contact their "buddy," they must immediately notify the OOD.

e. During regular liberty and/or weekend liberty, specific mileage restrictions are:

(1) 50 miles during training/duty days.

(2) 200 miles for 48 hour liberty.

(3) 300 miles for 72/96 hour liberty.

f. Students must adhere to MCB Camp Pendleton Civilian Attire Policy while on liberty.

g. Students may be placed into Phase I or II liberty based on upon a failure to comply with Phase III criteria and/or guidelines.

(d) Phase III Alpha. This liberty status is for students E-4 and below who have less than two years of active service, however, maintain acceptable conduct and performance.

Phase III Alpha liberty commences at the end of the training day. The criteria and guidelines for Phase III Alpha liberty are:

1. Criteria

a. Must not be on academic probation.

b. Must pass both components of the PFA.

c. Must pass all hikes.

d. No disciplinary infractions.

2. Guidelines

a. Liberty will only commence when secured by S-3 staff.

b. Students will adhere and report for all required musters.

c. Students leaving MCB Camp Pendleton will sign out/in the liberty log book with the OOD accompanied by a "Liberty Buddy." No "Liberty Buddy" is required on board MCB Camp Pendleton, however, must sign out/in with the OOD. They are required to be aware of their "Force Preservation Buddy," as well as his location, and will be required to make phone contact with him by noon on non-training days. If they are unable to contact their buddy, they must immediately notify the OOD.

d. Students approved as "Brown Baggers," leaving MCB Camp Pendleton need to sign out/in the liberty log book with the OOD. They are required to be aware of their "Force Preservation Buddy," as well as his location, and will be required to make phone contact with him by noon on non-training days. If they are unable to contact their "buddy," they must immediately notify the OOD.

e. Liberty will expire at 2030 Sunday through Thursday. Students will remain in the barracks, BLDG 210825, until the morning muster. This does not apply to students approved as "Brown Baggers."

f. Liberty will expire at 2200 Fridays, Saturdays, and holidays. Students will remain in the barracks,

BLDG 210825, until the 0800 morning muster. This does not apply to students approved as “Brown Baggers.”

g. Musters will be conducted at the commencement and expiration of liberty by the OOD.

h. With the exception of those students approved as “Brown Baggers,” overnight liberty must be approved by the Operations Officer or delegated authority. This request must be in writing, utilizing enclosure (1).

i. Students must adhere to MCB Camp Pendleton Civilian Attire Policy while on liberty.

j. Students may be placed into Phase I or II liberty based on upon a failure to comply with Phase III Alpha criteria and/or guidelines.

(5) Academic Probation. Academic probation is for those students that have failed to pass a written test and/or practical application. Those students will automatically be placed in Phase II liberty if in a Phase III liberty status. Guidance for those students placed on Academic Probation are as follows:

(a) One Time Failure. Students that have failed one test or one practical application will be placed on Academic Probation until successfully passing the next test or practical application (retest does not apply). Students with one test failure (written or practical) will remain in Phase II liberty and will be required to attend mandatory night study until successfully passing the next corresponding test for which they failed (written or practical).

(b) Two Time Failure. Students that have failed two written tests or two practical applications will be placed on Academic Probation until the successful completion of Casualty Assessment. Students with two test failures (written or practical) will be required to attend mandatory night study. Students who are already on Phase II liberty will remain on Phase II liberty.

(c) Three Time Failure. Students that have failed three academic tests, or three practical application labs, will result in the student being recycled into the next convening FMST class. Students that are academically recycled are required to participate in all portions of the curriculum and

will be required to attend mandatory night study. Academically recycled students will remain on Academic Probation and will be placed in a Phase II liberty status until reassigned to 4th Platoon.

g. Special Liberty. Special liberty is defined as any liberty granted outside of normal liberty during a training day. Special liberty must be submitted two weeks prior to the requested date and will be considered on a case-by-case basis. Requests for special liberty will be forwarded to:

(1) Operations Officer for 24 to 72 hour liberty.

(2) Commanding Officer for 96 hour liberty.

h. Physical Training. The purpose of unit PT is to establish or strengthen unit camaraderie, esprit de corps, military professionalism, and preparation for entry into the operating forces. It is the personal responsibility of each student to ensure that they remain constantly ready for the rigors of combat. Remedial PT will be held for those students failing to meet Navy standards for physical fitness per reference (h), and will be assigned to Phase II liberty.

i. Privately Owned Vehicles (POV). Student vehicles must pass a safety inspection conducted by FMTB-W staff and are required to be registered on base. Students will adhere to California driving laws and base regulations when operating a vehicle.

(1) Automobiles. Students must provide a valid state driver’s license, proof of insurance and registration. Drivers 25 and under must show proof of completing the Navy/Marine Corps Driver’s Improvement Course. Students are authorized to maintain and drive a POV only while on liberty.

(2) Motorcycles. Students will NOT be permitted to operate a motorcycle, dirt bike or ATV while attached to FMTB-W. FMTB-W is an intermediate command, and per reference (i), personnel in a student status will not be able to complete the training requirements necessary to operate a motorcycle aboard Camp Pendleton until reaching their permanent activity. In accordance with reference (i), personnel also will NOT operate a motorcycle off-base while in a student status.

j. Cell Phone Use. Cellular phones are authorized only while on liberty. Cell phones are not authorized to be carried in uniform during the training day, to include night study and duty. On a case-by-case basis, if a situation exists that warrants communication outside of liberty hours, students may be permitted to maintain their cell phone with approval from the Platoon Leader. Cell phone use in this circumstance will solely be at the discretion of the Platoon Advisors.

k. Personal Electronic Devices. Personal electronic devices are authorized only while on liberty. These include, but are not limited to: video cameras, personal music players, digital cameras, and laptops.

l. Administrative Matters. Students requiring assistance regarding administrative matters, (i.e. pay problems, dependency applications, travel matters, promotions, lost ID cards, powers of attorney, etc.), must submit a Personnel Action Request through their Platoon Advisors.

(1) Mailing Address. Students who wish to receive or send mail can use the following address:

RANK, NAME
PLT NUMBER
Field Medical Training Battalion-West
Box 555243
Camp Pendleton, CA 92055-5243

(2) Basic Allowance for Housing(BAH)/ Basic Allowance for Subsistence(BAS). Unmarried personnel will not be permitted to receive BAH/BAS while in a student status. Individual cases may be reviewed by the command; however, off-base housing arrangements will not be made without command approval.

m. FMTB-W prides itself in training the finest Hospital Corpsmen in the Fleet. All students shall conduct themselves in a mature, responsible and professional manner at all times. Students are a direct representative of FMTB-W and the United States Navy.

5. Administration and Logistics. Directives issued by this battalion are published and distributed electronically.

6. Command and Signal

a. Command. This Order is applicable to all FMST students upon reporting on board FMTB-W.

b. Signal. This Order is effective the date signed.

D. CORNWELL

FMTB-W OVERNIGHT LIBERTY REQUEST

E-4 and below with less than 2 years active service.

Class#_____ PLT:_____ Date of request:_____

Rank:_____ Name:_____ Age:_____
From (date/time): _____ @ _____ To: _____ @ _____
Liberty Buddy Rank, Name, Age:_____
Reason for Request:_____

Contact Information

Cell Phone #:_____ Buddy Cell #:_____

Name of Hotel/Motel/Primary Occupant of Residence & Address:

Phone #:_____ Dist(miles) from FMTB:_____

Mode of Travel:_____ If POV, Inspected**: Y / N** Arrive Alive Card: **Y / N**

I, _____, have read and understand Battalion Order 1050.4B. I understand that if any information provided in this request is fabricated or designed to be misleading and/or if the information changes and I fail to notify the FMTB OOD (760-124-3456) constitutes a violation of the UCMJ. I understand that changes may result in a revocation of overnight privileges for the given period of time. I understand that consumption of alcohol is NOT permitted in, or on the grounds of the BEQ, Bldg 210825, to include the parking area; or by those under the age of 21.
Signature:_____ Date _____

Command Approval

Command Approving Signature:_____
Print rank/name and Date

Approved: ☐ Not Approved: ☐

Enclosure (1)

FMST Student Phase Liberty Matrix

	PHASE I	PHASE II	PHASE III	PHASE III ALPHA (E-4 AND BELOW, <2YRS)
LIBERTY PARAMETERS	20/21 AREA	MCB CAMP PENDLETON	(M-TH) 50 MI 48HR 200 MI 72-96HR 300 MI	(M-TH) 50 MI ***48HR 200 MI** ***72-96HR 300 MI**
UNIFORM	UNIFORM OF THE DAY, PT GEAR	UNIFORM OF THE DAY, PT GEAR	APPROPRIATE CIVILIAN ATTIRE, UNIFORM OF THE DAY, PT GEAR	APPROPRIATE CIVILIAN ATTIRE, UNIFORM OF THE DAY, PT GEAR
MUSTER TIMES	SU – 0800 & 2030 M - 2030 TU - 2030 W - 2030 TH - 2030 F - 2200 SA – 0800 & 2200	SU – 0800 & 2030 M - 2030 TU - 2030 W - 2030 TH - 2030 F - 2200 SA – 0800 & 2200	REPORT DURING PRESCRIBED TRAINING/DUTY HOURS	SU – 0800 & 2030 M - 2030 TU - 2030 W - 2030 TH - 2030 F - 2200 SA – 0800 & 2200
LIBERTY BUDDY	NOT REQUIRED ON BOARD MCB CAMP PENDLETON	NOT REQUIRED ON BOARD MCB CAMP PENDLETON	ALL E-3 AND BELOW LEAVING MCB CAMP PENDLETON (NOT BROWN BAGGERS)	ALL STUDENTS LEAVING MCB CAMP PENDLETON (NOT BROWN BAGGERS)
REASSIGNMENT OF LIBERTY	CO XO OPERATIONS OFFICER			

***WITH APPROVED OVERNIGHT LIBERTY CHIT.**

STUDENT GUIDELINES

SCOPE:

Welcome to Field Medical Training Battalion! Whether you are a seasoned Sailor, or have just graduated from Hospital Corpsman "A" school, there is a great purpose for your training here. Your respective course is designed to challenge you. The purpose of this document is to prepare you for the day-to-day operations at FMTB. You will be asked to spend a good portion of your day, including personal time, in preparation for upcoming events. This information will help you succeed at FMTB, so it is imperative that you read the entire guide.

TOPICS:

Morning reveille
Formations
Leadership positions/roles
Sick call procedures
Uniform standards
Field day
Exams/study/mandatory and remedial study
Navy PRT/USMC PFT
Corrective Lens Eyewear
Special Items to purchase
Discipline/Respect
Personal awards
Civilian attire
Off-limit establishments
Prohibited possession and consumption of alcoholic beverages
Prohibited access to berthing areas
Parking of POVs
Students Mailing Address and Emergency Telephone Numbers
Student Liberty
Smoking Policy
Student Watchstanding

A. **MORNING REVEILLE:** Reveille will be at 0500 and all brown baggers will be on deck by 0515 unless otherwise specified. Reveille may be earlier for events such as field training, conditioning hikes, obstacle courses, and practical training. Attention to the schedule, listening, and understanding of information being passed by advisors, instructors and staff is your responsibility. The schedule for the upcoming days and weeks will be posted in your barracks. Stay flexible, the schedule is subject to change.

B. **FORMATIONS:** Every student will muster in formation 15 minutes prior to any scheduled event. The morning formation is usually scheduled for 0530. The morning report will be delivered by the Company First Sergeant to the respective platoon advisor following morning formation. After chow, students need to prepare for departure at 0630 (or earlier) to commence the training day. Students shall be in their classroom seats 15 minutes prior to the start of class, e.g., 0715 in seats for a 0730 class. Everyone, including brown baggers (individuals collecting Basic Allowance for Housing and authorized to reside in the local community with family), will be present for morning muster and all personnel will march to chow. At the morning formation, the *Platoon Sergeants* will conduct daily uniform inspections. The following will be checked during uniform inspections: clean and serviceable uniform, blackened collar devices, clean boots, and personal grooming to standards, etc.

C. **LEADERSHIP POSITIONS/ROLES:** All leaders, regardless of their position, must set the example. If you have questions concerning your role and position, ask your platoon advisors. Remember, leaders are not born, but made. Use this training opportunity to develop and perfect your leadership skills. As always, leaders are held to a higher standard of conduct, professionalism, and accountability.

D. **CHAIN OF COMMAND**

1. **Fire Team Leader:** Within each squad, Fire Team Leaders are reponsible for the execution of task-oriented direction and coordination, inherent and routine fire team responsibilities within the squad, and the fire teams welfare, readiness, and understanding of orders and mission to successfully achieve objectives.

2. **Squad Leader:** The Squad Leader is reponsible for the execution of task-oriented direction and routine squad responsiblities within the platoon, and for the squad's welfare, readiness, and understanding of orders and mission to successfully achieve objectives.

3. **Platoon Sergeant**: The Platoon Sergeant is responsible for performing the duties given by the Company Gunnery Sergeant, Company First Sergeant or Platoon Advisors. He must ensure full compliance with the instructions. The platoon sergeant is responsible for holding platoon formation, conducting musters, keeping all the troops well-informed, and for marching the platoon to and from all destinations. Assistance with calling close order drill is available from the Platoon Advisors. The Platoon Sergeant will count all personnel, including weapons when carried, and report them on the morning muster sheet.

4. **Company Gunnery Sergeant**: The Company Gunny reports, and is responsible to the Company First Sergeant. The Company Gunny normally is the second highest ranking student in the company. His function is to set the example, ensure the morale, good order and discipline are kept at a high state throughout the course of instruction. The Company Gunny will assign tasks to the Platoon Seageants in order to accomplish the mission. Additional responsibilities include, but are not limited to:

- All tasks handed down by the platoon advisors
- Compiling morning reports
- Organizing company formations
- Supervise and ensure company field days and morning clean up are completed
- Establish and manage the Duty squad, Fire and Security, and Roving Patrol watch bills
- Organize and manage company level working parties
- Prepare and submit MRE rosters for brown baggers
- Conduct company gear survey. Status reports and any problems that arise will be directed to the Platoon Advisors.

5. **Company First Sergeant**: The Company First Sergeant reports to the platoon advisors. The Company First Sergeant is usually the most senior Sailor in the class and is responsible for the entire company. The Company First Sergeant is to set the example and ensure that morale and discipline, are both kept at a high state throughout the course of instruction. The Company First Sergeant will ensure that the Platoon Sergeants are responsible for all tasks passed down by the Platoon Advisors. He will ensure that there is full accountability of the company and gear is maintained at all times.

6. **Platoon Advisor**: Each platoon has Marine Corps and Navy advisors who are responsible for the overall coordination, function, accountability, readiness, mentoring, and counseling of all students assigned to the platoon.

E. **SICK CALL PROCEDURES:**

1. The Staff Independent Duty Corpsman (IDC) will hold student sick call on duty days from 0800-1100. If a student requires medical attention, he is to notify a respective Platoon Corpsman the night prior, or the morning of. It is then the responsibility of the Platoon Corpsman to determine if the requesting student needs to attend sick call. Administrative medical needs will not be seen during sick call hours; they will be screened by the Platoon Corpsman and briefed to the Staff IDC so he/she may determine a time to resolve them.

2. If a student requires urgent medical attention after working hours, he is to notify the Platoon Corpsman (if available) who will notify the Officer of the Day (OOD). If the Platoon Corpsman is not available, then the student will contact the OOD directly. The OOD will then arrange for the appropriate transportation to Naval Hospital Camp Pendleton. In the event of a life-threatening medical emergency, IMMEDIATELY call 911 and then notify the OOD directly.

3. All platoons will have two (2) Platoon Corpsman designated by the Staff IDC. Their responsibilities will include; routine medical treatment of minor illness/injuries, screening students prior to sick call, and assisting the Staff IDC during sick call operations as directed by the Staff IDC.

F. **UNIFORM STANDARDS:** The camouflage utility uniforms will always be clean and serviceable and collar devices will be blackened at all times. If collar devices start to chip, you can purchase collar device paint. Utility name tapes will be ordered and sewn on at no-charge (free) at base cleaners or at the cash sales office. Boots will be cleaned everyday. The utility uniform or any portion thereof will not be worn off-base. However, the complete utility uniform may be worn while stopping at a drive-through window (not inside), and can be worn to and from work. You

may wear the utility uniform anywhere on base. The complete list of appropriate uniform wear can be seen in the Utility Uniform and Individual Combat Equipment lessons in your Student Handbook.

G. **FIELD DAY:** Field day will be conducted when directed or when dictated by the schedule. The platoon barracks are normally inspected the following morning. Daily cleanup assignments will be delegated by the Platoon Sergeants and Squad Leaders. As always, daily maintenance of the barracks will result in an easier field day. Barracks trash will be emptied in the dumpster, at a minimum, three-times daily (prior to 0615, 1800, and 2045 daily). The barracks and all common-spaces are subject to inspection at any time.

H. **EXAMS/STUDY AND MANDATORY NIGHT STUDY:**

1. The written tests are broken into five (5) different blocks.

2. All-hands mandatory night study will be held for the whole company the night prior to each test.

3. First time test failures will be placed on Phase II liberty and mandatory night study until they pass the next consecutive block.

4. Two (2) time test failures will be placed on Phase II liberty and mandatory night until they pass Casualty Assessment at the end of the course.

5. Three (3) time test failures may be academically disenrolled or recycled.

6. Mandatory night study will normally be held Sunday through Thursday from 1800-2000.

7. The senior student will march the mandatory night study group to the school house. The Education Petty Office (EPO) will report to the OOD when everyone is accounted for.

I. **NAVY PFA / USMC PFT:** It is your responsibility to be prepared for the Navy's Physical Fitness Assessment (PFA) and Marine Corps Physical Fitness Test (PFT). No time is alloted in the training to conduct a remedial physical training program. It is recommended that you PT on your own in safe conditions. Regardless of what you've been told, your participation and performance in daily physical training, the PFA, conditioning hikes, and the PFT are factored into your overall course performance. Although the PFA/PFT are unofficial, a failure of the PFA/PFT may result in disenrollment from FMTB. The only training that will prepare you for the PFA/PFT is to do the sit-ups, push ups, pull ups, and runs. Failure to successfully complete the Navy Physical Readiness Test or to be within Navy weight and percent body-fat standards prior to graduation constitutes a course failure. All failures will be disenrolled or recycled.

J. **REQUIRED ITEMS TO BRING:** There is a requirement for all students to bring or purchase selected items essential for training and for duty with the Fleet Marine Force. These items are not issued and the best place to purchase them is at the Exchange upon your reporting to FMTB. The items to be purchased are:

1. Key locks –x5
2. Flashlight with red lens
3. Corrective lens eyewear (in addition to contacts if worn)
4. Standard Navy PT gear
5. Boot bands-x4 sets
6. Rank insignias-x4 sets
7. Shower shoes
8. White mesh laundry bag
9. White body towel-x2

K. **DISCIPLINE/RESPECT:** At no time will anyone disrespect another shipmate. If a problem arises, it should be brought to the Platoon Advisors attention and they will resolve the issue. Do not misconstrue training, guidance, accident prevention, and leadership for hazing. It is incumbent upon all members of this command to conduct themselves in such a manner that they, at all times and under all circumstances, set the best possible example for subordinates, peers and seniors. Every interaction between seniors and subordinates is an experience that should enhance the development of each as members of the Navy or Marine Corps. All members of this command by their actions must avoid creating a perception of inappropriate conduct or behavior that may be viewed as a violation of this order. Therefore, military personnel are required and expected to conduct themselves in a proper manner at all times, whether in uniform or civilian attire. Unseemly conduct while in and out of uniform tends to reflect discredit upon the Navy and the Marine Corps and may be considered an infraction of the Uniform Code of Military Justice (UCMJ). This is a formal Marine Corps School and we represent the Navy's finest on a Marine Corps Base.

L. **PERSONAL AWARDS:** There are three personal awards that can be achieved at FMTB. If you are motivated, you can earn more than one of them.

1. Honor Graduate: Awarded to the person with the highest overall Grade Point Average. Recycled students are not eligible for this award.

2. Platoon High PFA/PFT: Awarded to the student with the highest combined PRT/PFT score from each platoon.

3. Motivational Awardee: Awarded to the student from each platoon who displays the most motivation, professionalism, and leadership. Students will vote for their platoon's award winner.

M. **CIVILIAN ATTIRE:** When you leave this base you will be in proper civilian attire. Pants and shorts with pockets are acceptable as long as they are not fraying and in disrepair. Belts and shoes or tennis/running sneakers/shoes are to be worn. White or green undershirts are unacceptable as liberty attire. Remember you represent the Navy, in and out of uniform, so take pride in your personal bearing and appearance.

1. You are **NOT** permitted to enter the Marine Corps Exchange or visit the ATM on base in PT gear.

2. You are **NOT** authorized to mix civilain clothes and footwear with utilities or other uniform items at any time.

N. **OFF LIMIT ESTABLISHMENTS:** Upon reporting, you will be advised of social and commercial establishments which are off-limits to military personnel. Military personnel may subject themselves to personal risk if they use the off-limits facilities. If found at these establishments you may be charged for a violation of the UCMJ. Lists of off-limits establishments are posted on command bulletin boards and your platoon leadership will have copies.

O. **PROHIBITED POSSESSION AND CONSUMPTION OF ALCOHOL:**

1. The legal drinking age in the State of California is **21**.

2. Driving under the influence (DUI) carries harsh penalties, regardless of the outcome in the civilian court. Members charged with drinking under age or DUI shall be referred for evaluation and counseling for substance abuse and lose their base driving privileges. Regardless of the outcome in civilian court, members charged with DUI will receive Non-Judicial Punishment at a minimum.

3. The possession and consumption of alcholic beverages in a privately owned vehicle is strictly prohibited while on, or assigned to, the Camp Pendleton, Camp Del Mar and Field Medical Training Battalion. Additionally, n**o alcoholic beverages are authorized on the grounds, parking areas, or buildings, training areas or barracks of Field Medical Training Battalion.**

P. **PROHIBITED ACCESS TO BERTHING AREAS:**

1. Only students assigned to a barracks wing are authorized to enter or visit students in that, or any other barracks.

2. Visitors will be logged in by the DNCO and will remain on the quarterdeck. Visitors are not permitted in the squad bays or lounges.

3. Unauthorized persons subject to the Uniform Code of Military Justice who enter any barracks to which they are not authorized to enter shall be prosecuted, and all other persons not subject to the Uniform Code of Military Justice shall be arrested and charged in Federal Court for treaspassing and unauthorized entrance. Students that inappropriately allow, authorize, or who do not report an unauthorized entry may be subjected to the same disciplinary action.

4. Members of the opposite sex are **not allowed** in berthing spaces other than those designated for their own gender. While on duty or in an emergency, a member of the opposite sex may enter a berthing space only after announcing their presence and allowing ample time to ensure that members in the space are clothed.

Q. **PARKING OF PRIVATELY OWNED VEHICLES (POVs):** Students will park all vehicles in the student parking area at the barracks. **At no time** will a student drive his or her vehicle to the school house.

R. **STUDENT MAILING ADDRESS AND EMERGENCY TELEPHONE NUMBERS:**

1. **Mailing Address**:

Student Name (Rank, Full Name, USN or USNR)
(FMST CLASS #) (PLATOON #)
BOX 555243
Camp Pendleton, CA 92055

2. **EMERGENCY Telephone Numbers:** The following telephone numbers are for EMERGENCY purposes only:

OOD: COM: (760) 725-2559, CELL: (760) 213-1897

STUDENT DNCO: (760) 725-2325

S. **SMOKING/DIPPING POLICY**: Smoking or use of chewing tobacco/dipping is not authorized during training hours, and only at other times if in authorized and designated areas onboard Field Medical Training Battaliion.

T. **STUDENT WATCHSTANDING**: See attached/integrated Student Watchstander Guide.

TO LEARN MORE ABOUT FIELD MEDICAL TRAINING BATTALION, CAMP PENDLETON, AND ALL TRAINING PROGRAMS, CHECK OUT OUR WEBSITE AT:

http://www.tecom.marines.mil/fmtbw/Home.aspx

UNITED STATE MARINE CORPS
TRAINING COMMAND
3300 RUSSELL ROAD
QUANTICO, VIRGINIA 22134-5001

IN REPLY REFER TO:
5800
B052
OCT 1 2003

TRAINING COMMAND GENERAL ORDER 01- 03

From: Commanding General, Training Command
To: Distribution List

Subj: **PROHIBITED ACTIVITIES**

Ref: (a) Uniform Code of Military Justice, 10 U.S. Code 801, et seg.

1. Purpose. This order prohibits conduct that, in addition to those proscribed at the reference, is to the prejudice of good order and discipline of this command, is of a nature likely to bring discredit upon this command and the United States Marine Corps, is harmful to the health and well-being of members of the command, or is detrimental to command relations with other military and organizations as well as civilian agencies and communities.

2. Applicability. This order is applicable to all US military personnel assigned or attached to this command, or any of its subordinate commands, units and organizations.

3. Definitions. As used in this order, "permanent personnel" refers to any member, regardless of service, who is involved in training or providing support to student personnel. For purposes of this order, "student personnel" is defined as all persons, regardless of service, in one of the following categories:

a. Awaiting training or course entry;

b. Attending training or educational programs; or

c. Completed, eliminated, or discharged from training and awaiting reassignment or discharge.

4. Prohibited activities. In addition to those offenses proscribed by the reference, the following activities are also prohibited:

Subj: PROHIBITED ACTIVITIES

a. Fraternization. Professional relationships are essential to the effective operation of any military command or organization. Any unprofessional relationship with a student or a member of the student's immediate family can compromise the integrity and leadership of the staff in a training environment. Accordingly, permanent personnel and student personnel will refrain from any unprofessional relationship. Permanent personnel and student personnel will not, while on duty or in leave or liberty status, associate with each other in an informal, personal or intimate manner which reflects a familiarity that is inappropriate for the workplace. Permanent personnel and student personnel will not engage in any conduct that creates an actual or perceived conflict of interest between their military duties and their personal activities.

b. Underage drinking. No person, either permanent personnel or student personnel, will provide alcohol to permanent personnel or student personnel under 21 years old. This includes buying or sharing alcohol, or condoning its use by any permanent personnel or student personnel under 21 years old. Additionally, no person under the age of 21 years, either permanent personnel or student personnel will buy, possess, share, provide or consume alcohol.

c. Integrity violations. No permanent personnel or student personnel will knowingly use unauthorized assistance in submitted work designated to represent one's own efforts or to knowingly fail to indicate properly any authorized assistance received. No permanent personnel or student personnel will submit another person's work, whether published or unpublished, or ideas by claiming them as one's own and not giving proper reference to that work. Further, no permanent personnel or student personnel will knowingly condone any of these actions taken by other permanent personnel or student personnel.

5. Punitive Order. This order is punitive. Persons subject to the Uniform Code of Military Justice who violate any portion of this order may be court-martialed or receive adverse administrative action, or both.

6. Subordinate Command Responsibilities. Commanders and supervisors are expected to exercise good judgment in reinforcing this General Order and they will ensure that all personnel are briefed on its prohibitions and requirements.

7. Effective date. This General Order is effective immediately, and will remain in effect until rescinded by the Commanding General, Training Command.

FMTB BARRACKS REGULATIONS AND GUIDELINES

A. **BARRACKS PROTOCOL:**

1. Lounge is closed during working hours. Lounge television will be secured at 2200 Sunday through Thursday and 2400 Friday and Saturday. The study lounge will always remain open for **STUDYING**.

2. No eating, drinking (except water), dipping smoking, or open flames (candles, incense) in the squad bays. Eating is only allowed at the smoking pit or in the student lounge.

3. No hot plates or cooking appliances are permitted in the barracks.

4. No hair cutting inside the berthing spaces or the heads.

5. No sleeping on top of the rack with your uniform on.

6. **DO NOT** enter or exit through the fire exit doors.

7. All personnel will wear proper attire when leaving the squad bay.

8. English will be the only language spoken in mixed company.

9. All lockers will remain secured/locked at all times. Secure all personal items.

10. No alcohol on or in the barracks surrounding grounds. This includes the parking lot.

11. Absolutely no members of the opposite sex are allowed in berthing that is intended for the opposite gender (with the exception of duty personnel).

12. The duty cell phone is not for personal use. Only duty personnel are allowed in the duty hut, all other business will be conducted outside.

13. The storage room in the duty hut is not for personal use; do not leave any gear behind.

14. Keep feet off the lounge furniture.

15. Shoes and 782 gear are not to be washed in the washing/drying machines.

16. Report any discrepancies through the student chain of command.

17. Any violators of barracks regulations are subject to punishment under the UCMJ.

18. Any matters concerning the barracks or it's furniture should be directed to the BEQ manager.

STUDENT WATCHSTANDER RESPONSIBILITIES

A. **General:**

1. The Company First Sergeant, Company Gunnery Sergeant, Platoon Sergeants will not stand duty. All other E-4 through E-6 personnel will stand the Duty Non- Commissioned Officer (DNCO) and Assistant Duty Non- Commissioned Officer (ADNCO) watch. All E-1 through E-3 personnel will stand the fire and security or "rover" watch.

2. The Company Gunnery Sergeant will submit a watchbill to the watchbill coordinator every Thursday morning by 0800 for the following training week. While in garrison, the watch bill will consist of one (1) DNCO, one (1) ADNCO and four (4) rovers. The watchbill must be initialed by all watchstanders before submission. The watchbill will be posted at the quarterdecks of Valor Hall and Devil Doc Hall.

3. While on in duty status, the DNCO is a direct representative of the Commanding Officer. The DNCO will exercise the necessary authority and control to ensure routine functioning of school activities and facilities within established guidelines.

4. Any matter that is not withing established guidelines nor covered by routine procedures, which require immediate action will be referred to the OOD at (760) 725-2559.

5. All watchstanders shall be thoroughly familiar with all guidelines and orders pertaining to their post.

B. **Period of Duty:**

1. On normal working days, the duty crew will assume the duty at 1700 until 0500 the following morning. Members of the 4th Platoon will assume the duty throughout training day.

2. Duty turn over will be at 0600 on weekends and holidays.

3. All duty personnel are restricted to Camp Del Mar during their 24-hour watch period even if they are a brown bagger.

C. **Uniform:**

1. All duty personnel will wear the camouflage utility uniform and duty belt.

D. **Duty Swaps:**

1. All requests for duty swaps must be submitted five (5) days prior to the actual duty day. Requests will be routed through the platoons scribe and signed by the Platoon Sergeant and before coming to the watchbill coordinator. Emergency situations will be dealt with accordingly.

STUDENT PFA/PFT, HIKE & ACADEMIC FAILURE POLICY

A. PFA/PFT REQUIREMENTS:

1. All students are required to pass a standard Navy PFA and participate in a standard Marine Corps PFT while attending FMTB.

2. Any student who does not meet BCA requirements upon check-in will be recommended for recycle to the next convening class.

3. Students will have two opportunities to pass the Navy PRT. Failure of both will result in recommendation administrative recycle to the next convening class.

B. HIKE REQUIREMENTS:

1. Each class will have a four (4), six (6), seven (7) and eight (8) mile conditioning hike.

2. Failure to pass three (3) of the four (4) conditioning hikes (passing the eight (8) mile hike is mandatory) will result in recommendation for administrative recycle or disenrollment.

3. Any student who does not participate in two (2) hikes, or the eight (8) mile hike, due to medical reasons, will be recommended for medical recycle or disenrollment.

C. ACADEMIC REQUIREMENTS:

1. There will be five (5) test blocks throughout the class that students must pass with an 80% or better.

2. If a student fails a test, they will be issued a re-test the following morning. All passed re-tests will be counted as 80% towards the student's final average.

3. Failure of two (2) tests will result in a Student Professional Development Review Board.

4. Failure of a third test, to include re-test failures, will result in recommendation for academic recycle or disenrollment.

NOTE: Recycling to the next convening class or disenrollment from the school may result in the loss of student's advanced training/"C" School, co-location assignments and eligibility for special programs and career incentives.

RULES AND REGULATIONS FOR ALL FIELD EVOLUTIONS

A. **FIELD PROTOCOL:**

1. All students will adhere to the following rules and regulations while in the field:

a. Students requiring medications must inform their Platoon Corpsman two (2) days prior to step off.

b. Identification card will be carried and identification tags will be worn.

c. No headbands or scarves will be worn on the head at any time

d. Tobacco use in the field will be designated by the Range Safety Officer (RSO).

e. Nutrition is paramount!!! EAT your Meal Ready-to-Eat (MRE) and STAY hydrated!!!

f. Accountability reports of personnel and weapons will be given to the Platoon Advisors after every evolution.

g. A Blank Firing Apparatus (BFA) will be affixed on the M4 carbine at all times!!! Remember muzzle awareness!!!

h. Use designated trash receptacles only.

i. Student leadership will always have a memo book and something to write with.

j. **All students** will strickly adhere to the "buddy system" while in the field. At no time will any student be alone in the field.

OPERATIONAL RISK MANAGEMENT

Operational Risk Management (ORM) is the process of dealing with the risk associated within military operations, which includes risks assessment. Risk decision-making and implementation of effective risk controls.

ORM is a tool for identifying hazards, assessing risks, developing and implementing controls to prevent safety mishaps. Every individual should be able to make effective risk management decisions, based on experience, judgement and situational awareness.

Safety is paramount and our number one concern here at Field Medical Training Battalion. It is important to obey the guidelines established for you to prevent any unforseen mishaps. You will encounter a very dynamic training environment here and your attention to detail could help prevent an injury. Below are specific points of concern involving ORM for FMTB.

Know your Environment
Assess the Situation
Universal Precautions
Sharp Hazards
Risk of Infection
Using Proper Body Mechanics

For further information and details regarding Operational Risk Management, see OPNAVINST 3500.39A and/or MCO 3500.27A

Point of contact: http//:www.safetycenter.navy.mil

FIELD MEDICAL TRAINING BATTALION

MISSION STATEMENT

Develop, coordinate, resource, execute and evaluate training and education concepts, policies, plans and programs to ensure the Fleet Marine Force Hospital Corpsman is prepared for assignment with the operational forces.

VISION STATEMENT

To be the best training command within the United States Marine Corps; producing the best trained, best prepared, and battle ready Fleet Marine Force Hospital Corpsman. He will be prepared to meet the challenges of present and future operational environments.

MILITARY SONGS

ANCHORS AWEIGH

Stand Navy out to sea, fight our battle cry;
We'll never change our course, so vicious foe steer shy-y-y.
Roll out the TNT, Anchors aweigh! Sail on to victory
And sink their bones to Davy Jones, hooray!

Anchors aweigh, my boys, anchors aweigh.
Farwell to foreign shores, we sail at break of day-ay-ay-ay.
Through our last night ashore, drink to the foam,
Until we meet once more. Here's wishing you a happy voyage home.

Blue of the mighty deep, gold of God's great son.
Let these our colors be till all of time be done, done, done, done.
On the seven seas we learn Navy's stern call:
Faith, courage, service true, with honor, over honor, over all.

MARINE HYMN

From the halls of Montezuma to the shores of Tripoli
We fight our country's battles in the air on land and sea
First to fight for right and freedom and to keep our honor clean
We are proud to claim the title of United States Marine

Our flag's unfurled to every breeze from dawn to setting sun
We have fought in every clime and place where we could take a gun
In the snow of far off northern lands and in sunny tropic scenes
You will find us always on the job The United States Marines

Here's health to you and to our Corps which we are proud to serve
In many a strife we've fought for life and never lost our nerve
If the Army and the Navy ever look on heaven's scenes
they will find the streets are guarded by United States Marines

COURSE ACCREDITATION

This course is accredited by:

COUNCIL ON OCCUPATIONAL EDUCATION
41 PERIMETER CENTER EAST, NE SUITE 640
ATLANTA, GA 30346

All questions related to FMST college credit and Sailor-Marine American Council On Education Registry Transcript (SMART), may be directed to the Commission of the Council on Occupational Education, 41 Perimeter Center East, NE, Suite 640, Atlanta, GA 30346, (800) 917-2081.

GRIEVANCE PROCEDURES FOR STUDENTS

Students may utilize the following chain of command to submit program grievances or issues regarding curriculum, quality of instruction and facilities, student services and safety:

Student Leadership
Platoon Advisors
Platoon Leader
Company Chief
Chief Instructor (CI)
Operations Chief
Operations Officer
Command Master Chief
Executive Officer
Commanding Officer
Commanding General, Training Command.

All personnel reserve the right to directly communicate grievances or seek assistance from the Commanding Officer as exercised through the formal process of Request Mast as outlined in Battalion Order 1700.1E.

STUDY TECHNIQUES

Attending class is essential!
Concentrating during class and effective study out of class is also necessary. Study along the way - after each class - not just before a test.

BE ACTIVE IN YOUR STUDYING!
Just reading your text or notes over and over again is not effective and just does not work well.

BE ACTIVE IN YOUR STUDYING!
Pretend you are making out the test - literally make up and write down possible questions and possible answers. The process is the important part here, not the final product. This will both help you to focus on important points in the text and notes and help you to understand and remember the material better.

BE ACTIVE IN YOUR STUDYING!
Try making and using flash cards to study definitions and principles. The process of making the cards and using them is the important part, not the product.

BE ACTIVE IN YOUR STUDYING!
Using as many of your senses as possible while you study is helpful: Read a section of your text or notes and then

1) Write a summary of those notes from memory - then check yourself and do it again.

2) Summarize the material out-loud, even if (or especially when) no-one else is there.

BE ACTIVE IN YOUR STUDYING!
Study with others along the way - set up a regular study group. Talk about the subject material. I recommend that you do this along the way but not the night before the test.

Don't stay up late studying the night before the test. This backfires. You will not be rested and your brain will not work well during the test. Get a good night's sleep the night before the test. If you study effectively along the way you will be prepared and only need to review a little the night before the test. It is a gigantic mistake to wait until the night before the test for your most serious studying. Stay away from other students who are not serious about their studying.

Try different techniques. Find what works for you. The general principle here is to **BE ACTIVE IN YOUR STUDYING!** Find some new techniques that work better than your current techniques. One definition of insanity is trying the same thing

over and over again. And expecting different results (e.g., just reading the notes over and over again and expecting a better grade.)
- *Adapted from Dr. Ray L. Winstead*

BE ACTIVE IN YOUR STUDYING!

http://nsm1.nsm.iup.edu/rwinstea/study.shtm

http://campushealth.unc.edu/healthtopics/academic-success/avoiding-studying-traps.html

http://www.columbia.edu/cu/augustine/study/intense.html

ABOUT MULTIPLE CHOICE EXAMS

Multiple-choice exams have standard formats. Typically, the question has a "root" which poses a problem, followed by a series of alternatives, which are the answer and related alternatives.

1. READ or LISTEN carefully to all the directions about the exam.

2. READ through exam once. Answer all the questions you know. Don't dwell on the tough ones at this point; take advantage of the time you have to think through the question.

3. READ each question fully and try to identify key terms.

4. After reading each question, try to think of the answer WITHOUT looking at the alternative answers given (i.e. cover The answers with paper BEFORE reading the question).

5. Then read all choices to find the correct one (DON'T stop after the one you think is right, without reading the others. There could be a better answer. The directions on the exam usually state that you are to "select the BEST answer."

6. Eliminate the alternatives that are obviously wrong.

7. Correct answers will read as a true statement when you match the question and the answer.

8. When you have answered all the questions that you could do readily, go through exam again and work on the remaining questions. Spend a reasonable amount of time on each question, but move on if you get stuck.

9. Don't just guess at the answer for any of which you are unsure. Try to at least narrow down your options by eliminating one or two of the alternatives.

10. Save time at the end to double-check your answers (check that your answers are the ones you think are correct and that you haven't filled in the wrong circles by mistake) and try the tough questions again. If you are not penalized for incorrect answers, do not leave any blank answer on your sheet.

Compiled by H. Addy from:

* Drewes, F. and K.L.D. Milligan. 2002. How to Study Science. 3rd ed. McGraw-Hill, Boston, MA
* Ellis, D.B. 1985. Becoming a Master Student , 5th ed. College Survival Inc., Rapid City, SD
* McKeachie, W.J. 1986. Teaching Tips, 8th ed. D.C. Heath & Co., Lexington, MA
* Nilson, L.B. 1998. Teaching at its best. Anker Publ. Co., Bolton, MA.
* and hard-won personal experience

HOSPITAL CORPS HISTORY

The U. S. Navy Hospital Corps: A Century of Tradition, Valor, and Sacrifice

Few military organizations can look upon their histories with the same degree of pride and, in some cases awe, as can members of the Navy Hospital Corps. In its century of service, the Hospital Corps has proven itself ready to support Marines and Sailors by giving them aid whenever and wherever necessary. As the years have progressed, the tools and techniques used by Hospital Corpsmen and their forerunners have evolved, but the level of dedication has remained a strong current running through the Corps' history.

Revolutionary War

The first direction given to the organization of Navy medicine consisted of only one article in the *Rules for the Regulation of the Navy of the United Colonies of North America* of 1775. Article 16 stated:

"A convenient place shall be set apart for sick or hurt men, to be removed with their hammocks and bedding when the surgeon shall advise the same to be necessary: and some of the crew shall be appointed to attend to and serve them and to keep the place clean. The cooper shall make buckets with covers and cradles if necessary for their use."

Interestingly, the cooper or barrel-maker, whose skills could be used to make bedpans, had a more detailed job description than did any kind of trained medical assistant.

A typical medical section was usually limited to two, perhaps three men: the surgeon, the surgeon's mate, and possibly an enlisted man. The surgeon was a physician. The surgeon's mate, usually a doctor as well, held status like that of a modern Warrant Officer but signed only for a particular cruise. Although usually viewed within the history of the Medical Corps, surgeon’s mates’ position and responsibilities appear more to be equivalents to senior Hospital Corpsmen.

Few things changed in medical techniques and organization between 1775 and 1814, the period covering America's first naval wars. Among the less dramatic responsibilities of caring for the non-combat ill and injured was feeding and personal care of the sick. The simple daily ration of porridge or "loblolly" was sure to be carried down to those in the medical space by untrained attendants.

Surgeon's Mate and Loblolly Boy

Congress approved an act on March 2, 1799, which copied the words of the Continental Congress's medical department article 16 of 1775 exactly. As a result, there was still no title or job description for enlisted medical personnel. The nickname "loblolly boy" was in common use for so many years that it became the official title in Navy Regulations of 1814. The loblolly boy's job, described in the regulations of 1818, included the following:

> The surgeon shall be allowed a faithful attendant to issue, under his direction, all supplies and provisions and hospital stores, and to attend the preparation of nourishment for the sick.
>
> The surgeon's mates shall be particularly careful in directing the loblolly boy to keep the cockpit clean, and every article therein belonging to the Medical Department.
>
> The surgeon shall prescribe for casual cases on the gun deck every morning at 9 o'clock, due notice having been previously given by his loblolly boy by ringing of a bell.

The U.S. Navy's first loblolly boy of record was John Wall, who signed aboard the U.S.S. *Constellation* on June 1, 1798. The ship sailed with a surgeon, George Balfour, and a surgeon's mate, Isaac Henry, as well. Eight months later, in February 1799, Capt. Thomas Truxton won a decisive victory against the French frigate *L'Insurgente* in the Caribbean. This would have been Loblolly Boy Wall's first opportunity to care for shipmates wounded in battle.

Other loblolly boys who are documented in Navy records include Alexander Wood, who served aboard the U.S.S. *Essex* in 1802 and John Domyn aboard the frigate *Philadelphia* in 1803. Domyn and the rest of the crew of the *Philadelphia* were captured at Tripoli by Algerian pirates in October 1803 and remained captive until June 1805. Further, there was a 16 year-old loblolly boy aboard the U.S.S. *Eagle*, Joseph Anderson, about 1800. Anderson has the distinction of being the first known African-American loblolly boy.

Surgeon's Steward and Loblolly Boy

A new, senior enlisted medical rate, surgeon's steward, was introduced in the ensuing decades. The term is first seen in 1841 in Navy pay charts, but it appears that the new billet was only allowed on larger ships. By 1 April 1843, the Navy Department issued an order allowing surgeon's steward to be assigned to brigs and schooners. The relative importance of medical Sailors was hereby increased. Surgeon's stewards would rank second in seniority among the ship's petty officers, next only after the master-at-arms. Herman Melville, famed author of *Moby Dick*, gives a description of the surgeon's steward aboard the frigate U.S.S. *United States* in *White Jacket*, his account of Navy life in 1843:

"An official, called the surgeon's steward, assisted by subordinates, presided over the place [sick bay]...He was always to be found at his post, by night and by day."
Melville's detailed description of the ship's medical department notes that "Pills," the

surgeon’s steward’s nickname, performed a variety of duties. He assisted in preparing and passing surgical instruments during an operation. He also ran the ship's apothecary shop, which he opened for an hour or so in the morning and in the evening. Melville remembered how he went to the steward several times when he felt a need for medicine, only to be given his freshly-ground, bitter-tasting powders in a plain tin cup. While he commented on the unpleasant taste and after-effects, Melville also noted that the potion was free of charge.

Surgeon’s Steward and Nurse

The year 1861 brought a horrible civil war to this country. With the massive increase in the Navy, changes and developments in the medical department were sure to ensue. On 19 June 1861, a Navy Department circular order established a new name for the loblolly boy.

> "In addition to a surgeon's steward, 1 nurse would be allowed for ships with a complement of less than 200; 2 nurses would be allowed for ships with a complement of more than 200; and sufficient nurses would be allowed on receiving ships in a number proportionate to the necessities of the vessel."

While the shipboard medical department may have only changed titles of personnel, new techniques in mass care of the sick and wounded were developed. A captured sidewheel steamer was repaired and modified to care for patients. Revisions to the ship were to include bathrooms, kitchens, laundries, even elevators and facilities to carry 300 tons of ice. On 26 December 1862, the U.S.S. *Red Rover* became the first Navy vessel specifically commissioned as a hospital ship. The medical complement included 30 surgeons and male nurses, as well as four nuns.

While the Civil War was often not as intense at sea services as it was for the Army, there were a number of terrible battles which necessitated a competent medical department. Pvt. Charles Brother, a Marine stationed aboard Admiral David Farragut's flagship U.S.S. *Hartford*, recalls such an account in his 1864 diary. After the admiral cursed the sea mines awaiting his fleet in Mobile Bay ("Damn the torpedoes!"), Farragut directed the *Hartford* into the fight. Heavy Confederate fire from the Confederate ram *Tennessee* ensued. As would often be the case during combat action, Navy medical personnel risked becoming casualties from hostile fire. In their attempts to minister to battle casualties, medical personnel are themselves targets and sometimes do not even have the chance to render aid. Pvt. Brother noted, the shell from the ram burst as it came through killing the Docts Stew'd [sic] instantly...Very few were slightly wounded, all were either killed instantly or horribly mangled. Our cockpit [sick bay] looked more like a slaughterhouse than any thing else. Admiral Farragut's after-action report listed a grisly count of 25 killed and 28 wounded on his ship.

Apothecary and Bayman

Post-war reductions in the size of the Navy brought new classifications to enlisted medical personnel. The title surgeon's steward was abolished in favor of three grades of apothecaries in 1866. Those selected as apothecaries had to be graduates of a course in pharmacy, or to possess the knowledge by practical experience. The Apothecary, First Class ranked with a warrant officer, while the second and third class were petty officer equivalents. The three rates were reduced one petty officer apothecary on 15 March 1869.

Nurse, as a title for junior enlisted medical personnel, was replaced by the title "bayman," one who manned the sick bay, in the early 1870s. U.S. Navy Regulations of 1876 used the title officially, and it remained a valid for 22 more years.

Charles Shaffer began a 50-year career in Navy medicine in 1897 as a bayman. His career path was typical for one enlisting in the medical field. Shaffer was required to enlist as a landsman (seaman apprentice), earning $16 a month. It was not until transfer to his first command that Shaffer's rating was changed to bayman. And since the naval hospitals used civilian male nurses as opposed to baymen, Shaffer would go to a ship.
With his new title, Bayman Shaffer's pay was upped to $18 a month. His uniform now bore two strips of piping on the cuff and a "watch mark," a half-inch white stripe sewn around the shoulder seam of the blue jumper (blue on white uniforms) denoting him as deck force or non-engineering personnel. This stripe was worn on either the left or right shoulder seam, depending on whether the individual was assigned to the port or starboard watch. Prior to the establishment of the Hospital Corps, no specific medical insignia was worn by junior personnel.

Shaffer's senior counterpart, the apothecary, was wearing new insignia as well, that of the newly-created (1893) Chief Petty Officer. Its three chevrons and three arcs were surmounted by an eagle, and had a caduceus in the angle of the chevrons. An eagle whose wings extended horizontally surmounted the arcs. The rating badge described in the 1894 uniform regulations established the style which has continued, virtually unaltered, to the present day.

An apothecary of the 1890s mixed and dispensed all medication aboard ship. He was responsible for all medical department reports, supply requests, and correspondence. The apothecary administered anesthesia during surgery and would be the primary instructor for new baymen. Some of the medical skills were easily learned, though. "As a rule, baymen became skillful at bandaging," Shaffer noted, "perhaps due to their previous training in seamanship."

Their responsibilities did not end there, however. During shipboard surgery, the bayman focused an electric light on the incision site while the surgeon did his work on what was listed as the "combination writing and operating table". He sterilized surgical instruments by boiling, then storing them in a solution of 5 percent phenol. Bandages and dressings were sterilized by baking them in a coffee can in the ship's oven. Sick bay itself was prepared for surgery by wiping the entire room down with "a weak bichloride solution". On days when the ship's routine called for scrubbing bags and hammocks, a bayman was responsible for washing

those of the sick. He assisted in the maintenance of medical department records, and had to paint the ship's medical spaces when required.

In the last two decades of the 1800s, many in the naval medical establishment called for reforms in the enlisted components of the medical department. Medicine had by now progressed far more as a science, and civilian hospitals all had teaching schools for their nurses. Foreign navies had trained medical Sailors, and the U. S. Army had established its own Hospital Corps of enlisted men on 1 March 1887. Navy Surgeon General J. R. Tryon argued, in his annual report of 1893, against the practice of assigning landsmen to the medical department with nothing more than on-the-job-training. He advocated the urgent need for an organized hospital corps.

Physicians in the fleet were equally certain of the need for changes. Surgeon C. A. Sigfried of the U.S.S. *Massachusetts* made his views known in his report to the Surgeon General in 1897.

> "The importance of improving the medical department of our naval service is more and more apparent, in view of the recent advances in the methods and rapidity of killing and wounding. The great want is a body of trained bay men or nurses, and these should be better paid and of better stamp and fiber. Now and then we procure a good man, and proceed with his training as a bay man. He soon finds opportunity for betterment in some one of the various departments of the ship, in the matter of pay and emolument, either in some yeoman's billet or in some place where his meager $18 per month can be suddenly increased to $30, $40, or even $60 per month. The bay man, who should be an intelligent, sober man, and well trained in many things pertaining to nursing, dieting, ambulance, and aids to wounded, and have a moderate amount of education, finds his pay at present among the lowest in the ship's company; even the men caring for storerooms get more per month."

Hospital Corpsman: Hospital Steward and Hospital Apprentice

Arguments for a professional, well-trained group of individuals to provide medical care for the Navy finally paid off. Unfortunately, it took the imminent danger of combat in the Spanish-American War to spur Congress into action. Within a bill aimed at building the armed forces was a section to provide for the Navy's long-needed Hospital Corps. It was approved by President William McKinley on 17 June 1898. From that date to the present, either generically or by rating title, medical Sailors have been called "Hospital Corpsmen."

The Hospital Corps would again change the rate titles. The Hospital Apprentice would be the equivalent of an apprentice seaman, the Hospital Apprentice First Class was a Third Class Petty Officer, and the hospital steward was a Chief Petty Officer. Pharmacists were Warrant Officers, the first of a line of commissioned Hospital Corpsmen that continued until the establishment of the Medical Service Corps following World War II.

Early history of the Corps set a pace of conspicuous service and involvement that would

continue to the present. Before there was even a Hospital Corps School, Hospital Apprentice Robert Stanley was serving with the U.S. contingent at Peking. Actions by a Chinese political group that was opposed to foreign presence in China, the so-called Boxers, prompted attacks on foreign embassies in July 1900. During this action, Hospital Apprentice Stanley volunteered for the dangerous mission of running message dispatches under fire. For his bravery, Stanley became the first in a long line of Hospital Corpsmen to receive the Medal of Honor.

In order to ensure that the members of the new Hospital Corps were adequately trained in the disciplines pertinent to both medicine and to the Navy, a basic school for Corpsmen was established at the U. S. Naval Hospital Norfolk (Portsmouth), VA. Originally called the School of Instruction, it opened 2 September 1902. Its curriculum included anatomy and physiology, bandaging, nursing, first aid, pharmacy, clerical work, and military drill. The first class of 28 Corpsmen was graduated on 15 December 1902. Hospital Apprentice Max Armstrong, at the top of the alphabetical list of graduates, was naturally given his diploma first and has been heralded as the Navy's first graduate Hospital Corpsman.

The school continued for a brief time and was then moved to the Naval Hospital in Washington, DC, staying in existence there until 1911. For the next three years there was no basic school for Corpsmen, but the concept was revived in 1914. The next two Hospital Corps Training Schools were opened in Newport, RI and on Yerba Buena Island, CA.

Development of the Navy's Hospital Corps training courses would prepare the first generation of Hospital Corpsmen for arduous duty, both in peace and war. A graduate of the Hospital Corps School's sixth class, Hospital Steward William Shacklette, would find himself aboard the U.S.S. *Bennington* in San Diego harbor on 21 July 1905. When the ship's boiler exploded, Shacklette was burned along with almost half the crew. The other half was killed outright. He rescued and treated numerous of his shipmates and was awarded the Medal of Honor for his bravery. Another young Corpsman, Hospital Apprentice First Class William Zuiderveld of Michigan, landed at Vera Cruz, Mexico in 1914 as part of a force of Navy and Marine Corps personnel. During intense street fighting in which he was wounded himself, Zuiderveld, a graduate of the 16th class of the School of Instruction, risked his life on several occasions to aid wounded shipmates. He, too, received the Medal of Honor.

Hospital Corps: Hospital Apprentices and Pharmacist's Mates

The next revision in the structure of the Hospital Corps would come by act of Congress on August 29, 1916. Under this plan, the rates would be hospital apprentices, second class and first class (both of whom wore a red cross on the sleeve), pharmacist's mates, third, second, and first, and chief pharmacist's mate. The officer contingent of the Hospital Corps would include the two warrant officer ranks of pharmacist and chief pharmacist. The reorganization would allow for a massive increase, five-fold, in the size of the Hospital Corps.

At the start of 1917 the Hospital Corps counted 1,700 men in its ranks. A concerted effort to recruit and train new personnel enabled the Corps to reach its authorized strength of 3 ½ percent

of the Navy and Marine Corps, or 6,000 men. But as these plans came to fruition, the United States entered World War I in April. By the end of 1918, the Corps would peak at about 17,000.

Hospital Corps: Pharmacist's Mates in World War I

The massive war increase in Hospital Corps strength necessitated additional schools to train the newcomers. Hospital Corps School, Great Lakes, IL was established in January 1913. Wartime schools were created in Minneapolis at the University of Minnesota, in New York at Columbia University, and at the Philadelphia College of Pharmacy. A school for Naval Reserve Force Hospital Corpsmen was set up at Boston City Hospital. Other crashcourse schools for shipboard personnel were conducted at a number of other civilian hospitals. Hospital Corpsmen that were needed to serve as medical department representatives on small vessels such as destroyers were trained at the Pharmacist's Mate School at Hampton Roads, Virginia, the forerunner of the Independent Duty Hospital Corpsman School.

Hospital Corpsmen were assigned to the multitude of duty types and locations needed to support a Navy involved in a world war. Naval hospitals were opened and staffed. Ships and aircraft squadrons were given medical support. At sea, the dangers of the new war were ever present. When the troop transport USS *Mount Vernon* was torpedoed by a German U-boat, Pharmacist's Mate First Class Roger Osterheld contends with over 50 casualties, over half of whom were killed.

Naval training facilities and shore establishments needed Hospital Corpsmen as well as did occupation forces in Haiti and other bases around the world. But World War I provided the Hospital Corps a role that would afford it some of the most gruesome and dangerous challenges it would ever face: duty with the Marine Corps.

Assignment to Marine Corps units was not completely new. Hospital Corpsmen were serving with Marine occupational forces in Cuba, Haiti, and Santo Domingo at the outbreak of the war and had seen other similar service. It was the change of the Marine Corps' role, to one of expeditionary forces in a large scale ground war that changed what Hospital Corpsmen would do. Sick call and preventive medicine were continuous roles that remained unchanged. Facing artillery, mustard gas, and machine gun fire were new experiences.

Two to four Hospital Corpsmen were assigned to each rifle company. A First or Second Class Petty Officer would act as the company Hospital Corpsman and the others as platoon Hospital Corpsmen. In the trenches and more fixed locations, *postes de secours* or company aid stations were established by these contingents. A battalion aid station would have from five to seven Hospital Corpsmen and a Chief. The Senior Chief Pharmacist's Mate and six to eight more Hospital Corpsmen would serve at the regimental aid station.

These Hospital Corpsmen lived and worked in arduous battle conditions. In one occurrence, a predawn mustard gas attack on the 6th Marines at Verdun in April 1918 had devastating consequences: 235 of the 250 in one company succumbed to the gas and had to be evacuated. The two company Hospital Corpsmen worked furiously to treat these patients despite their own

gas injuries. One died and the other was permanently disabled. Assaults on German positions offered Hospital Corpsmen further chances to show their commitment. Their performance in woods well known to Marines would cause the 5th regiment's Commanding Officer to write, "there were many heroes who wore the insignia of the Navy Hospital Corps at the Bois de Belleau."

In all, some 300 Hospital Corpsmen, doctors, and dentists served with the 5th Marine Regiment, the 6th Marine Regiment, and the 6th Machine Gun Battalion, assigned to the Army's 2nd Infantry Division. Their professionalism and heroism were reflected in some of the statistics they compiled. During their time in Europe, in the bloody engagements such as Meuse-Argonne and Belleau Wood, they treated over 13,000 casualties. Eighteen of their own were killed and 165 were either wounded or injured by mustard gas.

A heritage of valorous service with the Marines was born. Two Hospital Corpsmen received the Medal of Honor. Other decorations to Hospital Corpsmen included 55 Navy Crosses, 31 Army Distinguished Service Crosses, 2 Navy Distinguished Service Medals, and 237 Silver Stars. A hundred foreign personal decorations were granted to Navy Hospital Corpsmen, and 202 earned the right to wear the French Fourragère shoulder aiguillette permanently. Their 684 personal awards make the Hospital Corps, by one account, the most decorated American unit of World War I.

Following the war there was an inevitable decrease in the strength of the armed forces. Despite the loss of Hospital Corpsmen, there were still missions to perform. Nicaragua was added to the list of occupational duties to which the Marines and their Hospital Corpsmen were assigned in 1927. Ships and naval hospitals still required Hospital Corps staff. Dedicated members of the Hospital Corps remained in the service, doing what they loved, despite the lack of advancement opportunity. In the years between the wars, time in rate from pharmacist's mate second class to pharmacist's mate first class was 8 years.

Hospital Corps: Pharmacist's Mates in World War II

World War II became the period of Hospital Corps' greatest manpower, diversity of duty, and instance of sacrifice. Between 1941 and 1945, the ranks of this small organization swelled from its pre-war levels of near 4,000 to over 132,000 personnel. This increase came to fulfill new responsibilities with new technologies at new duty stations. In the face of great adversity, the Hospital Corps would cement its reputation for effectiveness and bravery.

The Navy's fleet expanded to thousands of ships and the Marine Corps grew from a few regiments to six divisions. A two ocean war produced horrific numbers of casualties. The Hospital Corps would have to grow to meet the needs of casualty collection, treatment, and convalescence. To educate the influx of new Sailors, Hospital Corps Training School at Portsmouth, VA was augmented by a temporary school at Naval Hospital Brooklyn, NY. The school at Great Lakes was recreated in 1942, and others were started at Farragut, ID and at Bainbridge, MD in 1943. A separate Hospital Corps Training School was established for women at Bethesda, MD in January, 1944. Specialized schools were opened to train pharmacist's mates

for independent duty and for service with the Marines. Additionally, courses were established to instruct personnel on new equipment and techniques in dozens of developing medical fields.

Shore-based duty sent Hospital Corps personnel to hospitals and dispensaries in the United States and abroad. Advance base hospitals on newly-captured Pacific islands formed a crucial link in the chain of evacuation from battle sites. Those facilities in Hawaii or England received casualties from their respective fronts. Stateside hospitals watched over wounded service personnel as their recuperation continued. Hospital Corpsmen made the treatment of American casualties possible at each of these by providing technical support and direct patient care.

Duty on surface ships afforded Hospital Corpsmen numerous challenges and abundant environments in which to face them. Hospital ships required the services of personnel in much the same way as shore-based hospitals, except that those on ship were afloat and subject to attack. Other classes of vessels, such as landing ships, tank (LSTs) and patrol craft, escort and rescue (PCERs) became large floating clinic/ambulances which required additional Hospital Corps personnel.

Combatant ships and transports in the Atlantic, Pacific, and Mediterranean theaters took casualties from ships, aircraft, and submarines throughout the war, necessitating the service of well-trained Hospital Corpsmen. Casualties could be staggering on attacked ships. In one example, the aircraft carrier USS *Bunker Hill* sustained 392 killed and 264 wounded when it was hit by two kamikazes.

Role of submarine Hospital Corpsmen developed into one of great importance. Hospital Corpsmen treated 549 survivors of air or sea calamities, U.S. and enemy alike. In one case, three Sailors were seriously wounded, the submarine's C.O. wrote, "the Chief Pharmacist's Mate is particularly commended for his quick and efficient action in caring for these three wounded shipmates...He has been recommended for promotion and the Bronze Star Medal."

The most dramatic accomplishments of submarine Hospital Corpsmen were three who had to do surgery while submerged. Pharmacist's Mate First Class Wheeler "Johnny" Lipes performed a successful appendectomy aboard the USS *Seadragon* on 11 September 1942. Lipes, who had been a surgical technician, used improvised instruments made from mess deck utensils and instructed assistants as the procedure went on in the officers' wardroom. PhM1c Harry Roby performed the same act on the USS *Grayback* as did PhM1c Thomas Moore aboard USS *Silversides*, both in December 1942. Approximately 300 Hospital Corpsmen sat out all but the early days of the war when they were captured by the Japanese who invaded the Philippines. In prisoner of war camps and huddled in POW "hell ships", they endured malnutrition, disease, torture, and brutality. One hundred thirty-two Hospital Corpsmen died as prisoners during World War II, a death rate almost 20 percent higher than among other American POWs. Hospital Corpsmen served on the beaches not only in the island campaigns of the Pacific, but in Europe as well. Teams of Navy medical personnel formed aid stations with beach battalions at Sicily and Normandy, treating Army and allied wounded under fire. Hospital Corpsmen ensured the survival of these casualties until they could reach hospitals in England.

Of all the Hospital Corpsmen in World War II, Fleet Marine Force personnel endured, perhaps, the most grueling side of war. As they swarmed numerous beaches in the Pacific, they became targets themselves as they braved fire to reach downed comrades. At Guadalcanal, Tarawa, Peleliu, Saipan, Tinian, Kwajalein, Iwo Jima, and Okinawa, Hospital Corpsmen bled and died, often in greater numbers than the Marines for whom they cared. Hospital Corps casualties in the 4th Marine Division at Iwo Jima, for example, were 38 percent.

Pharmacist's Mate First Class Ray Crowder made notes of his combat experiences in his diary:

> "Most of the men who had been wounded previously were hit again...I was hit by a piece of shrapnel in my leg but I overlooked it until later. As soon as I could get my wits together...I began to do what I could for the guys. Two of the men were screaming with shock. Darkness had already fallen and I couldn't see what I was doing. All that I could do was to feel the blood and try to get a pressure bandage put over it to stop the bleeding."

Pharmacist's Mate Second Class John H. Bradley's heroism with the 28th Marines on Iwo Jima is typical of acts repeated by Hospital Corpsmen throughout the war. On seeing a wounded Marine, Bradley rushed to his aid through a mortar barrage and heavy machine gun fire. Although other men from his unit were willing to help him with the casualty, Bradley motioned them to stay back. Shielding the Marine with his own body, the Hospital Corpsman administered a unit of plasma and bandaged his wounds. Through the gunfire, he then pulled the casualty 30 yards to safety.

PhM2c Bradley was awarded the Navy Cross for his valor, but he is not usually remembered for this act. Days later, he and five Marines were captured in Joe Rosenthal's photograph of the second flag raising on Mt. Suribachi. The image was reproduced more than perhaps any photo in history. It was the theme for the Marine Corps War Memorial in Arlington, VA and made Bradley the first U.S. Navy Sailor to appear on a postage stamp. His likeness as a dedicated American serviceman is the most famous in the Hospital Corps' history.

Members of the Hospital Corps treated some 150,000 combat casualties during the war. This does not include thousands of others, those plagued by disease and injured in the line of duty, who were aided by their medical shipmates. The cost of this service was high: 1,170 Hospital Corpsmen were killed in action and thousands more were wounded. But their valor in doing their jobs was great. Hospital Corpsmen earned 7 Medals of Honor, almost half of those awarded to Sailors in the war. In addition, they earned 66 Navy Crosses, 465 Silver Star Medals, and 982 Bronze Star Medals.

A New Hospital Corps:

Massive reorganization of the armed forces took place after World War II. A new Department of Defense was established, and the Army-Navy Medical Service Corps Act

removed commissioned allied health and medical administration officers from the Hospital Corps. This law also provided for a separate Dental Technician rating, which remained a component of the Hospital Corps until 1972. Women in the Hospital Corps had previously been WAVES, or members of the Women's Reserve, U.S. Naval Reserve. New legislation permitted women to enlist in the Regular Navy, and HM1 Ruth Flora became the first Hospital Corpsman to do so on 12 July 1948.

Effective 2 April 1948, the Navy changed the names and insignia of the Hospital Corps. The new titles were Hospital Recruit, Hospital Apprentice, Hospitalman, Hospital Corpsman Third, Second, and First Class, and Chief Hospital Corpsman. The red Geneva cross, which had marked Corpsmen for 50 years, was replaced in the rating badge with the original mark of the winged caduceus. The rates of Senior Chief and Master Chief Hospital Corpsman were added in 1958.

Hospital Corpsmen in Korea

As part of a United Nations force, Marines were committed to the Korean peninsula when South Korea was invaded by its northern neighbor in the summer of 1950. Within the first year, Hospital Corpsmen had participated in the dramatic landing at Inchon and the frigid retreat from the Chosin Reservoir. By the summer of 1951, a stalemated line of opposing forces took static positions. For the next two years, the war would be reminiscent of World War I, with bunkers, trenches, raids and artillery fire. The slow war of attrition was nonetheless lethal. In late March 1953, 3,500 Chinese Communist Forces soldiers attacked three outposts--Reno, Vegas, and Carson--of 40 Marines and one Hospital Corpsmen each. Out of this fighting came two Medals of Honor and numerous other decorations. In the Nevada Cities Outpost battles, most of the Hospital Corpsmen who were involved at the small unit level were either killed or wounded.

Although only one Marine division was involved in the war, the Hospital Corps lost 108 killed in action. Disproportionate to their numbers was their heroism. In Korea, Hospital Corpsmen earned 281 Bronze Star Medals, 113 Silver Star Medals, and 23 Navy Crosses. All five enlisted Navy Medals of Honor were awarded to Navy Hospital Corpsmen serving with the Marines.

Hospital Corpsmen in Vietnam

American military commitment in Southeast Asia grew in the decades following World War II. As early as 1959, a few Hospital Corpsmen provided medical support for U. S. military personnel as part of the American Dispensary at the U.S. Embassy. Four years later, in 1963, Navy Station Hospital, Saigon was created. Ninety Hospital Corpsmen would staff the facility, which provided care for U. S. and allied (Australian, New Zealand, Filipino, and South Korean) military, as well as South Vietnamese civilians. These medical personnel conducted routine medical care and treated the victims of combat and terrorist actions until the hospital was transferred to the Army in 1966.

A new hospital was constructed in 1965 at Naval Support Activity Da Nang. A staff of 485 Hospital Corpsmen worked with doctors and nurses to care for combat casualties. The

hospital, which was designed primarily to care for Marines in the I Corps sector, treated 23,467 patients in 1968 alone. Although not on the front lines, the Hospital Corpsmen here were subjected to routine rocket and mortar attacks.

Hospital Corpsmen were assigned aboard ships of various kinds, providing off-shore medical support to U. S. forces. The largest commitment here was on the hospital ships USS *Repose* and USS *Sanctuary*. Some 200 Hospital Corpsmen, representing the gamut of technical specialties, worked on each ship. Teams of 20 Hospital Corpsmen served on LPH class amphibious ships. Others supported the Riverine force on APB class base ships.

U. S. State Department initiatives and the Medical Civic Action Program (MEDCAP) provided medical support for Vietnamese civilians. Beyond routine aid and treatment, the Hospital Corpsmen working through these programs provided guidance in sanitation and preventive medicine throughout South Vietnam.

By far the Hospital Corps' largest contribution in Vietnam was with Marine Corps units. Starting with the 50 who landed with the Marines at Da Nang in 1965, the enlisted medical component would grow to 2,700 Hospital Corpsmen assigned to 1st and 3d Marine Divisions, 1st Marine Air Wing, and other combat support units. Two medical battalions and two hospital companies operated field hospitals, collecting and clearing units, and dispensaries which treated the flow of combat casualties from the field. Closer support was provided at the battalion aid station (BAS) level, where casualties could be stabilized before evacuation to more definitive care. The BAS was often bypassed because of the exceptional medical evacuation capabilities of helicopter medical evacuation (MEDEVAC).

The most dangerous role of the Hospital Corpsman in Vietnam was in the field. Special units, such as Navy SEAL teams and Marine reconnaissance units took medical Sailors with them, as did the artillery, air, and infantry elements of the Marine Corps. Most of the 53 Hospital Corpsmen assigned to an infantry battalion served with rifle companies, one or two men per platoon of about 40. These Sailors patrolled with their Marines, risked the same dangers, and rendered the aid that saved the lives of thousands.

Contributions of Hospital Corpsmen in Vietnam were noteworthy, as they cared for over 70,000 combat Navy and Marine Corps combat casualties and countless military and civilian sick call patients. Their valor was great. HM3 Donald E. Ballard, HM3 Wayne M. Caron, and HM2 David R. Ray earned the Medal of Honor for heroism. HM3 Robert R. Ingram received his Medal of Honor for Vietnam in 1998. Additionally, 30 Hospital Corpsmen received the Navy Cross, 127 the Silver Star Medal, and 290 the Bronze Star Medal. The names of 638 Hospital Corpsmen were killed in action there, more than in any other war except World War II. Too many more--4,563--would earn the Purple Heart.

HM2 Chris Pyle wrote the following letter home before assignment with 1st Marine Division in Vietnam.

> “Many people have died to save another. The Navy Corpsman has had more honors bestowed on him than any other group. My life has but one meaning, to save or help someone. Soon I will be going over to Vietnam. I have my fears and beliefs, but they lay hidden under my emotions. That’s why God has made me so. Someday I will see before me a wounded marine. I will think of all kinds of things, but my training has prepared me for this moment. I really doubt if I will be a hero, but to that Marine I will be God. I am hoping that no one will die while I am helping him; if so, some of myself will die with him. Love for fellow man is great in my book. It’s true they make me mad at times but no matter who it is, if he’s wounded in the middle of a rice paddy, you can bet your bottom dollar that whatever God gave me for power, I will try until my life is taken to help save him, and any other.”

Five months later, on 28 May 1969, HM2 Pyle was killed in action.

Hospital Corpsmen in Beirut

A different part of the world would beckon Hospital Corpsmen in the 1980s, southwest Asia. The objective was a "peacekeeping" mission in Beirut, Lebanon, in which U.S. forces participated with those of France, Italy, and the Great Britain in a Multinational Force. Here, Hospital Corpsmen from the ships of a Mediterranean Amphibious Ready Group and a Marine Amphibious Unit were assigned to stop a bloody, eight-year old factional civil war. By the end of August, 1983, the peacekeepers had become targets and responded in a ground war that was all but unknown back in the U.S.

Firefights at isolated outposts soon produced casualties, and Hospital Corpsmen responded under fire to treat their wounded Marines. When a mortar round hit one of the Marine positions, one Hospital Corpsman, HN Victor Oglesby, found himself with five wounded Marines, his platoon sergeant dead, and his platoon commander barely alive. Two months later, on 23 October a uniformed suicide truck bomber attacked the headquarters of 1st Battalion, 8th Marines. The truck bomb unleashed the largest non-nuclear blast ever detonated, and killed 241 Americans. Almost the entire battalion aid station--15 Hospital Corpsmen and the battalion surgeon--were killed. The casualty count for the Hospital Corps would be the next costly after World War I. One of the three Hospital Corpsmen who survived the blast, HM3 Donald Howell, tended to wounded Marines while trapped in the rubble and wounded himself. The relief unit for the 24th Marine Amphibious Unit would not arrive in Lebanon until they had invaded the small Caribbean nation of Grenada.

Hospital Corpsmen in the Persian Gulf War

The 1990-91 Iraqi invasion of Kuwait gained a strong response from the U.S. and the world. Preparations were made to drive the Iraqi Army out of the tiny country, and Corpsmen were readied to respond to the needs of their shipmates. Hospital Corpsmen around the globe reacted, as their ships, stations, and Marines deployed or prepared to receive casualties. In fact, the first Navy casualty of the war was a Hospital Corpsman. Of the vast number of Naval Reservists

called to active duty, the largest single group activated was Hospital Corpsmen. Of an inventory of just over 12,000 Hospital Corpsmen in the Naval Reserve, 6,739 were recalled to active duty. The largest group of them, 4,617, served at medical treatment facilities and casualty receiving centers. 1,142 went to Marine Corps units, 841 to Fleet Hospitals 6 and 15, 471 of them were assigned to the hospital ships *Mercy* and the *Comfort*.

Hospital Corpsmen in Somalia

U.S. forces would again try to bring stability to a troubled land: Somalia. Hospital Corpsmen there faced both bullets and the needs of a starving populace. One, HM3 Timothy E. Quinn, wrote a letter describing his experiences in February 1993. "I was on a foot patrol that got pinned down by automatic weapons fire, and here I am tucked up against a tree trying to get small..." He continued, "I go out to orphanages and do simple sick call and such...the people there tell us that food is now plentiful, and that no one is dying of hunger anymore, but now the medical problems are much more apparent."

Hospital Corpsmen in 1998

In its first century, the Hospital Corps has compiled a truly honorable legacy of valor and sacrifice. In addition to the wars and conflicts recounted here, Hospital Corpsmen have responded to natural disasters, military accidents, and other peacetime emergencies. Moreover, they have maintained the regular health of their Sailors and Marines, giving immunizations, conducting preventive medicine efforts, and holding sick call. Today, the 23,000 regular and 6,000 reserve members of the Navy Hospital Corps continue to serve around the globe. They are assigned to naval hospitals and clinics, to surface ships and submarines. They fly search and rescue missions and deploy with Seabees. They maintain constant battle readiness with Marine Corps units and SEAL teams.

Hospital Corpsmen have always had the job of maintaining the health of their shipmates. Their innumerable instances of heroism, of consciously exposing themselves to danger to save lives, are not spectacular because they were required to act. Their displays of courage have been noteworthy because these men and women cared about their shipmates.

Next portion added at FMTB – Article by Cpl. Anthony R. Blanco

15th MEU (SOC) combat Corpsman uphold proud legacy
Ever since the birth of the Corps in 1775, Marines and Sailors have served side-by-side on naval vessels beginning their long and adventurous history.

Rich within that history is the bond between the Marine and the Hospital Corpsman. Only twenty three short years after the first Marines began their sea service, Navy Corpsman stepped up and began providing the medical care of Marines. To this day Navy Corpsmen, also known as ‘Doc, have saved countless numbers of Marines’ lives during every American conflict since 1798.

The Navy Corpsmen attached to the 15th Marine Expeditionary Unit (Special Operations Capable) are no different from the past Corpsmen and still carry the special Marine Corps and Navy bond.

Marines and Sailors recently debarked from the Tarawa Amphibious Ready Group in support of United States and Coalition forces building up in Kuwait. Navy Corpsmen are here to support any action necessary and that includes adding another page to their illustrious history with their participation in Operation Enduring Freedom and the possible confrontation with Iraq to destroy potential weapons of mass destruction.

During World War II, Navy Corpsmen performed emergency medical treatment on wounded Marines while under heavy enemy fire.

In 1945, the Secretary of the Navy, James Forrestal, commended Corpsmen when he said, "The Hospital Corpsmen saved lives on all the beaches Marines stormed. … You Corpsmen performed foxhole surgery while shell fragments clipped your clothing, shattered the plasma bottles from which you poured new life into the wounded, and sniper's bullets were aimed at the (red cross) brassards on your arms."

Seven Navy Corpsmen received the Medal of Honor, the nation's highest award, and 67 Corpsmen received the Navy Cross, the Navy's second highest award, by performing above and beyond the call of duty during World War II.

Although Corpsmen don't usually have a degree in medical science and are younger than most doctors, they are doing more than what some doctors only dream about, according to Chief David D. Jones, 37, the BLT 2/1 medical chief, who is a native of Brooklyn N.Y. Jones has spent 12 of is 18 years in the Navy with Marine Corps units.

By working in an environment where a fighting hole or a bunker could be the operating room, the Navy implemented Field Medical Service Schools at Marine Corps Base Camp Pendleton, Calif., and Marine Corps Base Camp Lejeune, N.C., in 1950 to better train Corpsmen in the field. Before Corpsmen can attach to an infantry unit they must complete the course, according to HM2 (FMF) Tommy L. Johnson, who is a Hospital Corpsman with Trailer Platoon, Battalion Landing Team 2/1, 15th MEU (SOC). Johnson, whose previous duty assignment was at Siganelli Naval Air Station, Italy, said he was looking forward to working with an infantry Marine unit.

"When I got orders to [Camp Horno on Camp Pendleton], I was excited because I got the opportunity to work with the best fighting force in world," the 23-year-old Richmond, Calif., native said.

Because medical doctors don't fight on the front line with the Marine units, Corpsmen are challenged by making-on-the-spot life-saving decisions.

In Vietnam, approximately 16 percent of casualties on the front lines were critically injured and it was up to the Corpsman to save the lives of those Marines, according to Navy Lt. Michael B.

Humble, 30, the BLT 2/1 surgeon, who is a native of Russellville, Ky. “I trust them to make [important] decisions,” Humble said. “I believe that the Marines fight better when they know that they have a Corpsman there. It’s a comforting feeling knowing that someone is behind you willing to take care of you.”

Johnson, who worked for the Navy before coming to a Marine unit, said he wanted to raise the bar and test himself to hang with an infantry unit. “I wanted to bring myself to another level,” Johnson said. “When I walk into a [Naval] hospital and other Corpsmen see me wearing my Fleet Marine Force badge, they look at me with pride.”

Even Marines in his unit know that he’ll be there to take care of them, whether in battle or back home at Pendleton. “I love field Corpsmen because they do everything we do and they have to know more than we do,” said Sgt. Iradj M. Navai, 26, a squad leader with Trailer Platoon, BLT 2/1, who is a native of San Clemente, Calif. “He (Johnson) went out of his way and gave us all medical blow out kits so we could perform self-aid and buddy-aid if he wasn’t available during combat.” A “blow out” kit is a medical kit that contains a variety of field medical dressings and bandages.

Johnson also takes the opportunity during down time to teach his Marines basic medical care.

“In the field, my Marines come first,” Johnson said. “They depend on me and I know that my Marines are going to take care of me if I become injured.” Corpsmen throughout history have proved they are vital to the healthcare of Marines during combat. Lt. Gen. Lewis B. “Chesty” Puller, said to his Corpsmen during the Korean War, “You guys are the Marines’ doctors; there’s no better in the business than Navy Corpsmen.”

As many Marines agree with Chesty, Navai puts Corpsmen on a different level.

“They keep us alive in combat, they are our angels,” Navai said. “If you get scared or hurt, all you have to say is ‘Corpsman up’ and there’s your angel.”

COMBAT CORPSMEN
Cpl. Anthony R. Blanco
15th Marine Expeditionary Unit (Special Operations Capable)

INTRO TO USMC

INTRODUCTION TO THE USMC

UNITED STATES MARINE CORPS

FIELD MEDICAL TRAINING BATTALION
BOX 55243
CAMP PENDLETON, CA 92055-5243

FMST 101

Rank Structure of the USMC

TERMINAL LEARNING OBJECTIVE

1. Without the aid of references, describe common terms, sayings, and quotations used in the Marine Corps without omitting key components. (HSS-MCCS-2025)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference and in writing, **identify the different ranks within the Navy and Marine Corps** within 80% accuracy, in accordance with the Marine Corps Common Skills Handbook. (HSS-MCCS-2025a)

2. Without the aid of reference and in writing, **identify the job descriptions within the Navy and Marine Corps ranks** within 80% accuracy, in accordance with the Marine Corps Common Skills Handbook. (HSS-MCCS-2025b)

1. ENLISTED RANKS

Categorized into three groups

-Junior Enlisted
-Non-Commissioned Officers
-Staff Non-Commissioned Officers

Junior Enlisted

PAYGRADE	MARINE CORPS	NAVY
E-1	Private NONE	Hospitalman Recruit NONE

Roles: 1. Entry level Marine/Sailor
2. Platoon member responsible to their fireteam leader.
3. An HR may be assigned as a Platoon Corpsman or General Duty Corpsman within an aid station.

E-2	Private First Class 	Hospitalman Apprentice 

Roles: 1. Entry level Marine/Sailor
2. Platoon member responsible to their fireteam leader.
3. An HA may be assigned as a Platoon Corpsman or General Duty Corpsman within an aid station.

E-3	Lance Corporal 	Hospitalman 

Roles: 1. Entry level or experienced Marine/Sailor
2. Platoon member responsible to their fireteam leader.

3. Experienced Lance Corporals can assume the duties as a fireteam leader.
4. An HN may be assigned as a Platoon Corpsman or General Duty Corpsman within an aid station.
5. Experienced HNs maybe assigned as Senior Line Corpsman.

Non-Commissioned Officer / NCO

PAYGRADE	MARINE CORPS	NAVY
E-4	Corporal 	Hospital Corpsman Third Class 

Roles: 1. Experienced Marine assigned as fireteam leader or squad leader
2. An HM3 may be assigned as a Platoon Corpsman or hold the Senior Line Corpsman position.
3. Within an aid station, an HM3 may be assigned a commodity such as Physicals PO, Supply PO, PMR, etc.

E-5	Sergeant 	Hospital Corpsman Second Class 

Roles: 1. Experienced Marine assigned as squad leader, but can assume duties as Platoon Sergeant.
2. An HM2 at the company level is assigned as the Senior Line Corpsman.
3. Within an aid station, an HM2 will have added responsibilities ranging from Administration PO to Assistant LPO.

Staff Non-Commissioned Officer / SNCO

PAYGRADE	MARINE CORPS	NAVY
E-6	Staff Sergeant 	Hospital Corpsman First Class 

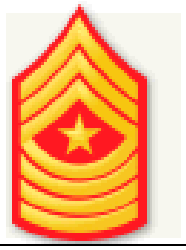
Roles:
1. Senior Marine assigned as Platoon Sergeant, but can assume duties as Platoon Commander.
2. An HM1 is assigned to the aid station with administrative responsibilities.
3. Leading Petty Officers are tasked with the day to day operations of the aid station.

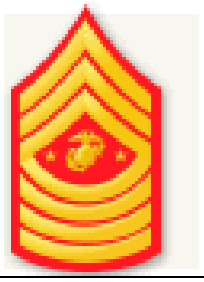
PAYGRADE	MARINE CORPS	NAVY
E-7	Gunnery Sergeant 	Chief Hospital Corpsman 

Roles:
1. Senior Marine assigned as Company Gunnery Sergeant; can assume role as Company 1stSgt.
2. The Chief of an aid station is responsible for all sailors within a unit as well as the functioning of the aid station.
3. The Chief reports directly to the SgtMaj and the Battalion Commander.

PAYGRADE	MARINE CORPS	NAVY
E-8	Master Sergeant (Technical Expert)  First Sergeant (Administrative) 	Senior Chief Hospital Corpsman 

PAYGRADE	MARINE CORPS	NAVY
E-9	Master Gunnery Sergeant (Technical Expert) 	Master Chief Hospital Corpsman 

PAYGRADE	MARINE CORPS	NAVY
E-9	Sergeant Major (Administrative) 	Command Master Chief 

PAYGRADE	MARINE CORPS	NAVY
E-9	**Sergeant Major of the Marine Corps** 	**Master Chief Petty Officer of the Navy (MCPON)** 

2. OFFICER RANKS

Marine Corps Officers wear gold or silver rank insignias on the shoulder lapel of their coats or overcoats. They also wear small replicas of the insignia on their shirt collar. The color and shape of the insignia varies with their rank.

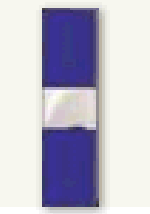
Officer ranks within the Marine Corps are categorized into three (3) groups

-Company Grade: W1 to W5 and O-1 to O-3
-Field Grade: O-4 to O-6
-General Grade: O-7 to O-10

Company Grade

PAYGRADE	MARINE	NAVY
W-1	Background is **GOLD** and markings are **SCARLET**. 	There are no W-1 Warrant Officers in the Navy

PAYGRADE	MARINE	NAVY
W-2	Background is **GOLD** and markings are **SCARLET** 	Background is **GOLD** and markings are **BLUE** 

PAYGRADE	MARINE	NAVY
W-3	Background is **SILVER** and markings are **SCARLET** 	Background is **SILVER** and markings are **BLUE** 

PAYGRADE	MARINE	NAVY
W-4	Background is **SILVER** and markings are **SCARLET** 	Background is **SILVER** and markings are **BLUE** 

PAYGRADE	MARINE	NAVY
W-5	Background is **SILVER** and markings are **SCARLET** 	Background is **SILVER** and markings are **BLUE** 

NOTE: W-1 in the Marine Corps is known as Warrant Officer. W-2 through W-5 are called Chief Warrant Officers.

PAYGRADE	MARINE	NAVY
O-1 (Bar is Gold)	**2nd Lieutenant** 	**Ensign** 

PAYGRADE	MARINE	NAVY
O-2 (Bar is Silver)	**1st Lieutenant** 	**Lieutenant Junior Grade** 

PAYGRADE	MARINE	NAVY
O-3 (Bars are Silver)	**Captain** 	**Lieutenant** 

Field Grade

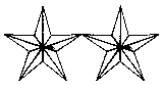
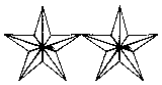
PAYGRADE	MARINE	NAVY
O-4 (Leaf is Gold)	Major 	Lieutenant Commander 

PAYGRADE	MARINE	NAVY
O-5 (Leaf is Silver)	Lieutenant Colonel 	Commander 

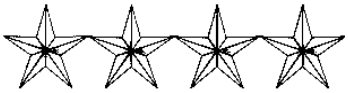
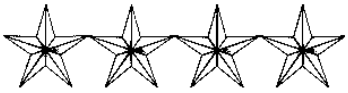
PAYGRADE	MARINE	NAVY
O-6 (Eagle is Silver)	Colonel 	Captain 

General Grade Officers

PAYGRADE	MARINE	NAVY
O-7	Brigadier General 	Rear Admiral (lower half) 

PAYGRADE	MARINE	NAVY
O-8	Major General 	Rear Admiral (upper half) 

PAYGRADE	MARINE	NAVY
O-9	Lieutenant General 	Vice Admiral 

PAYGRADE	MARINE	NAVY
O-10	General 	Admiral 

Senior Officers

Each branch of the Armed Forces has a senior officer grade of their respective branches of the service:

-Marines: Commandant of the Marine Corps
-Navy: Chief of Naval Operations
-Army: Chief of Staff of the U.S. Army
-Air Force: Chief of Staff of the U.S. Air Force

REFERENCE

Marine Corps Common Skills Handbook

Rank Structure Review

Match the Marine Corps rank with the proper name. (Not every name will be used)

Captain

Private

Lance Corporal

First Sergeant

Sergeant

Major General

Lieutenant General

Colonel

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
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FMST 102

Marine Corps History

TERMINAL LEARNING OBJECTIVES.

1. Without the aid of references, **describe common terms, sayings, and quotations used in the Marine Corps** without omitting key components. (HSS-MCCS-2025)

1. Without the aid of references, **identify significant events in Marine Corps history** without omitting key components. (HSS-MCCS-2026)

ENABLING LEARNING OBJECTIVES.

1. Without the aid of reference and in writing, **identify Marine Corps terminology** within 80% accuracy, in accordance with the Marine Corps Common Skills Handbook. (HSS-MCCS-2025c)

2. Without the aid of reference and in writing, **identify historical significance of different places in Marine Corps history** within 80% accuracy, in accordance with the Marine Corps Common Skills Handbook. (HSS-MCCS-2026a)

3. Without the aid of reference and in writing, **identify historically significant individuals in Marine Corps history** within 80% accuracy, in accordance with the Marine Corps Common Skills Handbook. (HSS-MCCS-2026b)

4. Without the aid of reference and in writing**, identify historically significant Battles in Marine Corps history** within 80% accuracy, in accordance with the Marine Corps Common Skills Handbook. (HSS-MCCS-2026c)

5. Without the aid of reference and in writing, **identify historically significance of Pathbreakers in Marine Corps history** within 80% accuracy, in accordance with the Marine Corps Common Skills Handbook. (HSS-MCCS-2026d)

1. **MARINE CORPS TERMINOLOGY.**

The United States Marine Corps holds deep regard for its history, traditions, and honor. This history and tradition includes, and is to some extent defined by the heroic actions and sayings of past and present Marine Warriors. These actions and statements made by Marines or people observing Marines have become part of the Marine Corps Warrior Ethos. We use them to remember what Marines have done and how they have influenced our warrior culture in a very positive way. The terminology that Marines use depict a very specific time in our history that is drawn upon by young and old Marines alike; to instill pride in our service. Here are the terms that are used by every Marine:

a. **First to Fight.** Marines have been in the forefront of every American war since the founding of the Marine Corps. They entered the Revolution in 1775, just before the Declaration of Independence was signed. They have carried out more than 300 landings on foreign shores. They have served everywhere, from the poles to the tropics. Their record of readiness reflects pride, responsibility, and challenge.

b. **Leathernecks.** The nickname Leathernecks dates back to the leather stock, or neckpiece worn as part of the Marine uniform during the years 1775 to 1875. Back then, the leather bands around their throats ensured that Marines kept their heads erect. Descended from the stock, the standing collar is hallmark of the Marine blues, whites, and evening dress. Like its leather ancestor, the standing collar regulates stance and posture, proclaiming the wearer as a modern "leatherneck".

c. **Devil Dogs.** The term was coined during the Battle of Belleau Wood in 1918 in which the Germans received a thorough indoctrination in the Marines' fighting ability. Fighting through "impenetrable" woods and capturing "untakeable" terrain, their persistent attacks delivered with unbelievable courage soon had the Germans calling the Marines "Teufelhunden", which are fierce fighting dogs of legendary origin. The term is belovedly translated "devil dogs".

d. **Espirit de Corps.** The "spirit" of a unit is commonly reflected by all of its members. It implies devotion and loyalty to the Marine Corps, with deep regard for its history, traditions, and honor. It is the epitome of pride in the unit.

e. **Uncommon valor was a common virtue.** Refers to the victories in World War II, especially at Iwo Jima, the largest all-Marine battle in history. Admiral Nimitz spoke this not only to the Marines fighting on Iwo Jima, but to the entire Marine Corps' contribution to the war stating, "Uncommon valor was a common virtue."

f. **Semper Fidelis.** The Marine Corps Motto Semper Fidelis is Latin for Always Faithful.

2. **SIGNIFICANT EVENTS.** As we look back into the history of the Marine Corps we see that there are many places that Marines have gone and fought. Like the Hymn says "we have fought in every clime and place, where we could take a gun." These are some of the significant places that Marines hold as milestones in their history.

a. **Tun Tavern.** The Marine Corps was created on 10 November 1775 in Philadelphia, Pennsylvania at Tun Tavern by a resolution of the Continental Congress, which "raised two battalions of Marines." Captain Samuel Nicholas became the commander of these two battalions and is traditionally considered the first Commandant of the Marine Corps.

b. **Derna, Tripoli.** In 1805 Marines stormed the Barbary pirates' stronghold at Derna on the "Shores of Tripoli." Marines raised the "Stars and Stripes" for the first time in the Eastern Hemisphere.

c. **Belleau Wood.** Marines fought one of their greatest battles in history at Belleau Wood, France during World War I. Marines helped crush a German offensive at Belleau Wood which threatened Paris. In honor of the Marines who fought there, the French renamed the area "the Wood of the Brigade of Marines." German intelligence evaluated the Marines as "storm troops"—the highest rating on the enemy fighting scale. In reference to the Marine's ferocious fighting ability, German troops called their new enemy "Teufelhunden" or "Devildogs," a nickname in which Marines share pride in to this day.

d. **The Chosin Reservior.** After pushing far into North Korea during November of 1950, Marines were cut off after the Chinese Communist Forces entered the war. Despite facing a 10-division force sent to annihilate them, Marines smashed seven enemy divisions in their march from the Chosin Reservoir. The major significance of this retrograde movement was that Marines brought out all operable equipment, properly evacuated their wounded and dead, and maintained tactical integrity.

e. **Kuwait.**

(1) 1990 - Following the invasion of Kuwait by Iraqi forces, Operation Desert Shield was launched. This joint military operation was designed to halt the advance of Iraqi forces and to position multinational forces assembled for possible offensive operations to expel the invading force. This operation validated the Marine Corps Maritime Prepositioning Force (MPF) concept and enacted the plan of tailoring units to accomplish a mission as part of a Marine Air Ground Task Force (MAGTF).

(2) 1991 - Operation Desert Storm was launched after the Iraqi government refused to comply with United Nations resolutions. Marine aviation was heavily used when the air phase commenced in January of 1991. When massive bombing failed to dislodge Iraqi forces, Marine ground forces swept into Kuwait and liberated the country, causing severe damage to the Iraqi military capability.

3. **HISTORICALLY SIGNIFICANT MARINES**.

a. **Presley Neville O'Bannon.** First Lieutenant O'Bannon is remembered for heroism in the battle for the harbor fortress of Derna (Tripoli) in the Mediterranean. O'Bannon's Marines were the first U.S. forces to hoist the flag over territory in the Old World. The "Mameluke" sword, carried by Marine officers today, was presented to O'Bannon in 1805.

b. **Archibald Henderson.** Brevet Brigadier General Archibald Henderson became Commandant in 1820 and held his command for 39 years until his death in 1859. General Henderson led the Corps through the Indian Wars, the War with Mexico, the opening of China, and the disorders in Central America. The "Grand Old Man of the Marine Corps," as he is often called, introduced higher standards of personal appearance, training, discipline, and strived to have the Marine Corps known as a professional military force, capable of more than just sea and guard duties.

c. **Daniel Daly.** Sergeant Major Daly is recognized for earning two Medals of Honor: (1) Chinese Boxer Rebellion and (2) First Caco War in Haiti. When his unit had been pinned down and their attack was stalled during the Battle of Belleau Wood, then Gunnery Sergeant Daly yelled to his men, "Come on, you sons of a b-----, do you want to live forever?"

d. **Smedley D. Butler.** Major Butler is recognized for earning two Medals of Honor: (1) Veracruz and (2) First Caco War in Haiti. By the end of 1916, the Marine Corps was recognized as a national force in readiness and for leadership gained from continual combat and expeditionary experience.

e. **John A. Lejeune.** Major General Lejeune served as 13th Commandant of the Marine Corps, 1920-1929. LeJeune was the first Marine officer ever to command an army division in combat in France during World War I (1918). 2nd Marine Division is now stationed aboard Camp LeJeune, N.C.

f. **Lewis B. ("CHESTY") Puller.** Lieutenant General Puller served in Nicaragua through several periods of political unrest and rebellious activity. Puller and a force of about 32 Marines became famous for their ability to engage rebel groups and bandits while scouring the jungles in a wide area of Nicaragua to the Honduran border. Puller became known as the "Tiger of the Mountains" (1930). The Marine Corps' mascot, an English bulldog named "Chesty," is named for this brave and fine Marine Corps officer. Puller is also the highest decorated Marine in history with 5 Navy Crosses.

g. **Ira H. Hayes.** The Fifth Amphibious Corps of Marines, commanded by Major General Harry Schmidt, was assigned to take Iwo Jima. Corporal Ira Hayes, a Pima Indian, was one of the Marines immortalized in the now famous photograph taken of the second flag raising incident on Mount Suribachi shortly after the Japanese stronghold was taken on 23 February 1945.

h. **Opha Mae Johnson.** Private Johnson became the Marine Corps' first enlisted woman on 13 August 1918. Her enlistment was a reflection of the dramatic changes in the status of women brought about by the entry of the United States into World War I. Marine Reserve (F) was the official title by which the Marine Corps' first enlisted women were known. They were better known as "skirt Marines" and "Marinettes."

i. **Jason Dunham.** Is the first Marine to be awarded the Medal of Honor (posthumously) since the Vietnam War. Cpl Dunham fought with 3rd Bn 7th Marines, while operating in the town of Karabilah, Iraq. While responding to his Battalion Commanders convoy that had been ambushed, Cpl Dunham's squad approached an SUV and found rifles and RPGs. When the driver attempted to run away Cpl Dunham fought him to the ground. At this point the insurgent dropped an armed grenade at his feet. Cpl Dunham called out the grenade and attempted to cover it with his helmet and body. Cpl Dunham died eight days later in Bethesda, Maryland. No other members of his squad was seriously injured that day.

j. **Dakota Meyer.** Sgt Meyer is the first living Marine recipient of the Medal of Honor since the Vietnam War. While serving with Marine Embedded Training Team 2-8 in the Kunar Province, Afghanistan, Sgt Meyer was on patrol to engage in a local Shurah. While providing security, the main body came under intense direct and indirect fire from houses and fortified positions. Upon hearing that four U.S. team members were cut off, Sgt Meyer moved into the kill zone to locate them. While looking for the Marines, Sgt Meyer and his gun truck evacuated over two dozen Afghan Soldiers. During this evacuation Sgt Meyer received shrapnel wounds to his arm. After making five different trips into the kill zone during the six hour battle, Sgt Meyer and other Marines located the missing Marines and were able to remove them from the battle field.

4. SIGNIFICANT BATTLES IN MARINE CORPS HISTORY

a. **Battle of Chapultepec.** In 1847 during the Mexican War, Marines occupied the "Halls of Montezuma" during the Battle of Chapultepec in Mexico City. The royal palace fell to invading Marines, who were among the first United States troops to enter the capital. Today Marine NCOs wear a red stripe on their dress blue trousers known as the "blood stripe" in honor of the fighting that took place during the battle.

b. **The Battle of Wake Island**. In December 1941, following the air attack on Pearl Harbor, the Japanese struck Wake Island. Despite being heavily outnumbered, the Marines mounted a courageous defense before finally falling on 23 December. This small force of Marines caused an extraordinary number of Japanese casualties and damage to the invading force.

c. **Island-hopping campaign of WW II**

(1) The Battle of Guadalcanal – On 7 August 1942, the 1st Marine Division landed on the beaches of Guadalcanal in the Solomon Islands and launched the first United States land offensive of World War II. This battle marked the first combat test of the new amphibious doctrine, and also provided a crucial turning point of the war in the Pacific by providing a base to

launch further invasions of Japanese-held islands. Amphibious landings followed on the remaining Solomon Islands including New Georgia, Choiseul (feint), and Bougainville.

(2) The Battle of Tarawa - The Gilbert Islands were the first in the line of advance for the offensive in the Central Pacific. The prime objective was the Tarawa Atoll and Betio Island which had been fortified to the point that the Japanese commander proclaimed it would take a million Americans 100 years to conquer. On 20 November 1943, Marines landed and secured the island within 76 hours, but paid a heavy price in doing so. Because of an extended reef, landing crafts could not reach land causing Marines to be offloaded hundreds of yards from the beaches. This led to heavy losses from enemy fire. Additionally, many Marines drowned while attempting to wade ashore.

(3) The Battle of the Mariana Islands - Due to the need for airfields by the Air Force and advanced bases for the Navy, the Marianas were invaded. Landings on the islands of Saipan, Guam, and Tinian accomplished this. During June and July of 1943, Lieutenant General Holland M. Smith led a combined invasion force of Marines and soldiers that totaled over 136,000. This was the greatest number of troops to operate in the field under Marine command to date.

(4) The Battle of Iwo Jima - On 19 February 1945, Marines landed on Iwo Jima in what was the largest all-Marine and bloodiest battle in Marine Corps history. The Marine Corps suffered over 23,300 casualties. The capture of Iwo Jima greatly increased the air support and bombing operations against the Japanese home islands. Of the savage battle, Admiral Chester W. Nimitz said, "Among the Americans who served on Iwo Jima Island, uncommon valor was a common virtue."

(5) The Battle of Okinawa - In April of 1945, Marines and Soldiers landed and secured the island of Okinawa. This marked the last large action of World War II. Due to the death of the Army commander, Major General Roy S. Geiger assumed command of the 10th Army.

d. **Significant Battles during Operation Iraqi Freedom**

(1) Battle of Nasiriyah - The city of Nasiriyah was home to key bridges needed to cross the Euphrates River for the advancement of Coalition Forces throughout Iraq. In March 2003 RCT-1 with elements from the United Kingdom assaulted and seized control of the bridges. Once gained, Coalition Forces started a neighborhood sweep clearing Ba'athist fighters from the area.

(2) Battle of Najaf - Najaf was a key target of Coalition Forces as it was the main hub of activity in the southern region of the country. Throughout the war Najaf was a heavily contested area that came under control after a three week period of intense fighting in August 2004. The fighting was centered around Wadi as-Salam Cemetery. The fighting ended when senior Iraqi cleric Grand Ayatollah Ali Al-Sistani negotiated an end to the fighting, giving control to Coalition Forces and promising cooperation with security measures.

(3) 1st Battle for Fallujah - Occurred in the Spring of 2004 after a convoy protected by private security forces was hit and the contractors were killed, burnt and hung from the bridges in Fallujah. The initial assault was quick and fierce, successfully gaining a foothold in the city. During the fighting misinformation was publicized by the press about Marines purposefully killing civilians. Do to international pressure officials pulled Marines out of the city. All allegations of civilians being targeted were proven false.

(4) 2nd Battle for Fallujah - During the months following the 1st Battle for Fallujah the insurgency took a firm hold of the city and began to prepare for a head to head fight with Coalition Forces. Operation Phantom Fury started on November 8th, 2004. The fighting was the hardest since the Vietnam War. Intense house to house fighting went on for over a month and a half. December 23rd, 2004 the last of the fighters were killed in the city. Comparisons to the battle of Hue City and the Pacific Island Hopping Campaign have been drawn to the fighting in Fallujah.

(5) Battle for Ramadi - After the fall of Fallujah in 2004, the insurgency in Iraq moved to the city of Ar Ramadi. In 2006 Marines moved to push out all insurgency in the city. However, fighting was intense and frequent. Three months after the assault on Ramadi, insurgents killed a man called Abu Ali Jassim, a Sunni sheik that promoted Iraqis joining the police force. After the murder the insurgents hid the body in a field instead of returning it for a proper burial, violating Islamic law. Following this, 20 tribes from the Al Anbar province organized a movement called Anbar Awakening. The tribes soon turned against the insurgents and pushed them out of the suburbs of the city, giving them no place to hide and fight from effectively giving control to Coalition and local security forces.

e. **Significant Battles of Operation Enduring Freedom**. After Osama bin Laden had taken credit for the terrorist attacks against the United States on 9/11, America wanted to destroy his terrorist group. Since the group and Bin Laden were based in Afghanistan, America started an aerial and ground campaign to overthrow the Taliban controlled government and find Osama Bin Laden.

(1) Nawa - In July 2009, 1st Bn, 5th Marines occupied the district as part of Operation Strike of the Sword. The Helmand Province was considered to be one of the key centers of the Taliban movement. Over the next 2 years Marines partnered with Afghan Security Forces in order to hold elections in which no Taliban attacks occurred. Since then, the Nawa District became one of the first districts to be turned completely over to Afghan Security Forces.

(2) Marjah - In February 2010, Marines from 6th Marine Regiment and other Coalition Forces moved to occupy the District of Marjah. This was believed to be the last Taliban stronghold in the Helmand Province. The district was built by American contractors in the 1950s and Brig. Gen. Nicholson, commander of the 2nd Marine Expeditionary Brigade, said “The United States built Marjah, We’re going to come back and fix it.”

(3) Sangin - A town in the northern area of Helmand Province, was taken over by elements of 1st and 3rd Bn, 7th Marines. After months of fighting and turning over the AO to 3rd Bn, 5th Marines, the town was cleared of Taliban fighters. Due to heavy numbers of casualties, Echo Co. 2nd Bn, 9th Marines and Echo Co. 2nd Bn, 8th Marines came to aid 3/5's operations.

5. **PATHBREAKERS IN MARINE CORPS HISTORY**.

a. **Montford Point Marines.** From 1942 to 1949, after President Roosevelt issued Executive Order No. 8802 establishing the fair employment practice that began to erase discrimination in the Armed Forces. This Order created the opportunity for African Americans to be recruited into the Marine Corps. During the first 7 years these Marines were segregated from normal recruit training sites, and were sent to Montford Point (since renamed Camp Johnson) which is aboard Camp Lejeune, N.C. Approximately 20,000 Marines were trained during those years.

b. **Navajo Code Talkers.** Code Talkers were young Navajo men who transmitted secret communications on the battlefields of WWII. At a time when America's best cryptographers were falling short, these modest sheepherders and farmers were able to fashion the most ingenious and successful code in military history. They drew upon their proud warrior tradition to brave the dense jungles of Guadalcanal and the exposed beachheads of Iwo Jima. Serving with distinction in every major engagement of the Pacific theater from 1942-1945, their unbreakable code played a pivotal role in saving countless lives and hastening the war's end.

c. **Women Marines.** In 1918, the Secretary of Navy allowed women to enroll for clerical duty in the Marine Corps. Officially, Opha Mae Johnson is credited as the first woman Marine. Johnson enrolled for service on August 13, 1918; during that year some 300 women first entered the Marine Corps to take over stateside clerical duties from battle-ready Marines who were needed overseas. The Marine Corps Women's Reserve was established in February 1943. June 12th, 1948, Congress passed the Women's Armed Services Integration Act and made women a permanent part of the regular Marine Corps.

REFERENCES:
Marine Corps Common Skills

Marine Corps History Review

1. Identify the significance of the Belleau Wood.

2. When and where was the Marine Corps founded?

3. Who is the “Grand Old Man of the Marine Corps”?

4. What was the significance of the battle of Nasiriyah?

5. Who was the the Marine Corps' first enlisted woman?

6. In which battle were Marines immortalized from the now famous photograph taken of the second flag raising incident on Mount Suribachi?

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 103

USMC Organizational Structure and Chain of Command

TERMINAL LEARNING OBJECTIVES

(1) Without the aid of references, **identify the mission of the Marine Corps** without omitting key components.(HSS-MCCS-2031)

(2) Without the aid of references, **identify the location of major Marine units** without omitting key components. (HSS-MCCS-2032)

(3) Without the aid of references, **describe Marine Air-Ground Task Force (MAGTF) organizations**, without omitting key components. (HSS-MCCS-2033)

ENABLING LEARNING OBJECTIVES

(1) Without the aid of reference and in writing**, identify the significance of the National Security Act of 1947** within 80% accuracy, in accordance with the Marine Corps Common Skills Handbook. (HSS-MCCS-2031a)

(2) Without the aid of reference and in writing, **identify the location of the three Marine Expeditionary Forces** within 80% accuracy, in accordance with Marine Corps Common Skills Handbook. (HSS-MCCS-2032a)

(3) Without the aid of reference, given a description or title, **identify the two parallel Chains of Command within the Marine Corps**, within 80% accuracy, in accordance with MCDP 1-0 Marine Corps Operations. (HSS-MCCS-2033a)

(4) Without the aid of reference, given a description or title**, identify the four broad categories of the Marine Corps**, within 80% accuracy, in accordance with MCDP 1-0 Marine Corps Operations. (HSS-MCCS-2033b)

(5) Without the aid of reference, given a description or title, **identify the four core elements within a Marine Air Ground Task Force (MAGTF)**, within 80% accuracy, in accordance with MCO 3120.8 Policy for the Organization of Fleet Marine Forces for Combat. (HSS-MCCS-2033c)

(6) Without the aid of reference, given a description or title, **identify the different types of Marine Air Ground Task Forces (MAGTFs)**, within 80% accuracy, in accordance with MCO 3120.8 Policy for the Organization of Fleet Marine Forces for Combat. (HSS-MCCS-2033d)

1. **THE SIGNIFICANCE OF THE NATIONAL SECURITY ACT OF 1947**

a. **The United States Marine Corps** - was created on November 10, 1775 by a resolution of the Continental Congress which authorized two battalions of Marines. On July 11, 1798, the Marine Corps was established as a separate service and in 1834 was made a part of the Department of the Navy. The National Security Act of 1947, as amended, sets forth the present structure, missions, and functions of the Marine Corps.

b. **The Secretary of the Navy** - is the head of the Department of the Navy. Under the direction, authority, and control of the Secretary of Defense, the Secretary of the Navy is responsible for the policies and control of the Department of the Navy, including its organization, administration, operation, and efficiency. The United States Marine Corps is an integral part of the Department of the Navy and is, at all times, subject to its laws and regulations.

c. **Commandant of the Marine Corps** - The authority of the Commandant of the Marine Corps flows from the reassignment and delegation of authority vested in the Secretary of the Navy. The Commandant of the Marine Corps commands the United States Marine Corps and is the senior officer of the United States Marine Corps. Succession to duties of the Commandant of the Marine Corps during absence, disability, or temporary vacancy in that office is detailed in the U.S. Navy Regulations.

d. **The Mission Of The Marine Corps**

(1) The Marine Corps shall be organized, trained, and equipped to:

(a) Provide Fleet Marine Forces of combined arms, together with supporting air components, for service with the United States Fleet in the seizure or defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign.

(b) Provide detachments and organizations for service on armed vessels of the Navy, and security detachments for the protection of naval property at naval stations and bases.

(c) Develop, in coordination with the Army, Navy, and Air Force, the doctrines, tactics, techniques, and equipment employed by landing forces in amphibious operations. The Marine Corps shall have primary interest in the development of those landing force doctrines, tactics, techniques, and equipment which are of common interest to the Army and the Marine Corps.

(d) Provide, as required, Marine forces for airborne operations, in coordination with the Army, the Navy, and the Air Force and in accordance with doctrine established by the Joint Chiefs of Staff.

(e) Develop, in coordination with the Army, the Navy, and the Air Force doctrines, procedures, and equipment of interest to the Marine Corps for airborne operations which are not provided for by the Army.

(f) Be prepared, in accordance with integrated joint mobilization plans, for the expansion of the peacetime components to meet the needs of war.

(g) Perform such other duties as the President may direct.

2. MARINE EXPEDITIONARY FORCES

a. **Three Standing MEFs** - Each MEF is comprised of a Command Element, Marine Division, Marine Aircraft Wing and a Marine Logistics Group.

(1) **I Marine Expeditionary Force (I MEF)**

(a) 1st Marine Division (1st MARDIV)- Camp Pendleton, CA

(b) 3rd Marine Aircraft Wing (3rd MAW)- Miramar, CA

(c) 1st Marine Logistics Group (1st MLG)- Camp Pendleton, CA

(2) **II Marine Expeditionary Force (II MEF)**

(a) 2nd Marine Division (2nd MARDIV)- Camp Lejeune, NC.

(b) 2nd Marine Airwing (2nd MAW)- Cherry Point, NC.

(c) 2nd Marine Logistics Group (2nd MLG)- Camp Lejeune, NC.

(3) **III Marine Expeditionary Force (III MEF)**

(a) 3rd Marine Division (3rd MARDIV)- Camp Butler, Okinawa, Japan.

(b) 1st Marine Aircraft Wing (1st MAW)- Futenma, Okinawa, Japan.

(c) 3rd Marine Logistics Group (3rd MLG)- Camp Butler, Okinawa, Japan.

3. TWO PARALLEL CHAINS OF COMMAND IN THE MARINE CORPS

a. **Service Chain of Command** is used for things that are specifically inherent to the Marine Corps. Examples would include anything from purchasing new tanks to establishing rules for the use of tuition assistance. These topics, whether large or small, only affect the Marine Corps. The top portion of the service chain is listed below:

(1) President
(2) Secretary of Defense
(3) Secretary of the Navy
(4) Commandant of the Marine Corps

b. **Operational Chain of Command** is used to direct forces in conjunction with operational or functional missions. Often times this involves other services outside the Marine Corps. The Operational Chain of command break down is listed below:

(1) President
(2) Secretary of Defense
(3) Commanders of Combatant Commands

4. FOUR BROAD CATEGORIES OF THE MARINE CORPS

a. **Headquarters, U.S. Marine Corps** – Headquarters, US Marine Corps (HQMC) consists of the Commandant of the Marine Corps and those staff agencies that advise and assist him in discharging his responsibilities prescribed by law and higher authority. The Commandant is directly responsible to the Secretary of the Navy for the total performance of the Marine Corps. This includes the administration, discipline, internal organization, training requirements, efficiency, and readiness of the service.

b. **Operating Forces** - "The heart of the Marine Corps." It comprises the forward presence, crisis response, and fighting power that the Corps makes available to US unified combatant commanders. The Marine Corps has permanently established two combatant command-level service components in support of unified commands with significant Marine forces assigned: US Marine Corps Forces Atlantic (MARFORLANT) and US Marine Corps Forces Pacific (MARFORPAC).

(1) **Marine Corps Forces Atlantic (MARFORLANT) -** Headquarters at Norfolk, VA. The war fighting arm of MARFORLANT is the II Marine Expeditionary Force (II-MEF). Dual hatted commanding all Marine Forces in US European Command (CINCUSEUCOM), and US Southern Command (CINCUSSOCOM).

(a) Marine Corps Security Forces (MCSF) – at Naval installations.

(b) Marine Corps Embassy Security Group (MCESG) – detachments at Embassies and Consulates around the globe.

(2) **Marine Corps Forces Pacific (MARFORPAC)** - Headquarters at Camp H.M. Smith, HI. The war fighting arm of MARFORPAC is the I Marine Expeditionary Force (I-MEF) and the III Marine Expeditionary Force (III-MEF). MARFORPAC commands all Marine Corps operational and shore based commands in the Pacific theater and dual hatted commanding all Marine Forces in the central theater (MARFORCENT).

c. **Marine Corps Reserve (MARFORRES)** - The United States Marine Corps Reserve (MARFORRES) is responsible for providing trained units and qualified individuals to be mobilized for active duty in time of war, national emergency, or contingency operations, and provide personnel and operational tempo relief for active component forces in peacetime. MARFORRES, like active forces, consists of a combined arms force with balanced ground, aviation, and combat service support units. MARFORRES is organized under the Commander, MARFORRES. Their headquarters is located in New Orleans, LA.

d. **Supporting Establishments**

The Marine Corps supporting establishments consist of those personnel, bases, and activities that support the Marine Corps Operating Forces.

(1) Marine Corps Recruiting Command

(2) Marine Corps Combat Development Command

(3) Marine Corps Systems Command

(4) Training Activities and Formal Schools

5. FOUR CORE ELEMENTS OF MARINE AIR-GROUND TASK FORCE (MAGTF)

The MAGTF is a balanced, air-ground combined arms task organization of Marine Corps forces under a single commander, structured to accomplish a specific mission. It is the Marine Corps' organization for missions across the range of military operations. It is designed to fight while having the ability to prevent conflicts and control crisis. MAGTF's are flexible, task-organized forces that are capable of responding rapidly to a broad range of crisis and conflict situations. The MAGTF is primarily organized and equipped to conduct amphibious operations as part of naval expeditionary forces. MAGTF's are also capable of sustained combat operations ashore. Each MAGTF, regardless of size or mission has the same basic structure.

a. **Command Element (CE)**

(1) Role - It is task organized to provide command and control capabilities (including intelligence and communications) necessary for effective planning, direction, and execution of all operations.

b. **Ground Combat Element (GCE)**

(1) Role - Its mission is to execute amphibious assault operations and such operations as may be directed.

c. **Aviation Combat Element (ACE)**

(1) Role - Its mission is task organized to provide a flexible and balanced aviation organization that is capable of providing the full range of aviation operations, without the requirement for pre-positioned support control, and logistical facilities.

d. **Logistics Combat Element (LCE)**

(1) Role - It is a composite grouping of functional components that provides Logistics Combat Support above the organic capability of supported units to all elements of the MEF.

6. **TYPES OF MAGTF**

There are four (4) basic MAGTF organizations (Marine Expeditionary Force, Marine Expeditionary Brigade, Marine Expeditionary Unit and Special Purpose MAGTF.

a. **Marine Expeditionary Force (MEF)**

(1) **Definition of Capabilities** - The largest standing (Exists in peacetime and wartime) MAGTF, approximately 20,000 to 90,000 personnel. The MEF is the principal Marine Corps war fighting organization. It is capable of missions across the range of military operations, through amphibious assault and sustained operations ashore in any environment. Commanded by a Lieutenant General or Major General

b. **Marine Expeditionary Brigade (MEB)**

(1) Definition of Capabilities - This is a medium sized, approximately 3,000 to 20,000 personnel, Infantry reinforced, non-standing MAGTF that is task organized to respond to a full range of crisis, from forcible entry to humanitarian assistance. MEB's are not a standing force and formed only in times of need. An example is post 9/11, the 4th MEB and 2nd MEB were formed to respond to combat and peacekeeping contingencies in Afghanistan and Iraq. The MEB is commanded by a Brigadier General.

(2) MEB- is comprised of a Command Element, Marine Regiment, Marine Aircraft Group and Combat Logistics Regiment.

(a) 1st Marine Expeditionary Brigade (1st MEB) - Camp Pendleton, CA

(b) 2nd Marine Expeditionary Brigade (2nd MEB) - Camp Lejeune, NC

(c) 3rd Marine Expeditionary Brigade (3rd MEB) - Camp Butler, Okinawa, Japan

c. **Marine Expeditionary Unit, Special Operations Capable (MEU/SOC)**

(1) Definition of Capabilities - The standard forward deployed Marine expeditionary organization. MEU (SOC) is task organized to be a forward deployed presence and designed to be the "First on the scene" force. MEU (SOC) is capable of a wide range of small scale contingencies to include non-combatant evacuation, clandestine recovery, maritime interdictions, specialized demolitions, tactical recovery of aircraft and/or personnel, gas/oil platform seizure, humanitarian/civic actions, and other military operations other than war. Approximately 1,500 to 3,000 personnel and commanded by a Colonel.

(2) MEU is comprised of a Command Element, Marine Infantry Battalion, Composite Marine Air Squadrons (fixed and rotary wing) and Combat Logistics Battalion.

(a) 11th, 13th and 15th Marine Expeditionary Units- Camp Pendleton, CA

(b) 22nd, 24th and 26th Marine Expeditionary Units- Camp Lejeune, NC

(c) 31st Marine Expeditionary Unit- Camp Hansen, Okinawa, Japan

d. **Special Purpose Marine Air-Ground Task Force (SPMAGTF)**

(1) Definition of Capabilities - The SPMAGTF is a non-standing MAGTF temporarily formed to conduct a specific mission. It is normally formed when a standing MAGTF is unavailable or inappropriate. Their designation derives from the mission they are assigned, the location in which they will operate, or the name of the operation in which they will participate.(i.e. SPMAGTF Somalia, Hurricane Katrina etc…)

(2) SPMAGTF is comprised of Command Element and Composites of MARDIV, MAW and MLG.

e. **Functional Areas Of Operation Within MAGTF Elements**

The functional areas within MAGTF elements are balanced and structured to accomplish a specific mission. The functional areas provide support via administrative, intelligence, operational, logistical and communicative. Functional areas fall under Headquarters and Service of these prospective elements.

f. **Marine Division, Marine Aircraft Wing and Marine Logistics Group)**

(1) G-1 Administration (Manpower, Records, Legal)

(2) G-2 Intelligence (Security)

(3) G-3 Operations (Training)

(4) G-4 Logistics (Supply)

(5) G-6 Communications (Computers, Radios)

g. **Marine Regiment, Marine Aircraft Group and Combat Logistics Regiment Marine Battalion, Marine Air Squadron, and Combat Logistics Regiment**

(1) S-1 Administration (Manpower, Records, Legal)

(2) S-2 Intelligence (Security)

(3) S-3 Operations (Training)

(4) S-4 Logistics (Logistics)

(5) S-6 Communications (Computers, Radios)

REFERENCES:

Health Service Support Operations MCWP 4-11.1
Marine Corps Manual
Marine Corps Operations MCDP 1-0
National Security Act of 1947 (revised in 1952)
Organization of Marine Corps Forces MCRP 5-12
Policy for the Organization of Fleet Marine Forces for Combat MCO 3120.8

USMC Organizational Structure and Chain of Command Review

1. How many standing Marine Expeditionary Forces are there? Where are they located?

2. Explain the difference between the Service and Operational chains of command?

3. Explain the four broad categories of the Marine Corps?

4. What are the four core elements of the Marine Air Ground Task Force (MAGTF)? Explain the roles of each element?

5. What are the four types of MAGTF's? Explain the differences between them?

UNITED STATES MARINE CORPS

FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 104

Traits and Principles of Marine Corps Leadership

TERMINAL LEARNING OBJECTIVE

1. Without the aid of references **describe Marine Corps leadership** without omitting key components. (HSS-MCCS-2027)

ENABLING LEARNING OBJECTIVES

1. Without the aid of references, given a description or list, **identify Marine Corps leadership traits** within 80% accuracy, in accordance with MCRP 6-11B. (HSS-MCCS-2027a)

2. Without the aid of references, given a description or list, **identify Marine Corps leadership principles** within 80% accuracy, in accordance with MCRP 6-11B. (HSS-MCCS-2027b)

INTRODUCTION

"Leadership is intangible, hard to measure and difficult to describe. Its quality would seem to stem from many factors. But certainly they must include a measure of inherent ability to control and direct, self-confidence based on expert knowledge, initiative, loyalty, pride and sense of responsibility. Inherent ability cannot be instilled, but that which is latent or dormant can be developed. Other ingredients can be acquired. They are not easily learned. But leaders can be and are made."

General C. B. Cates, 19th Commandant of the Marine Corps

Lt. Gen. Lewis "Chesty" Puller

Steadily he worked his way up the ranks proving his outstanding leadership qualities. He received a direct commission and he began collecting awards for valor. By the time he retired from the Corps in 1951 he had earned more awards than any Marine in history; five Navy Crosses, the Distinguished Service Cross, the Silver Star, two Legions of Merit with "V" device, the Bronze star with "V" device, the Bronze Star, the Air Medal and the Purple Heart.

1. **FOURTEEN LEADERSHIP TRAITS**

The traits and principles of leadership are the basic fundamentals that Marines use to develop their own leadership abilities and that of their subordinates. There are fourteen (14) leadership traits. The fourteen leadership traits can be remembered with the acronym **JJDIDTIEBUCKLE:**

Justice

Definition - Giving reward and punishment according to the merits of the case in question. The ability to administer a system of rewards and punishments impartially and consistently.

Significance - The quality of displaying fairness and impartiality is critical in order to gain the trust and respect of subordinates and maintains discipline and unit cohesion, particularly in the exercise of responsibility.

Example - Fair appointment of tasks by a squad leader during field day.

Judgment

Definition - The ability to weigh facts and possible courses of action in order to make sound decisions.

Significance - Sound judgment allows a leader to make appropriate decisions in the guidance and training of his/her Marines and the employment of his/her unit. A Marine who exercises good judgment weighs pros and cons accordingly when making appropriate decisions.

Example - A Marine properly apportions his/her liberty time in order to relax as well as to study.

Dependability

Definition - The certainty of proper performance of duty.

Significance - The quality that permits a senior to assign a task to a junior with the understanding that it will be accomplished with minimum supervision.

Example - The squad leader ensures that his/her squad falls out in the proper uniform without having been told to by the platoon sergeant.

Initiative

Definition - Taking action in the absence of orders.

Significance - Since an NCO often works without close supervision; emphasis is place on being a self-starter. Initiative is a founding principle of Marine Corps Warfighting philosophy.

Example - In the unexplained absence of the platoon sergeant, an NCO takes charge of the platoon and carries out the training schedule.

Decisiveness

Definition - Ability to make decisions promptly and to announce them in a clear, forceful manner.

Significance - The quality of character which guides a person to accumulate all available facts in a circumstance, weigh the facts, choose and announce an alternative which seems best. It is often better that a decision be made promptly than a potentially better one be made at the expense of more time.

Example - A leader, who sees a potentially dangerous situation developing, immediately takes action to prevent injury from occurring.

Tact

Definition - The ability to deal with others in a manner that will maintain good relations and avoid offense. More simply stated, tact is the ability to say and do the right thing at the right time.

Significance - The quality of consistently treating peers, seniors, and subordinates with respect and courtesy is a sign of maturity. Tact allows commands, guidance, and opinions to be expressed in a constructive and beneficial manner. This deference must be extended under all conditions regardless of true feelings.

Example - A Marine discreetly points out a mistake in drill to a NCO by waiting until after the unit has been dismissed and privately asking which of the two methods are correct.

Integrity

Definition - Uprightness of character and soundness of moral principles. The quality of truthfulness and honesty.

Significance - A Marine's word is his/her bond. Nothing less than complete honesty in all of your dealings with subordinates, peers, and superiors is acceptable.

Example - A Marine who uses the correct technique on the obstacle course, even when he/she cannot be seen by the evaluator.

Enthusiasm

Definition - The display of sincere interest and exuberance in the performance of duty.

Significance - Displaying interest in a task, and an optimism that it can be successfully completed, greatly enhances the likelihood that the task will be successfully completed.

Example - A Marine who leads a chant or offers to help carry a load that is giving someone great difficulty while on a hike despite being physically tired, he encourages his fellow Marines to persevere.

Bearing

Definition - Creating a favorable impression in carriage, appearance, and personal conduct at all times.

Significance - The ability to look, talk, and act like a leader whether or not these manifestations indicate one's true feelings.

Example - Wearing clean, pressed uniforms, and shining boots and brass. Avoiding profane and vulgar language. Keeping a trim, fit appearance.

Unselfishness

Definition - Avoidance of providing for one's own comfort and personal advancement at the expense of others.

Significance - The quality of looking out for the needs of your subordinates before your own is the essence of leadership. This quality is not to be confused with putting these matters ahead of the accomplishment of the mission.

Example - An NCO ensures all members of his unit have eaten before he does, or if water is scarce, he will share what he has and ensure that others do the same.

Courage

Definition - Courage is a mental quality that recognizes fear of danger or criticism, but enables a Marine to proceed in the face of danger with calmness and firmness.

Significance - Knowing and standing for what is right, even in the face of popular disfavor. The business of fighting and winning wars is a dangerous one; the importance of courage on the battlefield is obvious.

Example - Accepting criticism for making subordinates field day for an extra hour to get the job done correctly.

Knowledge

Definition - Understanding of a science or an art. The range of one's information, including professional knowledge and understanding of your Marines.

Significance - The gaining and retention of current developments in military and naval science and world affairs is important for your growth and development.

Example - The Marine who not only knows how to maintain and operate his assigned weapon, but also knows how to use the other weapons and equipment in the unit.

Loyalty

Definition - The quality of faithfulness to country, Corps, unit, seniors, subordinates and peers.

Significance - The motto of our Corps is *Semper Fidelis*, Always Faithful. You owe unswerving loyalty up and down the chain of command.

Example - A Marine displaying enthusiasm in carrying out an order of a senior, though he may privately disagree with it.

Endurance

Definition - The mental and physical stamina measured by the ability to withstand pain, fatigue, stress, and hardship.

Significance - The quality of withstanding pain during a conditioning hike in order to improve stamina is crucial in the development of leadership. Leaders are responsible for leading their units in physical endeavors and for motivating them as well.

Example - A Marine keeping up on a 10-mile forced march even though he/she has blisters on both feet.

2. **MARINE CORPS 11 LEADERSHIP PRINCIPLES**

Know Yourself and Seek Self Improvement

(1) This principle of leadership should be developed by the use of leadership traits. Evaluate yourself by using the leadership traits and determine your strengths and weaknesses.

(2) You can improve yourself in many ways. To develop the technique of this principle:

(a) Make an honest evaluation of yourself to determine your strong and weak personal qualities.

(b) Seek the honest opinions of your friends or superiors.

(c) Learn by studying the causes for the success and failures of others.

(d) Develop a genuine interest in people.

(e) Master the art of effective writing and speech.

(f) Have a definite plan to achieve your goal.

b. **Be Technically And Tactically Proficient**

(1) A person who knows their job thoroughly and possesses a wide field of knowledge. Before you can lead, you must be able to do the job. Tactical and technical competence can be learned from books and from on the job training. To develop this leadership principle of being technically and tactically proficient, you should:

(a) Know what is expected of you then expend time and energy on becoming proficient at those things.

(b) Form an attitude early on of seeking to learn more than is necessary.

(c) Observe and study the actions of capable leaders.

(d) Spend time with those people who are recognized as technically and tactically proficient at those things.

(e) Prepare yourself for the job of the leader at the next higher rank.

(f) Seek feedback from superiors, peers and subordinates.

c. **Know Your People And Look Out For Their Welfare**

(1) This is one of the most important of the leadership principles. A leader must make a conscientious effort to observe his Marines and how they react to different situations. A Marine who is nervous and lacks self-confidence should never be put in a situation where an important decision must be made. This knowledge will enable you as the leader to determine when close supervision is required.

(2) To put this principle in to practice successfully you should:

(a) Put your Marines welfare before you own.

(b) Be approachable.

(c) Encourage individual development.

(d) Know your unit's mental attitude; keep in touch with their thoughts.

(e) Ensure fair and equal distribution of rewards.

(f) Provide sufficient recreational time and insist on participation.

d. **Keep Your Personnel Informed**

(1) Marines by nature are inquisitive. To promote efficiency and morale, a leader should inform the Marines in his unit of all happenings and give reasons why things are to be done. This is accomplished only if time and security permits. Informing your Marines of the situation makes them feel that they are a part of the team and not just a cog in a wheel. Informed Marines perform better.

(2) The key to giving out information is to be sure that the Marines have enough information to do their job intelligently and to inspire their initiative, enthusiasm, loyalty, and convictions.

(3) Techniques to apply this principle are:

(a) Whenever possible, explain why tasks must be done and the plan to accomplish a task.

(b) Be alert to detect the spread of rumors. Stop rumors by replacing them with the truth.

(c) Build morale and espirit de corps by publicizing information concerning successes of your unit.

(d) Keep your unit informed about current legislation and regulations affecting their pay, promotion, privileges, and other benefits.

e. **Set The Example**

(1) A leader who shows professional competence, courage and integrity sets high personal standards for himself before he can rightfully demand it from others. Your appearance, attitude, physical fitness and personal example are all on display daily for the Marines and Sailors in your unit. Remember, your Marines and Sailors reflect your image!

(2) Techniques for setting the example are to:

(a) Show your subordinates that you are willing to do the same things you ask them to do.

(b) Maintain an optimistic outlook.

(c) Conduct yourself so that your personal habits are not open to criticism.

(d) Avoid showing favoritism to any subordinate.

(e) Delegate authority and avoid over supervision, in order to develop leadership among subordinates.

(f) Leadership is taught by example.

f. **Ensure That The Task Is Understood, Supervised, and Accomplished**

(1) Leaders must give clear, concise orders that cannot be misunderstood, and then by close supervision, ensure that these orders are properly executed. Before you can expect your men to perform, they must know what is expected of them.

(2) The most important part of this principle is the accomplishment of the mission. In order to develop this principle you should:

(a) Issue every order as if it were your own.

(b) Use the established chain of command.

(c) Encourage subordinates to ask questions concerning any point in your orders or directives they do not understand.

(d) Question subordinates to determine if there is any doubt or misunderstanding in regard to the task to be accomplished.

(e) Supervise the execution of your orders.

(f) Exercise care and thought in supervision. Over supervision will hurt initiative and create resentment; under supervision will not get the job done.

g. **Train Your Marines And Sailors As A Team**

(1) Teamwork is the key to successful operations. Teamwork is essential from the smallest unit to the entire Marine Corps. As a leader, you must insist on teamwork from your Marines. Train, play and operate as a team. Be sure that each Marine knows his/her position and responsibilities within the team framework.

(2) To develop the techniques of this principle you should:

(a) Stay sharp by continuously studying and training.

(b) Encourage unit participation in recreational and military events.

(c) Do not publicly blame an individual for the team's failure or praise just an individual for the team's success.

(d) Ensure that training is meaningful, and that the purpose is clear to all members of the command.

(e) Train your team based on realistic conditions.

(f) Insist that every person understands the functions of the other members of the team and the function of the team as part of the unit.

h. **Make Sound And Timely Decisions**

(1) The leader must be able to rapidly estimate a situation and make a sound decision based on that estimation. Hesitation or a reluctance to make a decision leads subordinates to lose confidence in your abilities as a leader. Loss of confidence in turn creates confusion and hesitation within the unit.

(2) Techniques to develop this principle include:

(a) Developing a logical and orderly thought process by practicing objective estimates of the situation.

(b) When time and situation permit planning for every possible event that can reasonably be foreseen.

(c) Considering the advice and suggestions of your subordinates before making decisions.

(d) Considering the effects of your decisions on all members of your unit.

i. **Develop A Sense Of Responsibility Among Your Subordinates**

(1) Another way to show your Marines you are interested in their welfare is to give them the opportunity for professional development. Assigning tasks and delegating authority promotes mutual confidence and respect between leader and subordinates. It also encourages subordinates to exercise initiative and to give wholehearted cooperation in accomplishment of unit tasks. When you properly delegate authority, you demonstrate faith in your Marines and increase authority, and increase their desire for greater responsibilities.

(2) To develop this principle you should:

(a) Operate through the chain of command.

(b) Provide clear, well thought out directions.

(c) Give your subordinates frequent opportunities to perform duties normally performed by senior personnel.

(d) Be quick to recognize your subordinates' accomplishments when they demonstrate initiative and resourcefulness.

(e) Correct errors in judgment and initiative in a way, which will encourage the individual to try harder.

(f) Give advice and assistance freely when your subordinates request it.

(g) Resist the urge to micro manage.

(h) Be prompt and fair in backing subordinates.

(i) Accept responsibility willingly and insist that your subordinates live by the same standard.

j. **Employ Your Command Within its Capabilities**

(1) A leader must have a thorough knowledge of the tactical and technical capabilities of the command. Successful completion of a task depends upon how well you know your unit's capabilities. If the task assigned is one that your unit has not been trained to do, failure is very likely to occur. Failures lower you unit's morale and self esteem. Seek out challenging tasks for your unit, but be sure that your unit is prepared for and has the ability to successfully complete the mission.

(2) Techniques for development of this principle are to:

(a) Avoid volunteering your unit for tasks that are beyond their capabilities.

(b) Be sure that tasks assigned to subordinates are reasonable.

(c) Assign tasks equally among your subordinates.

(d) Use the full capabilities of your unit before requesting assistance.

k. **Seek Responsibilities And Take Responsibility**

(1)For professional development, you must actively seek out challenging assignments. You must use initiative and sound judgment when trying to accomplish jobs that are required by your grade. Seeking responsibilities also means that you take responsibility for your actions. Regardless of the actions of your subordinates, the responsibility for decisions and their application falls on you.

(2) Techniques in developing this principle are to:

(a) Learn the duties of your immediate senior, and be prepared to accept the responsibilities of these duties.

(b) Seek a variety of leadership positions that will give you experience in accepting responsibility in different fields.

(c) Take every opportunity that offers increased responsibility.

(d) Perform every task, no matter whether it is top secret or seemingly trivial, to the best of your ability.

(e) Stand up for what you think is right. Have courage in your convictions.

(f) Carefully evaluate a subordinate's failure before taking action against that subordinate.

(g) In the absence of orders, take the initiative to perform the actions you believe your senior would direct you to perform if present.

REFERENCES:
Marine Corps Manual
MCRP 6-11B

Traits and Principles of Marine Corps Leadership Review

1. Define the Marine Corps 14 Leadership Traits? Remember the acronym **JDIDTIEBUCKLE:**

2. Define the Marine Corps 11 Leadership Principles?

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 105

USMC Uniform Regulations

TERMINAL LEARNING OBJECTIVE

1. Given commander's guidance, with or without arms, clothing and field equipment, civilian attire and an inspector, **stand a personnel inspection** to ensure readiness, serviceability, cleanliness, and personal appearance of personnel and equipment. (HSS-MCCS-2035)

ENABLING LEARNING OBJECTIVE(S)

1. Without the aid of references, given a MARPAT uniform item and ownership marking locations, **select the proper wear for each item**, with no discrepancies, IAW MCO P1020.34 series. (HSS-MCCS-2035a)

2. Without the aid of references, given a prescribed uniform, **stand a uniform inspection with a passing grade**, IAW NAVPERS 15665 series or MCO P1020.34 series. (HSS-MCCS-2035d)

1. **CAMOUFLAGED UTILITY UNIFORM**

Navy personnel assigned to Marine Corps units are issued the digital woodland or desert utility uniform. Wearing of the utility uniform does not require compliance with Marine Corps grooming regulations unless you are Marine regs.

Items issued - Standard issue to Navy personnel serving with Marine Corps units.

Infantry Combat boots	1 pair
Jungle boots(hot weather)	1 pair
Utility cap (without EGA)	1 Woodland 1 Desert
Booney/ Field Cover	1 Woodland 1 Desert
Camouflage utility blouse	2 Woodland 2 Desert
Camouflage utility trousers	2 Woodland 2 Desert
Cushion sole socks	3 pairs
HM/RP collar insignia	2 each
Rank collar insignia	2 each
Name-tapes	4 sets each
Green undershirt	6 each

Wear

(1) Proper wear of the Camouflage Utility Uniform

(a) Design - The camouflage utility uniform is designed for field wear and should be loose-fitting and comfortable. The item selected should be fitted loosely to allow for some shrinkage without rendering the garment unusable.

(b) Blouse - The camouflage blouse will not be tucked into the trousers. The utility blouse should always be kept buttoned and large or heavy objects should not be carried in the pockets. At the option of local commanders, sleeves may be rolled up or down depending on time of year or weather. The woodland uniform will be worn in the winter with sleeves unrolled. The desert uniform will be worn in the summer months with sleeves rolled up. When sleeves are worn "up" they will have a three inch fold terminating about two inches above the elbow.

(c) Trousers – Trousers will be worn around the waist, and the bottom of the leg should reach the floor when not wearing boots. While wearing boots the trousers will be bloused using boot bands to hold in place..

(d) Cover - All personnel, E-4 and above, will wear a subdued cap device on their utility garrison cover/ 8 point cover. No device will be worn over the Eagle Globe and Anchor.

(e) Belt - The Navy black web belt and buckle may be worn with the camouflage uniform by those enlisted personnel (E-1 thru E-6). Navy E-7and above will wear the khaki web belt with gold buckle. The Marine Corps Martial Arts Program has a designated belt ranking system. Only those individuals who attend this course and qualify, are authorized to wear the appropriate belt.

(f) Sweater - Navy officer and enlisted personnel may wear the green (Wooley Pully) or green service sweater with the camouflage utility uniform. The sweater will be worn underneath the camouflage utility blouse with sleeves down.

(g) Raingear - Navy personnel will wear organizational rainwear as issued by the Marine Corps, with the camouflage utility uniform.

(h) Boots – Only USMC issued boots with Eagle Globe and Anchor embossed on the outside of the heel will be worn. Boots will be laced left over right as you look down at it. There will be an identification tag worn in the left boot laces between the 2nd and 3rd eyelet, tucked into leather flap.

(1) Insignia

(a) The rating insignia - is worn on the left side of the collar, centered and bisecting the angle of the point of the collar. The lower outside edge of the insignia will be equally spaced ½ inch from both sides of the collar.

Figure 1. HM Rating Insignia

(b) The rank insignia - is worn on the right side of the collar, centered and bisecting the angle of the point of the collar. The lower outside edge of the insignia will be equally spaced ½ inch from both sides of the collar.

Figure 2. E-2 and E-3

Figure 3. E-4 through E-6

Figure 4. E-7 through E-9

(c) Breast insignia - will be centered on the pocket on a horizontal (parallel to the ground) line, even with the highest point of the service tape, a second device will be worn 1/8 inch above the 1st device.

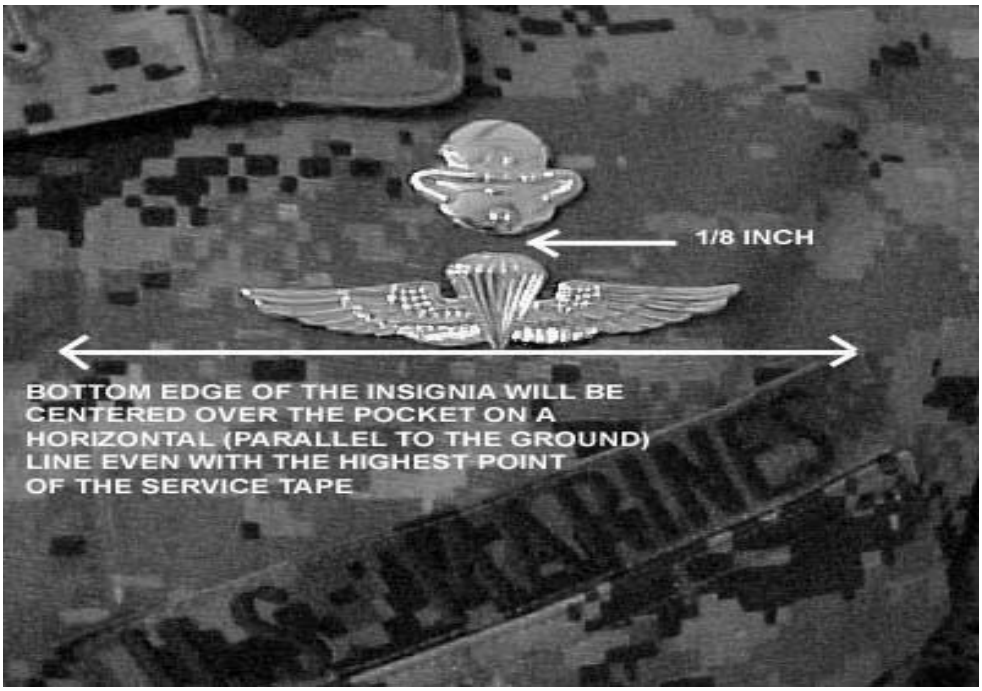

Figure 5. Breast Insignia

c. **Unauthorized wear of the utility uniform**

(1) The wearing of the camouflaged utility uniform and its policies are much like the Navy's Working Uniform. Members are prohibibited from wearing the utility uniform as a liberty uniform off-base or during inappropriate circumstances such as:

(a) At restaurants, pizza parlors, bars, lounges, etc.

(b) When dealing with public officials (police, courthouse, attorneys, etc.)

(c) While attending classes or activities, or conducting business at education facilities

(d) At commercial airports / bus stations for travel or entering pick up/drop off areas

(e) At retail/rental stores, shopping malls, and shops for shoppping or paying bill

(f) At grocery stores/supermarkets

(g) At movie theaters, mini-golf, or other similar entertainment, recreational or sporting activities

d. **Grooming standards/personal appearance**

Members will present the best possible image at all times and continue to set the example in military presence. Members are prohibited from:

(1) Mutilation of the body or any body parts in any manner.

(2) Attaching, affixing or displaying objects, articles, jewelry or ornamentation to, through or under skin, tongue or any other body part. Female members may not wear earings in utility uniform.

(3) Tattoos or brands on the neck and head. On other areas of the body, tattoos or brands that are prejudicial to good order and discipline and morale or are of a nature to bring discredit upon the Marine Corps are also prohibited.

(4) Eccentric or faddish styles of hair, jewelry, or eyeglasses. The good judgement of all members at all levels is key to enforcement of Marine Corps standards with this issue.

(5) Chewing gum, chewing tobacco, cigerettes or the consumption of food while in formation or walking in uniform

(6) Articles that are not authorized for wear as a part of a regulation uniform will not be worn exposed with the uniform such as: pens, watch chains, backpacks / bags, barrettes / hair ribbons, CD / MP3 players or other similar items.

(7) Pagers and cell phones are not authorized for wear on a regulation uniform unless specifically authorized.

(8) Sunglasses will be conservative in nature and will not be worn indoors or in formations unless authorized by a medical representitive.

(9) The wear of clothing articles not specifically designed to be normally worn as headgear (e.g. bandannas, doo rags) is strictly prohibited in civilian attire and regulation uniform.

(10) No part of a prescribed uniform, except those items not exclusively military in character, will be worn with civilian clothing.

e. **Care** - During washing, drying and finishing cycles, use the lowest possible setting so that at no time will the garment be exposed to temperatures greater than 130 degrees. Some laundry facilities may not press utilities due to potential damage from automated presses. Thus, any pressing required will be the individuals responsibility. The use of starch, sizing and any process that involves dry cleaning or a steam press will adversely affect the treatments and durability of the uniform and is not recommended. These uniforms are designed as a wash and wear uniform. A hand iron set on a low heat may be used.

f. **Marking -** Enlisted Sailors will plainly and indelibly mark every article of uniform clothing with the owner's name (except for organizational clothing).

(1) Size - Marks will be of a size appropriate to the article of clothing and the space available for marking and will consist of block leters not more than ½ inch in size. Marking machines, stencils, name tapes, or stamps, may be used.

(2) Color - Names are marked in black, on light colored material and utilities, and in white on dark material. Marks will be placed so that they do not show when the clothing is worn.

(3) Location - The precise location for marking the following gear is as follows:

(4) Duffel bag **-** On the outside of the bag on the bottom

(5) Web belt - On buckle side only, as near to the buckle end as possible

(6) Cap - Inside, on the sweatband to the left

(7) Coats and overcoats - Inside, on the neckband

(8) Drawers - Outside immediately below the waistband, near the front

(9) Gloves - Inside, at the wrist

(10) Shoes and boots - Inside, near the top

(11) Socks - Outside, on top of the foot

(12) Utility blouse - Name-tape sewn above right breast pocket, service tape sewn above left breast pocket

(13) Trousers - Name-tape sewn above right rear pocket

(12) Undershirt - Inside back, near the neck-band under the tag

2. **STAND A UNIFORM INSPECTION**

Inspection criteria- the inspection criteria covers ten different areas of the uniform. Each area is graded for servicability, proper marking, and proper fitting. Each hit is counted and added up for a total score. No hits is an Outstanding, 1 hit is Excellent, 2 hits is Above Average, 3 hits is Below Average, 4 hits is Unsatisfactory and a failure of the Uniform inspection. The areas that are inspected are:

(1) Cover – This gets checked for serviceabilty, cleanliness, proper fit, proper marking, loose threads hanging down and anything else that does not keep with the good appearance of the uniform.

(2) Dogtags – These will be checked to ensure the member is wearing them, the correct information on the dogtag and they are clean.

(3) Blouse – This is checked for serviceabilty, cleanliness, proper fit, proper marking, loose threads hanging down, rating badge and service stripes.

(4) Undershirt – The undershirt is checked for cleanliness, proper marking and proper fit.

(5) Belt – The belt will be checked for serviceability and cleanliness, proper length, buckle appearance, military alignment and that it is properly marked.

(6) Hygiene – Hygiene will be inspected for proper shave, clean and cut fingernails, fresh haircut, and trimmed mustache.

(7) Trouser – Trousers will be checked for serviceability, proper fit, proper markings, and loose threads.

(8) Shoes – Shoes will be checked for servicability and proper lacing.

(9) Military Knowledge – Inspector will ask basic military knowledge pertaining to the individual being inspected.

REFERNCES: MCO P1020.34

FIELD MEDICAL TRAINING BATTALION
INSPECTION CHECKLIST
(NAVY UNIFORM) v3.0

FMST CLASS _____ PLT _____ DATE _____
INSPECTOR'S RANK/NAME_____
SAILOR'S RANK/NAME_____

COVER
_____UNSERV/DIRTY
_____IMPROPER FIT
_____NOT MARKED
_____LOOSE THREADS
_____OTHER (SPECIFY)
_____

DOGTAGS
_____MISSING
_____OTHER (SPECIFY)
_____

BLOUSE
_____UNSERV/DIRTY
_____IMPROPER FIT
_____NOT MARKED
_____LOOSE THREADS
_____RATING BADGE/SERVICE STRIPE
_____OTHER (SPECIFY)
_____

UNDERSHIRT
_____UNSERV/DIRTY
_____IMPROPER FIT
_____NOT MARKED
_____OTHER (SPECIFY)
_____

BELT
_____UNSERV/DIRTY
_____IMPROPER LENGTH
_____BUCKLE SCRATCHED
_____MILITARY ALIGNMENT
_____NOT MARKED
_____OTHER (SPECIFY)
_____

HYGIENE
_____IMPROPER SHAVE
_____FINGERNAILS DIRTY/LONG
_____HAIRCUT
_____MUSTACHE
_____OTHER (SPECIFY)
_____

RIBBONS
_____UNSERV/DIRTY
_____IMPROPER SPACING
_____SEQUENCE/ATTACHMENTS
_____CENTERING
_____OTHER (SPECIFY)
_____

TROUSER
_____UNSERV/DIRTY
_____IMPROPER FIT
_____NOT MARKED
_____LOOSE THREADS
_____OTHER (SPECIFY)
_____

SHOES
_____UNSERV/DIRTY
_____NOT LACED PROPERLY
_____OTHER (SPECIFY)
_____

MILITARY KNOWLEDGE
_____SAT
_____UNSAT

REMARKS:_____
_____
_____
_____

GRADE:
_____OUTSTANDING (NO DISCREPANCY)
_____EXCELLENT (1)
_____ABOVE AVERAGE (2)
_____BELOW AVERAGE (3)
_____UNSATISFACTORY (4)

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 106

Individual Combat Equipment

TERMINAL LEARNING OBJECTIVE(S)

1. Given a MARPAT reversible tarpaulin or two-man tent, in an operating environment, and while wearing individual field equipment, **construct a field expedient shelter** to protect against the effects of weather. (HSS-MCCS-2023)

2. Given commander's guidance, with or without arms, clothing and field equipment, civilian attire and an inspector, **stand a personnel inspection** to ensure readiness, serviceability, cleanliness, and personal appearance of personnel and equipment. (HSS-MCCS-2035)

3. Given an Individual First Aid Kit (IFAK) and references, **inventory an Individual First Aid Kit (IFAK)** to ensure it is complete and serviceable. (HSS-MED-2001)

ENABLING LEARNING OBJECTIVE(S)

1. Without the aid of references, given combat equipment, **select the proper wear for each item**, with no discrepancies, IAW MCO P1020.34 series. (HSS-MCCS-2035b)

2. Without the aid of references, given combat equipment, **select the proper maintenance for each item**, with no discrepancies, IAW MCO P1020.34 series. (HSS-MCCS-2035c)

3. With the aid of reference, **given a MARPAT reversible tarpaulin and other materials, construct a field expedient shelter** to protect against the effects of weather in accordance with MCRP 3-02H. (HSS-MCCS-2023a)

4. With the aid of reference, **given a two-man tent, construct a field expedient shelter** to protect against the effects of weather in accordance with MCRP 3-02H. (HSS-MCCS-2023b)

5. Without the aid of reference, give an Individual First Aid Kit (IFAK), **identify the components of the IFAK** within 80% accuracy and in accordance with the User's Instruction for the IFAK. (HSS-MED-2001a)

1. **INDIVIDUAL COMBAT EQUIPMENT**

a. **Family of Load Bearing Equipment (FILBE) -** FILBE is a Modular Load-Bearing system designed to enhance the survivability and lethality of the modern Marine. FILBE is a replacement for the ILBE system and components of the Integrated Individual Fighting system including the Improved Load Bearing Equipment (ILBE). The FILBE issue that you will receive here at FMTB-W consist of the following:

(1) USMC New Pack – (See figure 1) The USMC new pack is a modular system that can be configured into two different torso length patterns: the Normal and Long. It has a large main pouch that can be closed to allow for a sleeping system compartment and a radio pouch. It has a draw string close top. The lid is has a water resistant zipper at the base to allow access to the radio pouch. Two other zippers allow access to the storage compartments in the lid, it also has buckles that allow the day pack to be attached to the top. The pack is equiped with Pouch Attachment Ladder System (PALS).

Figure 1: USMC New Pack

(2) Patrol Pack – (See figure 2) Utilized to sustain an individual for 24-48 hour periods. Has buckles to attach it to the top of the pack. Also has Pouch Attachment Ladder System (PALS) for the attachment of external pouches.

Figure 2: Patrol Pack

(3) Combat Lifesaver Kit (CLS) – (See figure 3) the Combat Lifesaver Kit (CLS) contains medical supplies that, in addition to what Marines already carry in their Individual First Aid Kits (IFAKS), provide life-saving trauma care for critically wounded Marines and Sailors. CLS-trained Marines are issued the CLS Kit to increase the trauma support available to their teams/squad in situations where a Corpsman is not immediately available to provide aid. The items in the partable lightweight bag enable a CLS-trained Marine to treat extremity hemorrhaging and sucking chest wounds, and to clear a wounded warfighter's airway.

Figure 3: CLS Kit

(4) USMC Sub Belt – (See figure 4) Sized belt and detachable suspenders with MOLLE webbing used to configure ammunition pouches, grenade pouches, IFAK, and other items so that the individual may design load out for specific purposes. Designed to integrate with current USMC pack and other load bearing systems.

Figure 4: Load Bearing Vest

(5) Improved Modular Tactical Vest – (See figure 5) A scaleable vest that offers protection to the front, back, flanks with the insertion of ESAPI plates and also has neck and groin protection. Has MOLLE webbing used to configure ammunition pouches, grenade pouches, IFAK, and other items so that the individual may design load out for specific purposes. Can be used with the LBV or without.

Figure 5: Improved Modular Tactical Vest

(6) Lightweight Helmet with cover – (See figure 6) Improved fit over old helmet with more comfortable pads as well as chin strap. Cover is a reversable MARPAT cover that will be changed in accordance with what uniform is being worn at the time. Can be used with a NVG mounting plate.

Figure 6: Helmet and Cover

(7) Three-Sleeping System - Comes in two sizes, one that fits Marines up to 6 feet tall and another for taller Marines. The top of the new bag can be pulled tight around the face and features two snaps that cover the chin for better protection against the cold and wind. The waterproof bivy can be pulled over the head for added warmth and is designed with a flexible wire to keep the bag off of the face. The sleeping bag weighs only 2.4 pounds and offers protection down to 10 degrees provided Marines layer their clothes properly.

(8) Additional Equipment:

(a) Canteen w/ Cover – The canteen covers are used to carry the plastic water canteens and metal cup. The covers have two small pockets attached for carrying water purification tablets.

(b) ISO Mat - A foam padding used to support the sleeping system.

(c) Sustainment Pockets - Attached to outside of the pack as needed for additional load capability.

(d) Hydration bladder – Can hold 70 oz. of water. Used to drink on the move.

(e) Repair Kit – Utilized to repair the equipment as needed.

(f) Elbow/Knee pads – Issued to Marines to protect knees and elbows from trips and falls while on operations.

(g) Gortex top/bottom – MARPAT water proof gear issued for inclement weather.

(h) Poly pro top/bottom – warming layers issued and worn under the MARPAT uniform.

(i) Tan fleece – Tan warming layer to be used under MARPAT blouse.

(j) Cap fleece – Warming garment to be used to cover head during cold hours. Not usually worn during the day.

(k) Water proofing bag – Improved water proof storage bags to be used in conjunction with WP bag.

(l) Patrol sling – Used to secure weapon to body during a multitude of activities.

(m) Parade sling – Green sling used for parades and shooting on the rifle range.

(n) Ess glasses/goggles – Eye protection issued to every Marine and sailor to be used at all times during training as well as any time forward deployed.

(o) E-tool w/ carrier – Standard folding entrenching tool. Used to dig fighting holes.

(p) Tarp – A waterproof tarp to cover gear or to make a field expediant shelter or field expediant bed roll.

(q) Poncho Liner – Lightweight blanket that will supplement sleeping system or be used in a field expediant bed roll.

(r) Magazine Pouches – MOLLE adaptable pouches to store magazines in place so that the shooter can manipulate the weapon to achieve maximum lethality.

(s) Gloves – Issued to all Marines to protect hands.

(t) Compression Sack – Black sack with limiting straps to tighten down sleeping systems and be able to store them in packs while using the least amount of space.

2. **CARE AND MAINTENANCE OF COMBAT EQUIPMENT**

a. Scrape dirt and dust from the item using a brush that will not cut the fabric.

b. Hose or wash the item in a pail of water. Rinse thourghly with clean water.

c. Do not use chlorine bleach, yellow soap, cleaning fluids, or solvents that will discolor or deteriorate the item.

d. Dry the item in the shade or indoors. Do not dry in direct sunlight, direct heat or open flame.

e. Do not launder or dry item in home or commercial washers and dryers. Do not attempt to dye or repair. Turn in for repair or replacement.

f. Remember, extremely dirty or damaged equipment can eventually fail to perform its intended function.

3. FIELD EXPEDIENT SHELTER

a. Shelter Site Selection

(1) When you are in a survival situation and realize that shelter is a high priority, start looking for shelter as soon as possible. As you do so, remember what you will need at the site. Two requisites are:

(a) It must contain material to make the type of shelter you need.

(b) It must be large enough and level enough for you to lie down comfortably.

(c) When you consider these requisites, however, you cannot ignore your tactical situation or your safety. You must also consider whether the site—

1. Provides concealment from enemy observation.

2. Has camouflaged escape routes.

3. Is suitable for signaling, if necessary.

4. Provides protection against wild animals and rocks and dead trees that might fall.

5. Is free from insects, reptiles, and poisonous plants.

(d) You must also remember the problems that could arise in your environment. For instance—

1. Avoid flash flood areas in foothills.

2. Avoid avalanche or rockslide areas in mountainous terrain.

3. Avoid sites near bodies of water that are below the high water mark.

(e) In some areas, the season of the year has a strong bearing on the site you select. Ideal sites for a shelter differ in winter and summer. During cold winter months you will want a site that will protect you from the cold and wind, but will have a source of fuel and water. During summer months in the same area you will want a source of water, but you will want the site to be almost insect free.

(f) When considering shelter site selection, use the word BLISS as a guide.

1. B - Blend in with the surroundings.

2. L - Low silhouette.

3. I - Irregular shape.

4. S - Small.

5. S - Secluded location.

b. **Tarp Lean-To** (See figure 7)

(1) It takes only a short time and minimal equipment to build this lean-to. You need a tarp, 2 to 3 meters of rope or parachute suspension line, three stakes about 30 centimeters long, and two trees or two poles 2 to 3 meters apart. Before selecting the trees you will use or the location of your poles, check the wind direction. Ensure that the back of your lean-to will be into the wind. To make the lean-to:

(a) Cut the rope in half. On one long side of the poncho, tie half of the rope to the corner grommet. Tie the other half to the other corner grommet.

(b) Option: Attach a drip stick to each rope about 2 inches from the grommet. These drip sticks will keep rainwater from running down the ropes into the lean-to.

(c) Tie the ropes about waist high on the trees (uprights). Use a round turn and two half hitches with a quick-release knot.

(d) Spread the tarp and anchor it to the ground, putting sharpened sticks through the grommets and into the ground.

(e) If you plan to use the lean-to for more than one night, or you expect rain, make a center support for the lean-to. Place a stick upright under the center of the lean-to. This method will restrict your space and movements in the shelter.

(f) For additional protection from wind and rain, place some brush, your rucksack, or other equipment at the sides of the lean-to.

(g) To reduce heat loss to the ground, place some type of insulating material, such as leaves or pine needles, inside your lean-to. Note: When at rest, you lose as much as 80 percent of your body heat to the ground.

(h) To increase your security from enemy observation, lower the lean-to's silhouette by making two changes. First, secure the support lines to the trees at knee height (not at waist height) using two knee-high sticks in the two center grommets (sides of lean-to). Second, angle the poncho to the ground, securing it with sharpened sticks, as above.

Figure 7: Tarp Lean-To

c. **Tarp Tent** (See figure 8)

(1) This tent provides a low silhouette. It also protects you from the elements on two sides. It has, however, less usable space and observation area than a lean-to, decreasing your reaction time to enemy detection. To make this tent, you need a tarp, two 4 to 5-meter ropes, six sharpened sticks about 12 inches long, and two trees 2 to 3 meters apart. To make the tent:

(a) Cut the rope into equal halves

(b) Tie a 2-meter rope to the center grommet on each side of the tarp.

(c) Tie the other ends of these ropes at about knee height to two trees 2 to 3 meters apart and stretch the tarp tight.

(d) Draw one side of the tarp tight and secure it to the ground pushing sharpened sticks through the grommets.

(e) Follow the same procedure on the other side.

(f) If you need a center support, use the same methods as for the tarp lean-to. Another center support is an A-frame set outside but over the center of the tent. Use two 90- to 120-centimeter-long sticks, one with a forked end, to form the A-frame.

Figure 8: Tarp Tent

d. **Two Man Tent** (See figure 9)

(1) A two-man, three-season, free standing, double wall tent. The tent has a vapor permeable tent body with a fully water proof reversible rain fly. All tent floor and rain fly seams are factory taped for water fastness.

(a) Ventilation for use in arid desert and humid conditions to minimize build up of condensation.

(b) Rain fly prevents escape of light and provides protection against visual and infrared detection.

(c) Rain fly can be used in conjunction with tent or separate as a "hooch".

(d) Set up by one or two people in under 5 minutes.

Figure 9: Two Man Tent

5. **INDIVIDUAL FIRST AID KIT (IFAK)** The IFAK increases individual Marines or Sailors capabilities to provide Self-Aid/Buddy-Aid and provides interventions for leading causes of death on the battlefield, to include severe hemorrhage and and gunshot wounds.

a. **Adhesive Bandage** – Quantity 5. 2x4.5in.

b. **Adhesive Bandage** – Quantity 10. 3/4x3in.

c. **Burn Dressing** – Quantity 1. Saturated with water gel; individually wrapped.

d. **Dressing Burn, First Aid** – Polyester overall; triangular; sterile.

e. **Tape, Combat Medic Reinforced** – 2x100 inches; sealed in a 1.5 nylon pouch.

f. **Water Purification Tablet, Chlorine** – micropur MP1; 1 strip of 10 tabs.

g. **Bacitracin Ointment -** .0312 ounces in a single packet.

h. **Bandage, Gauze** – Quantity 2. White cotton rolled, 7/8x2x3 in.

i. **Bandage, Gauze, Impregnated** – Quantity 2. Guaze, hemostatic agent, combat gauze, 3 in x 4 yds.

j. **Card Casualty Response Two-Sided** – Two sided card used at point of injury to document tactical combat casualty care, plastic paper, attaches with an elastic strap.

k. **Chest Wound Kit Sterile W/O Needle** – Penetrating chest injury kit, sterile, for penetrating chest injuries, general chest wounds and exit wounds, general chest wounds and exit wounds, includes one Bolin chest seal.

l. **Dressing, Compression** – Quantity 2, H bandage, 6x1.5x3 in.

m. **Tourniquet, nonpneumatic; Combat Application** – Quantity 1, one handed, 30.5x1x1/8in.

FREFERENCES:

First Aid	MCRP 3-02G
Marine Corps Drill and Ceremonies Manual	NAVMC 2691 W/CH 1
Marine Corps Uniform Regulations	MCO P1020.34G W/CH 1-4
Rifle, 5.56-mm, M-16	TM 9-1005-319-10
Survival, Evasion, and Recovery	MCRP 3-02H
Uniform Fitting and Alteration	TM-10120-15/1B
User's Instructions for the Individual First Aid Kit	IFAK

Individual Combat Equipment Review

1. When considering shelter site selection, we use the acronym BLISS as a guide. What does this acronym mean?

2. Describe the purpose of the Load Bearing Vest?

3. Explain the process of cleaning and careing for combat equipment?

4. Explain the different types of field expedient shelters?

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
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FMST 107

Code of Conduct and the Rights of POW's

TERMINAL LEARNING OBJECTIVES

1. Without the aid of references, **describe the Code of Conduct** without omitting key components. (HSS-MCCS-2028)

2. Without the aid of references **describe your rights as a Prisoner of War (POW)** without omitting key components. (HSS-MCCS-2029)

3. Without the aid of references **describe your obligations as a Prisoner of War (POW)** without omitting key components. (HSS-MCCS-2030)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference and in writing, **identify the origin of the Code of Conduct** within 80% accuracy and in accordance with NAVMC 2681. (HSS-MCCS-2028a)

2. Without the aid of reference and in writing, **identify the six articles of the Code of Conduct** within 80% accuracy and in accordance with NAVMC 2681. (HSS-MCCS-2028b)

3. Without the aid of reference and in writing, **identify the origin of POW rights** within 80% accuracy and in accordance with MCRP 5-12.1A. (HSS-MCCS-2029a)

4. Without the aid of reference and in writing, **identify the 12 rights of POW's** within 80% accuracy and in accordance with MCRP 5-12.1A. (HSS-MCCS-2029b)

5. Without the aid of reference and in writing**, identify responsibilities of a POW** with 80% accuracy and in accordance with MCRP 5-12.1A. (HSS-MCCS-2030a)

1. **ORIGIN OF THE CODE OF CONDUCT**. The Code of Conduct for members of the Armed Forces of the United States was first promulgated by President Dwight D. Eisenhower Aug. 17, 1955. The code, including its basic philosophy, was reaffirmed on July 8, 1964 in DoD Directive No. 1300.7. In March 1988, President Ronald Reagan issued Executive Order 12633, amending the code with language that is gender-neutral. The code, although first expressed in written form in 1955, is based on time honored concepts and traditions that date back to the days of the American Revolution.

Purpose. As a member of the armed forces of the United States, you are protecting your nation. It is your duty to oppose all enemies of the United States in combat or, if a captive, in a prisoner of war compound. Your behavior is guided by the Code of Conduct, which has evolved from the heroic lives, experiences and deeds of Americans from the Revolutionary War to the Southeast Asian Conflict. Your obligations as a U.S. citizen and a member of the armed forces result from the traditional values that underlie the American experience as a nation. These values are best expressed in the U.S. Constitution and Bill of Rights, which you have sworn to uphold and defend. You would have these obligations-to your country, your service and unit and your fellow Americans-even if the Code of Conduct had never been formulated as a high standard of general behavior.

The Code is not intended to provide guidance on every aspect of military life. For that purpose there are military regulations, rules of military courtesy, and established customs and traditions. The Code of Conduct is in no way connected with the Uniform Code of Military Justice (UCMJ). The UCMJ has punitive powers; the Code of Conduct does not.

2. **ARTICLES OF THE CODE OF CONDUCT (CoC)**. The six articles of the Code of Conduct as related to Medical Personnel and/or Chaplains.

a. **Article I - I am an American, fighting in the forces which guard my country and our way of life. I am prepared to give my life in their defense.**

Medical personnel who are exclusively engaged in the medical service and chaplains who fall into the hands of the enemy are considered "retained personnel," **not** POWs. This allows flexibility to perform their job; but, does not relieve their obligation to abide by the CoC. They are still held accountable for their actions.

b. **Article II - I will never surrender of my own free will. If in command, I will never surrender the members of my command while they still have the means to resist.**

No additional flexibility for medical personnel or chaplains; however, still are subject to lawful capture. They may only resort to arms in self-defense or in defense of their charges attacked in violation of the Geneva Convention. They must refrain from aggressive action and may not use force to prevent their capture or that of their unit. On the other hand, it is perfectly legitimate for a medical unit to withdraw in the face of the enemy.

c. **Article III - If I am captured I will continue to resist by all means available. I will make every effort to escape and to aid others to escape. I will accept neither parole nor special favors from the enemy.**

Since medical personnel and chaplains are "retained personnel" and not considered POWs, the terms of the Geneva Conventions require the enemy to allow them to continue to perform their medical and religious duties for the benefit of the POWs and must take every opportunity to do so.

If the captor permits the performance of these professional functions for the POW community, then special latitude is authorized under the CoC in regards to escape. As individuals, medical personnel and chaplains do not have a duty to escape or to actively aid others in escaping as long as they are being treated as "retained personnel" (although history shows that this is rarely the case and medical personnel and chaplains must be prepared to be treated as other POWs).

d. **Article IV - If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information or take part in any action which might be harmful to my comrades. If I am senior, I will take command. If not, I will obey the lawful orders of those appointed over me and will back them up in every way.**

Medical personnel shall **not** assume command over nonmedical personnel and chaplains will **not** assume command over military personnel of **any** branch.

e. **Article V - When questioned, should I become a prisoner of war, I am required to give name, rank, service number, and date of birth. I will evade answering further questions to the utmost of my ability. I will make no oral or written statements disloyal to my country and its allies or harmful to their cause.**

The requirement for medical and chaplain personnel to communicate with a captor in connection with their professional responsibilities is subject to certain restraints. For example, when questioned, a POW is only to provide name, rank, service number, and date of birth. Also, a POW must resist, avoid, or evade, even when physically and mentally coerced, all enemy efforts to secure statements or actions that may further the enemy's cause.

f. **Article VI - I will never forget that I am an American, fighting for freedom, responsible for my actions, and dedicated to the principles which made my country free. I will trust in my God and in the United States of America.**

All members of the Armed Forces, including medical personnel and chaplains, are responsible for their action at all times and they must fulfill their responsibilities and survive captivity with honor. Failure to abide by these requirements could possibly subject a service member to disposition under the UCMJ.

3. ORIGIN OF POW RIGHTS.

The 1949 Geneva Conventions for the Protection of War Victims have been ratified by the United States and came into force for this country on 2 February 1956. Respectively, each of the Hague Conventions of 1899 and 1907 and each of the Geneva Conventions of 1864, 1906, and 1929 will, of course, continue in force as between the United States and such of the other parties to the respective conventions as have not yet ratified or adhered to the later, superseding convention(s) governing the same subject matter.

Moreover, even though States may not be parties to, or strictly bound by, the 1907 Hague Conventions and the 1929 Geneva Convention relative to the Treatment of Prisoners of War, the general principles of these conventions have been held declaratory of the customary law of war to which all States are subject. For this reason, the United States has adopted the policy of observing and enforcing the terms of these conventions.

Purpose of POW rights. Is inspired by the desire to diminish the evils of war by:

- Protecting both combatants and noncombatants from unnecessary suffering.

- Safeguarding certain fundamental human rights of persons who fall into the hands of the enemy, particularly prisoners of war, the wounded and sick, and civilians.

- Facilitating the restoration of peace.

POW rights stems from the Laws of War as outlined in the Geneva Conventions.

The nine principles of the law of war are:

(1) Fight only enemy combatants.

(2) Do not harm enemies who surrender: disarm them and turn them over to your superior.

(3) Do not kill or torture prisoners.

(4) Collect and care for the wounded, whether friend or foe.

(5) Do not attack medical personnel, facilities, or equipment.

(6) Do not destroy more than the mission requires.

(7) Treat all civilians humanely.

(8) Do not steal; respect private property and possessions.

(9) Do your best to prevent violations of the law of war; report all violations to your superiors, a military lawyer, a chaplain, or provost marshal.

4. **THE 12 RIGHTS OF POW's**.

a. **The right to receive sanitary, protective housing and clothing.**

- Prisoners of war shall be quartered under conditions as favorable as those for the forces of the Detaining Power who are billeted in the same area. The said conditions shall make allowance for the habits and customs of the prisoners and shall in no case be prejudicial to their health.

- Clothing, underwear, and footwear shall be supplied to POWs in sufficient quantities by the Detaining Power which shall make allowance for the climate of the region where the prisoners are detained.

b. **The right to receive a sufficient amount of food to sustain good health.**

- The basic daily food rations shall be sufficient in quantity, quality, and variety to keep POWs in good health and prevent loss of weight or the development of nutritional deficiencies. Account shall also be taken of the habitual diet of the prisoners. The

- Detaining Power shall supply work POWs with such additional rations necessary for the labor on which they are employed.

- Sufficient drinking water shall be supplied to POWs. The use of tobacco shall be permitted. Prisoners of war shall be associated with the preparation of their meals; they may be employed for that purpose in the kitchens. Furthermore, they shall be given the means of preparing themselves the additional food in their possession. Adequate premises shall be provided for messing. Collective disciplinary measures affecting food are prohibited**.**

c. **The right to receive adequate medical care.**

- Every camp shall have an adequate infirmary where POWs may have the attention they require as well as appropriate diet. Isolation wards shall, if necessary, be set aside for cases of contagious or mental disease. Prisoners of war suffering from serious disease or whose condition necessitates special treatment, a surgical operation, or hospital care must be admitted to any military or civilian medical unit where such treatment can be given, even if their repatriation is contemplated in the near future. Special facilities shall be afforded for the care to be given to the disabled, in particular to the blind, and for their rehabilitation pending repatriation.

- Prisoners of war shall have the attention, preferably, of medical personnel of the power on which they depend and, if possible, of their nationality. Prisoners of war may not be prevented from presenting themselves to the medical authorities for examination. The detaining authorities shall, upon request, issue to every prisoner who has undergone treatment, an official certificate indicating the nature of his or her illness or injury and the duration and kind of treatment received. A duplicate of this certificate shall be forwarded to the Central Prisoners of War Agency. The costs of treatment, including those of any apparatus necessary for the maintenance of POWs in good health, particularly dentures and other artificial appliances and spectacles shall be borne by the Detaining Power.

- Medical inspections of POWs shall be held at least once a month. They shall include the checking and the recording of the weight of each POW. Their purpose shall be, in particular, to supervise the general state of health, nutrition, and cleanliness of prisoners and detect contagious diseases, especially tuberculosis, malaria, and venereal disease. For this purpose, the

most efficient methods available shall be employed, e.g., periodic mass miniature radiography for the early detection of tuberculosis.

d. **The right to receive necessary facilities for proper hygiene.**

- Prisoners of war may be interned only in premises located on land and affording every guarantee of hygiene and healthfulness. Except in particular cases, which are justified by the interest of the prisoners themselves, they shall not be interned in penitentiaries. Prisoners of war interned in unhealthy areas, or where the climate is injurious for them, shall be removed as soon as possible to a more favorable climate.

e. **The right to practice religious faith.**

- Prisoners of war shall enjoy complete latitude in the exercise of their religious duties, including attendance at the service of their faith on condition that they comply with the disciplinary routine prescribed by the military authorities. Adequate premises shall be provided where religious services may be held.

f. **The right to keep personal property except weapons, military equipment, and military documents**.

- All effects and articles of personal use except arms, horses, military equipment, and military documents shall remain in the possession of POWs, likewise their metal helmets and gas masks and like articles issued for personal protection. Effects and articles used for their clothing or feeding shall likewise remain in their possession, even if such effects and articles belong to their regulation military equipment. At no time should POWs be without identity documents. The Detaining Power shall supply such documents to POWs who possess none.

- Badges of rank and nationality, decorations, and articles having above all a personal or sentimental value may not be taken from POWs. Sums of money carried by POWs may not be taken away from them except by order of an officer, after the amount and particulars of the owner have been recorded in a special register, and an itemized receipt has been given legibly inscribed with the name, rank, and unit of the person issuing the said receipt. Sums in the currency of the Detaining Power of which are changed into such currency at the prisoner's request shall be placed to the prisoner's credit.

g. **The right to send and receive mail**.

- Prisoners of war shall be allowed to send and receive letters and cards. If the Detaining Power deems it necessary to limit the number of letters and cards sent by each POW, the said number shall not be less than two letters and four cards monthly, exclusive of the capture cards provided for in Article 70, and conforming as closely as possible to the models annexed to the present convention. Further limitations may be imposed only if the Protecting Power is satisfied that it would be in the interests of the POWs concerned to do so owing to difficulties of translation caused by the Detaining Power's inability to find sufficient qualified linguists to carry out the necessary censorship.

- If limitations must be placed on the correspondence addressed to POWs, they may be ordered only by the power on which the prisoners depend, possibly at the request of the Detaining Power. Such letters and cards must be conveyed by the most rapid method at the disposal of the Detaining Power; they may not be delayed or retained for disciplinary reasons. Prisoners of war who have been without news for a long period, are unable to receive news from their next of kin, or given news by the ordinary postal route, as well as those who are at a great distance from their homes shall be permitted to send telegrams, the fees being charged against the POW's accounts with the Detaining Power or paid in the currency at their disposal. They shall likewise benefit by this measure in cases of urgency. As a general rule, the correspondence of POW shall be written in their native language. The parties to the conflict may allow correspondence in other languages. Sacks containing POW mail must be securely sealed and labeled so as clearly to indicate their contents, and must be addressed to offices of destination**.**

h. **The right to receive packages containing no contraband items such as food, clothing, educational, religious, and recreational materials**.

- Prisoners of war shall be allowed to receive, by post or by any other means, individual parcels or collective shipments containing in particular foodstuffs, clothing, medical supplies, and articles of a religious, educational, or recreational character which may meet their needs; including books, devotional articles, scientific equipment, examination papers, musical instruments, sports outfits, and materials allowing POWs to pursue their studies or their cultural activities.

- Such shipments shall in no way free the Detaining Power from the obligations imposed upon it by virtue of the present convention. The only limits which may be placed on these shipments shall be those proposed by the Protecting Power in the interest of the prisoners themselves, by the International Committee of the Red Cross, or any other organization giving assistance to the prisoners, in respect of their own shipments only, on account of exceptional strain on transport or communications.

i. **The right to select a fellow POW to represent you**.

- In all places where there are POWs, except in those where there are officers, the prisoners shall freely elect by secret ballot every 6 months, and also in case of vacancies, prisoners' representatives entrusted with representing them before the military authorities, the Protecting Powers, the International Committee of the Red Cross, and any other organization which may assist them. These prisoners' representatives shall be eligible for reelection.

- In camps for officers and persons of equivalent status or in mixed camps, the senior officer among the POWs shall be recognized as the camp prisoners' representative. In camps for officers, he or she shall be assisted by one or more advisers chosen by the officers; in mixed camps, his or her assistants shall be chosen from among the POWs who are not officers and shall be elected by them.

- Officer POWs of the same nationality shall be stationed in labor camps for POWs to carry out the camp administration duties for which the POWs are responsible. These officers

may be elected as prisoners' representatives under the first paragraph of this article. In such a case, the assistants to the prisoners' representatives shall be chosen from among those POWs who are not officers.

- Every representative elected must be approved by the Detaining Power before he or she has the right to commence his or her duties. Where the Detaining Power refuses to approve a POW elected by his or her fellow POWs, it must inform the Protecting Power of the reason for such refusal.

- In all cases, the prisoners' representative must have the same nationality, language, and customs as the POWs whom he or she represents. Thus, POWs distributed in different sections of a camp, according to their nationality, language or customs shall have for each section their own prisoners' representative in accordance with the foregoing paragraphs.

j. **The right to receive humane treatment**.

- Prisoners of war must at all times be humanely treated. Any unlawful act or omission by the Detaining Power causing death or seriously endangering the health of a POW in its custody is prohibited and will be regarded as a serious breach of the present convention. In particular, no POW may be subjected to physical mutilation or to medical or scientific experiments of any kind, which are not justified by the medical, dental, or hospital treatment of the prisoner concerned and carried out in his or her interest.

k. **The right to have a copy of the Geneva Convention and its annexes, including any special agreements, posted where it can be read. The Geneva Convention and its annexes, etc., must be written in the proper language and available upon request**.

- Every POW camp shall be put under the immediate authority of a responsible commissioned officer belonging to the regular Armed Forces of the Detaining Power. Such officer shall have in his or her possession a copy of the present convention. He or she shall ensure that its provisions are known to the camp staff and the guard and shall be responsible, under the direction of his government, for its application.

- In every camp, the text of the present convention and its annexes and the contents of any special agreement provided for in Article 6, shall be posted, in the prisoners' own language, in places where all may read them. Copies shall be supplied, on request, to the prisoners who cannot have access to the copy which has been posted**.**

l. **Explain the right to have a copy of all camp regulations, notices, orders, and publications about POW conduct posted where it can be read. Regulations, notices, etc., must be in the proper language for POWs to understand and available upon request.**

- Regulations, orders, notices and publications of every kind relating to the conduct of POWs shall be issued to them in a language which they understand. Such regulations, orders, and publications shall be posted in the manner described above and copies shall be handed to the

prisoners' representative. Every order and command addressed to POWs individually must likewise be given in a language which they understand**.**

5. **RESPONSIBILITIES OF A POW.**

Every prisoner of war, when questioned on the subject, is bound to give only four items of information.

(1) Name
(2) Rank
(3) Service number (social security number)
(4) Date of birth

If one willfully infringes this rule, they may render themselves liable to a restriction of the privileges accorded to ones rank or status.

Lawful obedience to rules and regulations.

Obey lawful rules and regulations.

Responsibility to perform paid labor. (As required).

- Labor that is not military
- Not degrading
- Not dangerous
- Not unhealthy

Responsibility to maintain military discipline, courtesy, and rendering of honors.

- Maintain military discipline in accordance with the rules and regulations governing the armed forces.

- Maintain courtesy and honors to all officers regardless of the branch of the service (U.S. or allied nation).

REFERENCES

NAVMC 2681 Code of the US Fighting Force
MCRP 5-12 .1A The Law of Land Warfare

Code of Conduct and the Rights of POW's Review

1. Define the purpose of the Code of Conduct.

2. Explain the six articles of the code of conduct.

3. Explain the origin and purpose of POW rights.

4. Explain the responsibilities of a POW.

5. Are medical personnel considered POW's or retained personnel under the Articles of the Code of Conduct?

UNITED STATES MARINE CORPS

FIELD MEDICAL TRAINING BATTALION
BOX 555243
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FMST 108

Recognize Combat Stress Disorders

TERMINAL LEARNING OBJECTIVE

1. Given personnel in any environment, **Manage Combat and Operational Stress** to strengthen, mitigate, identify, treat, and reintegrate personnel. (8404-COSC-2001)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **define the functions of OSCAR Team Members**, within 80% accuracy, per MCO 5351.1. (8404-COSC-2001a)

2. Without the aid of reference, given a description or list, **identify sources of Combat Stress and Operational Stress**, within 80% accuracy, per MCO 5351.1. (8404-COSC-2001b)

3. Without the aid of reference, given a description or list**, list the five core leader values of Combat Operational Stress Control**, within 80% accuracy per MCO 5351.1. (8404-COSC-2001c)

4. Without the aid of reference, given a description or list, **describe the four stress Zones that make up the Combat Operational Stress Control Continuum**, within 80% accuracy, per MCO 5351.1. (8404-COSC-2001d)

5. Without the aid of reference, given a description or list**, describe how to use the Combat Operational Stress Flow Chart**, within 80% accuracy, per MCO 5351.1. (8404-COSC-2001e)

6. Without the aid of reference, given a description or list, **define the four Primary Aid aspects of Combat Operational Stress First Aid**, within 80% accuracy, per MCO 5351.1. (8404-COSC-2001f)

7. Without the aid of reference, given a description or list, **define the three Secondary Aid aspects of Combat Operational First Aid**, within 80% accuracy, per MCO 5351.1. (8404-COSC-2001g)

8. Without the aid of referencs, given a description or list, **define the importance of an After Action Review**, to reduce further injury or illness, per MCO 5351.1. (8404-COSC-2001h)

1. **FUNCTIONS OF OSCAR TEAM MEMBERS** OSCAR teams are formed at the battalion level (units of app. 1000 Marines) across the Corps. Each unit trains a team of approximately 50 OSCAR mentors, derived from both the battalion headquarters unit and subordinate units. It is also supported by extenders and mental health professionals (MHPs) from internal or local sources, as available. The team's task is to help the unit commander prevent, identify, and manage COS problems as early as possible. The member of the OSCAR team are:

a. **Mentors** – consist of selected Marines with combat zone deployment experience, who are strong role models and are willing to assist and mentor other Marines with COS problems. The battalion headquarters element would typically assign its executive officer, sergeant major, and selected Marines to serve as OSCAR mentors; likewise, each company in the battalion would typically assign its executive officer, first sergeant, and selected Marines. Mentors are responsible for identifying, supporting, and advising Marines with COS issues as early as possible, providing leadership through example and referring them to OSCAR extenders and MHPs when problems persist. The reason for putting Marines on the front line is not only to empower leaders to help Marines recognize and recover from stress problems and get back in the fight more quickly, but also to free up MHPs from taking care of cases not requiring mental health treatment. Putting Marines on the front line also reduces stigma by giving Marines initial contacts they can trust—their brothers in arms who have "been there and done that."

b. **Extenders** - consist of medical staff, chaplains, licensed counselors, corpsmen, religious program specialists, and other professionals who "extend" the capabilities of OSCAR MHPs by bridging the gap between MHPs and Marine mentors. The individuals assigned or invited to be part of the battalion team will depend on the type of unit and local support available. For example, OSCAR teams in infantry battalions have battalion medical and religious ministry assets plus company corpsmen organic to them; these would typically be assigned to participate with their respective battalion OSCAR teams. Most supporting establishment commands, however, do not have such assets organic to their command and must rely on external resources, such as installation medical and religious ministry services, for support. Some remote commands must rely on other military services or civilian resources to assist. These battalions would be advised to invite providers with whom they have or would like to have a good working relationship to be part of their OSCAR team to facilitate familiarization and mutual understanding of missions. Extenders provide professional support within their respective scopes of practice. Examples include medical treatment of sleep problems, anxiety, depression, counseling for marital problems, anger management, burnout, loss, inner conflict, anxiety, depression, and other non-complicated mental health issues commonly addressed by primary care physicians, chaplains, and licensed counselors. Corpsmen and religious support specialists have limited specialty skills as extenders but function as peer mentors alongside their Marines.

c. **Mental Health Personnel** - consists of psychiatrists, psychologists, mental health nurse practitioners, and licensed clinical social workers embedded in operational units to provide formal mental health services. The individuals assigned or invited to be part of the battalion team also depend on the type of unit and support available. Each infantry division generally includes three mental health professionals and four psychological technicians on their table of organization. Each infantry regiment typically includes two mental health professionals and two

psychological technicians, all available on a shared basis to their respective battalions. However, outside of the infantry divisions, commands must generally rely on external mental health resources, such as installation mental health services, for support. Some remote commands must rely on other military services or civilian resources to assist their teams. In such cases, these commands would be advised to invite external MHPs with whom they have or would like to have a good working relationship to be an informal part of their OSCAR team and facilitate familiarization and mutual understanding of missions. Mental health personnel assigned to operational units provide not only direct clinical services, but also spend a significant portion of their time in the field with the Marines they support during training and deployment.

(1) Organic OSCAR mental health personnel augment the following capabilities for their commanders:

(a) Psychological health surveillance of unit members and units as a whole.

(b) Preventive psychological health training. Early interventions to promote recovery for individuals and units from life-threat or losses.

(c) Clinical mental health services in forward operational environments where such services would be otherwise unavailable.

(d) Professional coordination of comprehensive mental health care services in garrison before and after deployments to ensure readiness.

(e) Clinical mental health services in garrison as an adjunct to those provided by medical treatment facilities.

(f) Psychological health support for medical and religious ministry personnel who are at high risk for stress-related problems.

(2) The OSCAR mental health personnel also support their command's psychological health through the following specific functions and tasks:

(a) Advise commanders and other members of the chain of command on their leadership of psychological health, resilience, and COSC.

(b) Become known to their Marines and trusted by them through repeated contact and the sharing of adversity.

(c) Learn as much as possible about the stressors their Marines face, how they normally cope with stressors, and how Marine leaders manage and mitigate stressors.

(d) Educate and train Marines and Marine leaders in evidence based methods for preventing, identifying, and managing adverse stress reactions.

(e) Consult with primary care medical officers and corpsmen on the management of adverse stress reactions that require further care.

(f) Consult with Marine Corps chaplains regarding their stress management functions.

(g) Consult with military leaders on the management of unit-level stress challenges.

(h) Work closely with their command element, maintaining an awareness of ongoing operations and paying particular attention to events and operations likely to generate COS casualties.

(3) To be effective, the OSCAR MHPs cannot retreat to a familiar clinical setting surrounded by medical and mental health colleagues. The OSCAR MHP must learn to be comfortable in the world of the Marine. Similarly, Marine leaders must learn to communicate with their mental health professionals, consider heir guidance, and incorporate the information and technologies they bring into the culture of the unit. Because of the shortage of mental health manpower resources, OSCAR team members must also balance the competing priorities of providing preventive services in operational or training environments with providing direct clinical care.

2. SOURCES OF COMBAT AND OPERATIONAL STRESS (COSC)

a. **Operational Stress** - defined as: Changes in physical or mental functioning or behavior resulting from the experience or consequences of military operations other than combat, during peacetime or war, and on land, at sea, or in the air.

b. **Combat Stress** – defined as: Changes in physical or mental functioning or behavior resulting from the experience of lethal force or its aftermath. These changes can be positive and adaptive or they can be negative, including distress or loss of normal functioning.

Shell shock, as combat stress was called during World War I, often was viewed as a coward's reaction to fighting. There were little or no selection processes to filter out those with psychiatric illnesses before entering the military. As a result, some mental illnesses were exacerbated or developed and led to responses as drastic as death penalties for desertion. The few men who were diagnosed with combat fatigue were evacuated home, often when it was too late for recovery. Many developed chronic psychiatric conditions. World War II saw some changes, for instance in the US, there was more pre-recruitment screening. The problem of combat stress was grudgingly accepted as a part of warfare and by the end of WWII, psychiatrists were stationed within many units. Another major change was men were no longer moved away from the front to receive treatment, except for logistical reasons or in severe cases. In Korea there was even a mobile psychiatric unit conducting "stress control operations" near the front. Male culture still had difficulty dealing with man's emotional response to war. Vietnam underlined this and despite progress, there remained little overall acknowledgement of combat stress. Many men turned to drugs such as marijuana, heroin, and alcohol or found other potentially dangerous methods to self-treat issues. The lack of engagement with such a central issue cost many men

their lives on the battle field, in conflict zones, and with post traumatic disorders ending in suicide after the war ended.

3. **FIVE COSC CORE LEADER FUNCTIONS**. Commanders and leaders will employ the five COSC core leader functions: Strengthen, Mitigate, Identify, Treat, and Reintegrate to increase individual and unit readiness. Employing the five COSC core leader functions and utilizing the Stress Continuum provides the Marine Corps framework for understanding, recognizing and dealing with combat and operational stress reactions.. Methods for incorporating the COSC core leader functions are as follows:

a. **Strengthen**. Strengthening Marines enhances resilience against combat and operational stress and aids in the prevention of stress injuries and illness. Individuals enter military service with a set of pre-existing strengths and vulnerabilities based on genetic makeup, prior life experiences, personality style, family support systems, among other factors. Commanders of military units can do much to enhance the psychological resilience of unit members and their families. Strengthening falls into three main categories: training, social/unit cohesion and leadership aligned to physical, mental, social and spiritual domains.

b. **Mitigate**. Mitigation is the use of techniques to minimize the impact of stressors that cannot be removed including balancing the need to intentionally stress Marines during training and missions with reducing stressors that are not essential to training or mission accomplishment.

c. **Identify.** Since even the best preventive efforts cannot eliminate all stress reactions and injuries that might affect occupational functioning or health, effective COSC requires continuous monitoring of stressors and stress outcomes.

(l) Leaders must know the individuals in their units, including their specific strengths and weaknesses, and the nature of the challenges they face, both in the unit and in their personal lives. Most importantly, leaders must monitor which stress zone of the Stress Continuum unit members are in on a day-to-day basis. Marines and Sailors should recognize their own stress reactions, injuries, and illnesses; and they must be able to recognize small changes in behavior that may indicate a stress reaction. Leaders must recognize when a Marine's confidence in him or herself, or his or her peers or leaders is shaken, or when units have lost effectiveness because of challenges to the unit.

(2) Stigma, particularly self-stigma, can be a barrier to acknowledging stress injuries or illness and seeking assistance. Therefore, the best and most reliable method of ensuring that everyone who needs assistance gets it is for small unit leaders to continually monitor the personal and professional performance of their subordinates, and for peers to watch out for each other.

d. **Treat.** While Marine leaders do not provide direct clinical treatment, they are responsible for leadership interventions including facilitating discussions and knowing appropriate resources, as well as referring to the appropriate level of care those affected by stress. The tools available for the treatment of stress reactions include: self-aid, peer-to-peer, support from a Marine leader,

chaplain, corpsman, or medical officer and definitive medical or psychological treatment. Although some forms of treatment can only be delivered by trained medical or mental health providers, others require little special training and can be applied very effectively by a peer, family member, leader, or chaplain. Regardless of what level or type of treatment is available for any given Marine or Sailor, the overall responsibility for ensuring appropriate and timely care for injuries or illnesses rests with leaders and their commanders. This is done through coordination with appropriate level of care and follow-through with the Marine or Sailor and the care provider including maintenance and after-care.

e. **Reintegrate.** Commanders support Marines and Sailors during reintegration back into the force following formal mental health treatment. Reintegration is aligned to the maintenance of all Marines but includes two important factors: addressing command climate regarding stigma and establishing confidence. This includes continually monitoring fitness for duty and worldwide deployment, and mentoring the Marine during their recovery process by restoring the confidence of the stress-injured Marine, his or her peers and the unit. Reintegrating Marines preserves the investment made in the training of the individual and upholds our Core Values. Stigma is dispelled when other members of the unit see previously injured Marines return to full duty.

4. FOUR ZONES OF COMBAT AND OPERATIONAL STRESS CONTINUUM

a. The Stress Continuum (see figure 1) is a model that identifies how Sailors and Marines react under stressful situations. It is the foundation of Navy and Marine Corps efforts to promote psychological health.

b. The continuum is a color-coded map to identify behaviors that might arise from serving in combat, in dangerous peacekeeping missions and in the highly charged day-to-day work that is required of today's military. While its primary use is for individual service members, the continuum also is a valuable tool to track behaviors of military families and commands.

c. Common Behaviors of the Four Zones

(1) GREEN (READY): Not stress-free, but mastering stress with good coping skills. Ready to go!

-Remain calm, steady, confident
-Exhibit ethical and moral behavior
-Eat healthfully, exercise regularly and get proper sleep
-Keep a sense of humor and remain active socially, spiritually
-Use alcohol in moderation, if at all
-Get the job done and show respect for fellow warriors

(2) YELLOW (REACTING): Reacting to life's normal stressors. Mild and reversible!

-Feel anxious, fearful, sad, angry, grouchy, irritable or mean
-Cut corners on the job
-Are negative or pessimistic
-Lose interest, energy or enthusiasm
-Have trouble concentrating
-Become excessive in spending, Internet use, playing computer games, etc.

(3) ORANGE (INJURED): Stress injuries damaging the mind, body or spirit. Temporarily non-mission ready!

-Lose control of emotions or thinking
-Have nightmares, sleep problems, obsessive thinking
-Feel guilt, shame, panic or rage
-Abuse alcohol or drugs
-Change significantly in appearance or behavior
-Lose moral values

(4) RED (ILL): Stress injuries that become stress illnesses. Only diagnosed by health professionals! These are Orange Zone behaviors that persist, get worse, or get better and then come back worse. The service member cannot function properly.

(a) All medical disorders in individuals exposed to combat or other operational or traumatic stress are found in the Red Zone. These include posttraumatic stress disorder (PTSD), major depression, certain anxiety disorders and substance abuse disorders. The distinction between Orange Zone stress injury and Red Zone stress illness can only be made by a medical or mental-health professional.

(b) Red Zone illnesses are very treatable. The majority of Sailors and Marines who are treated finish their tours of duty and many continue to serve. Early treatment is the key.

d. Resilience to stress is the underlying theme of the continuum— building it, maintaining it and restoring it when necessary. The more resilience shown by a service member the easier it is to stay in the Green Zone.

e. The American Psychological Association has identified some individual attributes, or personal skills, that may contribute to an individual's ability to cope with life stressors. These attributes include:

- The capacity to make realistic plans and take steps to carry them out. (Judgment, and Decisiveness)
- A positive view of yourself and confidence in your strengths and abilities. (Bearing)
- Skills in communication and problem solving.(Tact, Knowledge, and Initiative)
- The capacity to manage strong feelings and impulses. (Dependability, Tact, Selflessness)

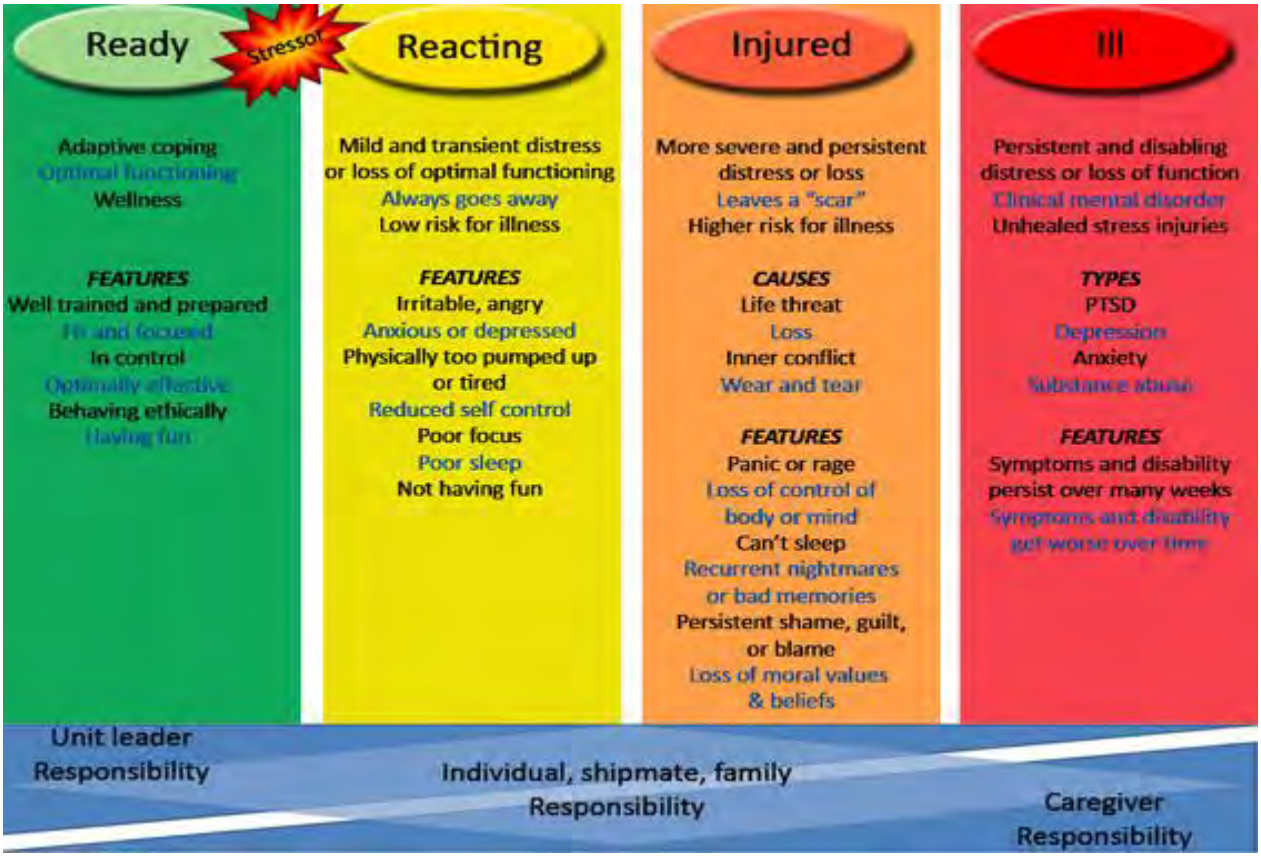

Figure 1: Combat and Operational Stress Continuum

5. **COSC Decision Flowchart** (see figure 2) is a simple tool for leaders to determine where a Marine falls on the stress continuum and shows what to do to mitigate or, if necessary, treat the injury or illness. The Decision Flowchart is applicable at all stages of the deployment cycle. The lists of stress symptoms on the far right, highlighted by the Yellow, Orange, and Red brackets, give the leader or Marine some indications of typical problems at each level of function. The diamonds in the middle specify decisions needed to determine the severity of the stress problem, and the boxes on the left indicate what action needs to be taken for each level of severity. It can also be used by individual Marines to evaluate themselves or their buddies who have symptoms of deployment-related stress. This is used by leaders to determine what actions should be taken with Marines experiencing combat stress problems.

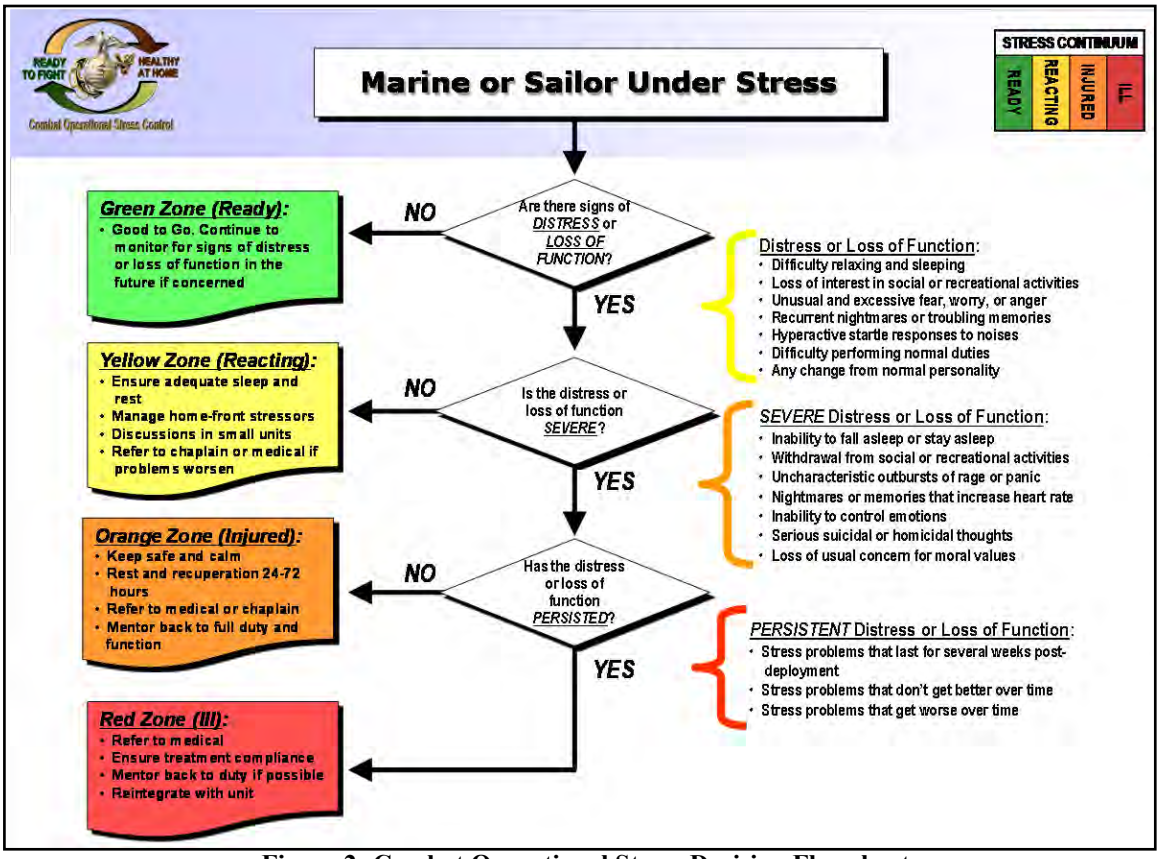

Figure 2: Combat Operational Stress Decision Flowchart

6. **PRIMARY AID ASPECTS** (See figure 3)

a. Check to see if action is required. This is the initial estimation of the reaction and includes asking the Marine if they need assistance. Those who are injured by stress may not be aware of their reaction, so it might be necessary for someone else to ask. In addition, stigma can be an obstacle to asking for assistance. Stress zones and needs change over time and risks from stress injuries may last a long time after the event, so this is a step that is applicable away from immediate danger.

b. Coordinate the next steps. This could include calling someone over to assist or informing those who need to know. It is also the first step to obtaining other needed sources of support or care.

c. Seek cover and get to safety. Get out of the line of fire, if needed, or away from the stressor. This may be necessary if a person in an immediate life-threatening situation is impaired in decision making or has frozen or panicked. This sense of "freezing" may put themselves or other people in danger. They may require someone else to make decisions on their behalf until they can recover.

d. Calm the Marine. The Marine will refocus more quickly if they are calm. Also, the longer stress hormones remain elevated, the more potential damage there is to the brain. Lowering stress hormone levels decreases the risk of long-term stress injury. The Marine providing

assistance should create an environment of safety to promote recovery. Methods of calming include tactical breathing and progressive muscle relaxation.

7. **SECONDARY AID ASPECTS** (See figure 3)

a. Connect with the Marine. Bring the Marine back to reality in order to obtain mission focus. This also prevents the sense of isolation that allows negative feelings to continue and hamper future recovery. The goal is to avoid alienation that can cause a loss of trust, energy and self-confidence. Leaders can utilize AAR as supporting tools after the event.

b. Restore competence and ability. Stress injury or illness causes loss or a change in normal functioning and abilities. At a minimum, this step should enable the Marine to move under their own power and care for themselves safely. Higher-level skills can be exercised and restored once the immediate issue is addressed.

c. Restore confidence. Allow the Marine to resume the mission when they are ready to do so. Encourage the Marine in order to restore his or her sense of self-confidence; these are critical steps that will help ensure that the Marine will be a valuable team member in the future.

d. Secondary aid may occur quickly during the event, but may also occur in more detail over time if required.

Figure 3. 7 C's of Stress First Aid

8. **AFTER ACTION REVIEWS**

Every leader will ensure their Marines are afforded the opportunity to discuss with their peers and immediate supervisors, in an atmosphere of trust and honesty, perceptions and reactions after significant operational or training events. Such discussions promote recovery from combat/operational stress reactions and can prevent them from developing into long-term issues. AAR is a tool for small unit leaders to identify Marines who might be in need of individual support.

AAR Goals

(1) Reviewing the facts, as best known to members of the small unit, surrounding operational or training events particularly where there have been casualties or loss of life. This promotes a common perception and understanding of the action and facilitates the sharing of lessons learned.

(2) Encouraging (but not forcing) Marines to share their personal experiences with each other of the action under discussion, including what they believe they did well and what they could improve.

(3) Relieving, as much as possible, inappropriate or excessive self-blame or anger among unit Marines for unavoidable failures.

(5) Establishing common perceptions among unit members of the meaning of what happened, and what purpose was served by the unit's actions and sacrifices.

(6) Restoring any damaged confidence among unit members in their leaders, equipment, peers or themselves through honestly and tactfully evaluating events and what will be done to prevent similar situations in the future, where possible.

(7) Identifying Marines according to the Stress Continuum, including those who show signs of a stress injury, so progress toward healing and recovery can be monitored, and a referral to resources can be initiated if required.

AAR Procedures

(1) Conduct AAR at the small unit level, such as squads or other similarly sized team.

(2) Facilitated by the small unit's senior leaders, such as a squad leader, who should be OSCAR trained.

(3) Conduct AAR within 72 hours of each action, but not before post-action rest and replenishment.

(4) No one outside the small unit should be present during an AAR, other than members of the immediate chain of command who were involved in the action or the unit chaplain if requested.

(5) All Marines should be required to attend every AAR their unit conducts, but they should not be required to speak if they choose not to.

(6) Each AAR should take between 15 to 60 minutes to conduct; but be flexible, do not rush or artificially prolong it.

AAR Responsibilities. Leaders are responsible for conducting AAR. The following considerations apply:

(1) Listen to your Marines and try to understand their experiences and perceptions.

(2) Provide positive mentoring by honestly sharing experiences with subordinates, in a calm and self-controlled manner.

(3) Assist junior Marines make sense out of what happened, including why sacrifices were made, and what good came from their efforts.

(4) If a Marine leader feels unable to conduct an AAR in their unit for whatever reason, he or she should discuss this with their most trusted superior. After the most stressful operational events, then an AAR may be most difficult to conduct, is exactly when Marines need it most.

(5) Memorials - In addition to the critical role of memorials as tribute and remembrance of the fallen, memorials are important events for identifying stress reactions, honoring sacrifice and core values, building unit cohesion, and supporting Marines and their families.

REFERENCES:
MCBUL 6490
MCO 5351.1

Recognize Combat Stress Disorders Review

1. Define operational and combat stress?

2. Define the “functions”of the OSCAR team members?

3. What are the five COSC core leadership functions?

4. Explain the four zones within the Operational Stress continuum?

5. What are the seven C’s of stress first aid?

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 109

M16/M4 SERVICE RIFLE FAMILIARIZATION

TERMINAL LEARNING OBJECTIVE.

1. Given a service rifle/Infantry Automatic Rifle (IAR), sling, magazines, cleaning gear, individual field equipment, and ammunition, **perform weapons handling procedures** with a service rifle/Infantry Automatic Rifle (IAR) in accordance with the four safety rules. (HSS-MCCS-2004)

2. Given a service rifle and cleaning gear, **maintain a service rifle** to ensure the weapon is complete, clean, and serviceable. (HSS-MCCS-2005)

3. Given a service rifle that has stopped firing and ammunition, **perform corrective action with a service rifle** to return the weapon to service. (HSS-MCCS-2006)

ENABLING LEARNING OBJECTIVES.

1. Without the aid of reference, given a list of choices, **identify the characteristics of the service carbine**, within 80 percent accuracy, per MCRP 3-01A. (HSS-MCCS-2004a)

2. Without the aid of reference, given a list of choices, **identify the four safety rules** for the service carbine, within 80 percent accuracy, per MCRP 3-01A. (HSS-MCCS-2004c)

3. Without the aid of reference, given a list of choices, **identify the components of the service carbine**, within 80 percent accuracy, per MCRP 3-01A. (HSS-MCCS-2004b)

4. Without the aid of reference, given a list of choices**, identify the weapon conditions for the service carbine**, within 80 percent accuracy, per MCRP 3-01A. (HSS-MCCS-2004d)

5. Without the aid of reference, given a list of choices, **identify the ammunition for the service carbine**, within 80 percent accuracy, per MCRP 3-01A. (HSS-MCCS-2004e)

6. Without the aid of reference, given a service carbine, **disassemble the service carbine**, to 100 percent accuracy, per MCRP 3-01A. (HSS-MCCS-2005b)

7. Without the aid of reference, given a service carbine and necessary cleaning gear, **clean the service carbine** so that it is clean, serviceable, and passes a functions check, per MCRP 3-01A.(HSS-MCCS-2005c)

8. Without the aid of reference, given a service carbine, **assemble the service carbine**, to 100 percent accuracy, per MCRP 3-01A. (HSS-MCCS-2005d)

9. Without the aid of reference, given a list of choices, describe the procedures to **perform a function check of the service carbine**, to 100 percent accuracy, per MCRP 3-01A. (HSS-MCCS-2005e)

1. **CHARACTERISTICS** The M16A4 Service rifle/M4 Service Carbine (M4 Service Carbine is the TO issue weapon for Corpsman),(see figures 1-3). They are a caliber 5.56mm, magazine-fed, gas-operated, air-cooled, shoulder-fired weapons that can be fired either in automatic three-round bursts or semiautomatic single shots as determined by the position of the selector lever.

(Figure 1. M16)

(Figure 2. M4)

M16A4		M4 Carbine
5.56 mm	*Caliber*	5.56 mm
8.79 pounds	*Weight (w/30 round magazine)*	6.9 pounds
39 5/8 inches	*Length (w/compensator)*	29.75 inches w/butt stock closed 33 inches w/butt stock open
800 rounds per minute (approximately)	*Cyclic rate of fire*	800 rounds per minute (approximately)
	Maximum effective rates of fire:	
45 RPM	*Semiautomatic*	45 RPM
90 RPM	*Burst*	90 RPM
12 – 15 RPM	*Sustained rate of fire*	12 – 15 RPM
	Maximum effective range:	
550 meters	*Individual/point targets*	500 meters
800 meters	*Area targets*	600 meters
3534 meters	*Maximum range*	3600 meters

(Figure 3, Characteristics of each service rifle)

2. SAFETY RULES

The following rules apply to all weapon systems at all times without exception.

SAFETY RULE #1 **Treat every weapon** as if it were loaded

a. Never trust your memory or make any assumptions about a weapon's safety status. Always confirm what condition your weapon is in if there is ever any doubt.
b. Check your weapon for ammunition whenever it has been out of your possession.
c. Never hand a weapon to anyone without clearing it. Clearing is a procedure for ensuring there is no ammunition in the weapon. Whenever you assume control of a weapon from someone, your first action is to clear it, even if you have witnessed its clearing.
d. Never move in front of a weapon held by someone else.
e. Never engage in or tolerate horseplay with or around weapons.

SAFETY RULE #2 **Never point a weapon** at anything you do not intend to shoot

a. Always be aware of muzzle direction and your surroundings. This ensures you will not unintentionally point your weapon at anything other than an intended target.
b. Be aware of the maximum range of your weapon. If you do not know what is beyond your vision in any unprotected direction, do not point your weapon in that direction.
c. Never allow the muzzle of your weapon to point at any part of your body.

SAFETY RULE #3 **Keep your finger straight** and off the trigger until you are ready to fire

a. Never be guilty of a negligent discharge.
b. A common reaction to a sudden shock or loss of balance while handling a weapon is an unintentional tightening of the grip. If your finger is off the trigger, you will eliminate the potential for firing a shot accidentally.

SAFETY RULE #4 **Keep the weapon on safe** until you intend to fire

The SAFE position on the selector lever is a built-in feature that has only one function. That function is to prevent inadvertent firing of the rifle.

a. When patrolling or walking it is possible for the trigger to be unintentionally depressed by objects (e.g., branches, wire, gear) encountered en route. Keeping the weapon on safe ensures the weapon will not fire if the trigger is accidentally engaged.
b. Never trust anyone else regarding a weapon's safety status.

3. **COMPONENTS** Before taking your rifle apart, you should know the nomenclature (names) of all externally visible parts. Using your own rifle, find and learn the nomenclature of all outside parts. Then, as you disassemble the rifle, learn the nomenclature of all internal parts (see figure 4).

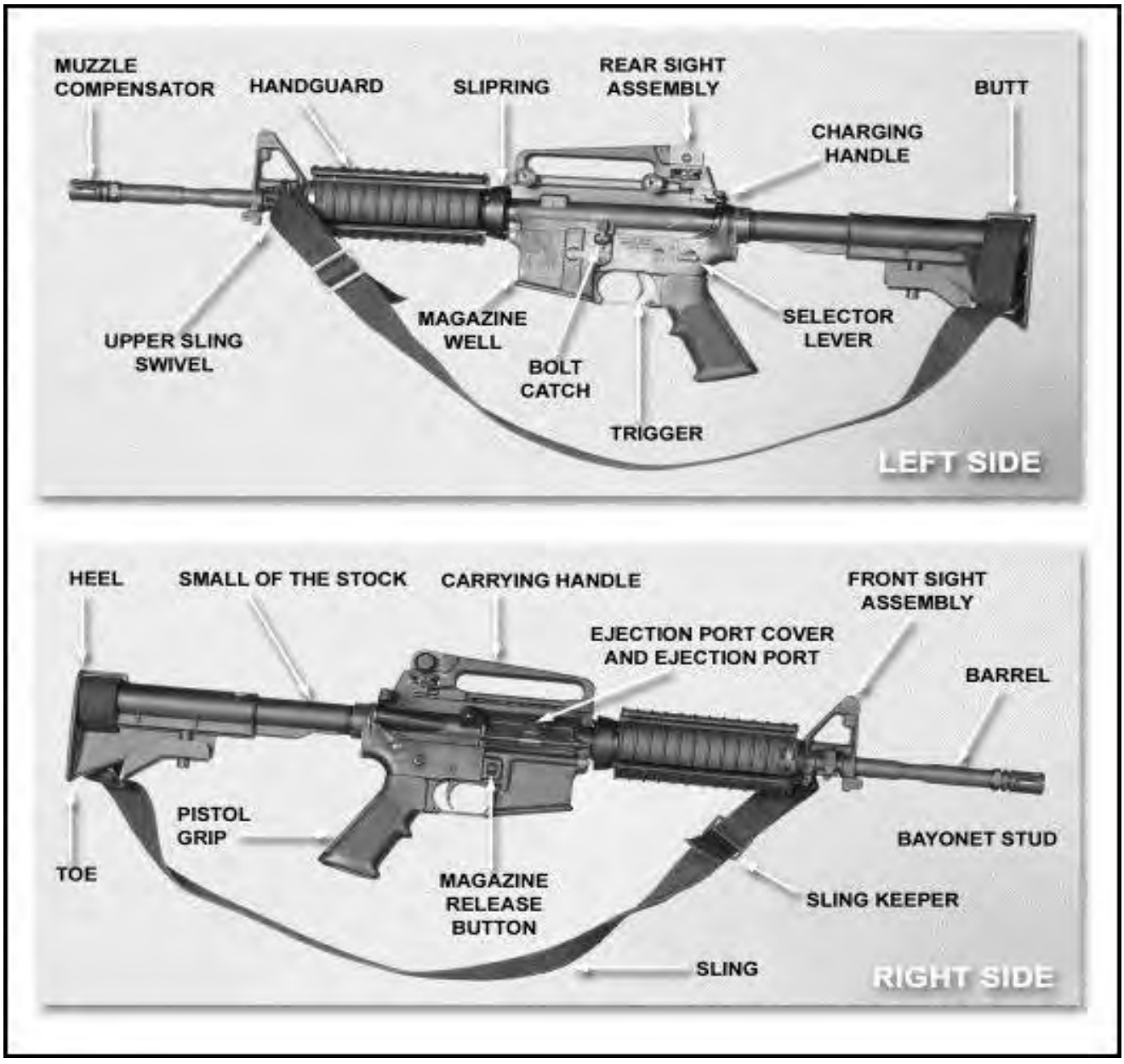

Figure 4. Components of External Parts

4. **WEAPONS CONDITIONS**

Condition Four

Magazine removed
Bolt forward
Chamber empty
Ejection port cover closed
Weapon on safe

Condition Three

Magazine inserted
Bolt forward
Chamber empty
Ejection port cover closed
Weapon on safe

Condition Two

Not applicable for the M16/M4

Condition One

Magazine inserted
Bolt forward
Round in the chamber
Ejection port cover closed
Weapon on safe

5. AMMUNITION (see figure 5)
Four types of ammunition are authorized for use with the M16/M4 service rifle: ball (M193 and M855), tracer (M196 and M856), dummy (M199), and blank (M200)

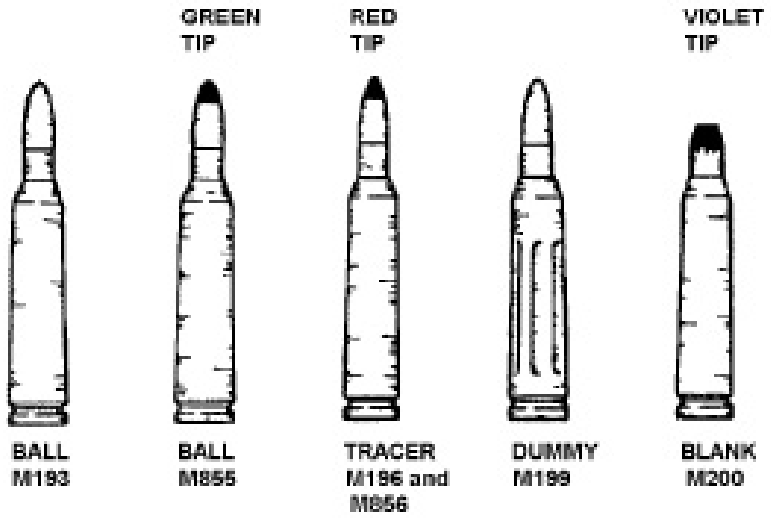

Figure 5. Ammunition

M193 Ball: This ammunition is a 5.56mm center fire cartridge with a 55-grain gilded metal jacket, lead alloy core bullet. The primer and case are waterproofed. The M193 ball ammunition has no identifying marks.

M855 Ball:
This ammunition is the primary ammunition for the M16A2 rifle. Identified by a green tip, its 5.56mm center fire cartridge has better penetration than the M193. It has a 62-grain gilded-metal jacket bullet. The rear two-thirds of the core of the projectile is lead alloy and the front one-third is a solid steel penetrator. The primer and case are waterproofed.

M196 and M856 Tracer
This ammunition has the same basic characteristics as ball ammunition. Identified by a bright red tip, its primary uses include observation firing, incendiary effect, and signaling. Tracer ammunition should be intermixed with ball ammunition in a ratio no greater than 1:1. The preferred ratio is one tracer to four balls (1:4) to prevent metal fouling in the bore.

M199 Dummy
This ammunition has six grooves along the side of the case. It contains no propellants or primer. The primer well is open to prevent damage to the firing pin. The dummy cartridge is used during dry fire and other training purposes.

M200 Blank
This ammunition has the case mouth closed with a seven-petal rosette crimp. It contains no projectile. Blank ammunition, identified by its violet tip, is used for training purposes.

6. **DISASSEMBLY:** Before you disassemble the rifle ensure the weapon is on safe (see figure 6).

Clearing the M16/M4 Carbine Service Rifle (Safety Features/Precautions)

- Attempt to point the selector lever to safe. If the weapon is not cocked, the selector lever cannot be pointed to safe.

- Remove the magazine from the weapon by grasping it with the left hand, press the magazine release button with your right index finger, and pull the magazine straight down (see figure 5).

- Lock the bolt carrier to the rear by grasping the charging handle, pressing the charging handle latch, and pull the charging handle all the way to the rear.

Figure 6. Selector Switch on Safe

- Press in on the bottom of the bolt catch with the thumb or forefinger. Allow the bolt carrier to move slowly forward until the bolt engages the bolt catch. Return the charging handle to its forward position.

– Inspect the receiver and chamber by looking through the ejection port to ensure these areas do not contain ammunition.

The rifle is clear and safe only when:

There is no round in the chamber

The magazine is out

The bolt carrier is locked to the rear

The selector lever is in the safe position

Disassembly - When the weapon is clear you can disassemble the weapon by doing the following:

Allow the bolt carrier to go forward by depressing the upper portion of the bolt catch.

Remove the sling and place the rifle on the table or a flat surface, muzzle to the left, weapon on the right side.

Remove the hand guards

Place the butt of the weapon against a flat surface and pull down on the slip ring until the lower lip of one hand guard is clear.

Pull out and down on the hand guard until the upper lip is cleared of the hand guard cap.

Repeat the same operation to remove the other side of the hand guard. Considerable pressure is required to remove the hand guard from the slip ring.

Detach the upper receiver from the lower receiver (see figure 7).

Press out the take down pin from left to right until the upper receiver swings free of the lower receiver.

Press out the receiver pivot pin.

Separate the upper and lower receiver groups.

Place the lower receiver group on the table.

Figure 7. Detach upper and lower receiver

Removing the charging handle and the bolt carrier group

Hold the upper receiver group with the muzzle and carrying handle up. Grasp the charging handle.

Press the charging handle. Latch and pull the charging handle three inches to the rear to withdraw the bolt carrier from the receiver (see figure 8).

Grasp the bolt carrier and pull it out from the receiver. When the bolt carrier is removed, the charging handle can be removed from its groove in the receiver.

Place the upper receiver on the table.

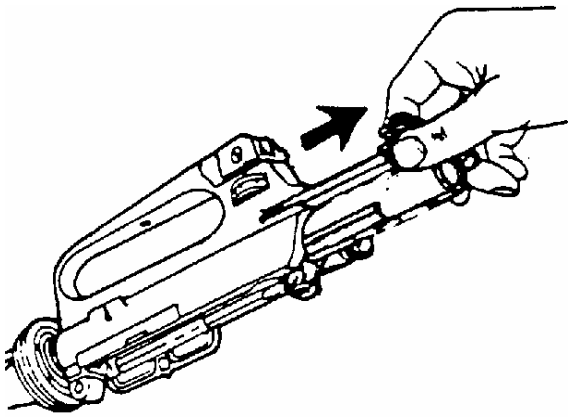

Figure 8. Removing the bolt carrier

Disassemble the bolt carrier group (see figure 9)

Press out the fire-retaining pin from right to left.

Elevate the front of the bolt carrier and allow the firing pin to drop free from its recess in the bolt. Rotate the bolt until the cam pin is clear of the bolt carrier key and remove the cam pin by rotating the head 90 degrees (1/4 turn) in either direction. Lift out of well in the bolt and bolt carrier. After the cam pin is removed, the bolt can be removed from its recess in the bolt carrier and disassembly of the bolt carrier group is complete.

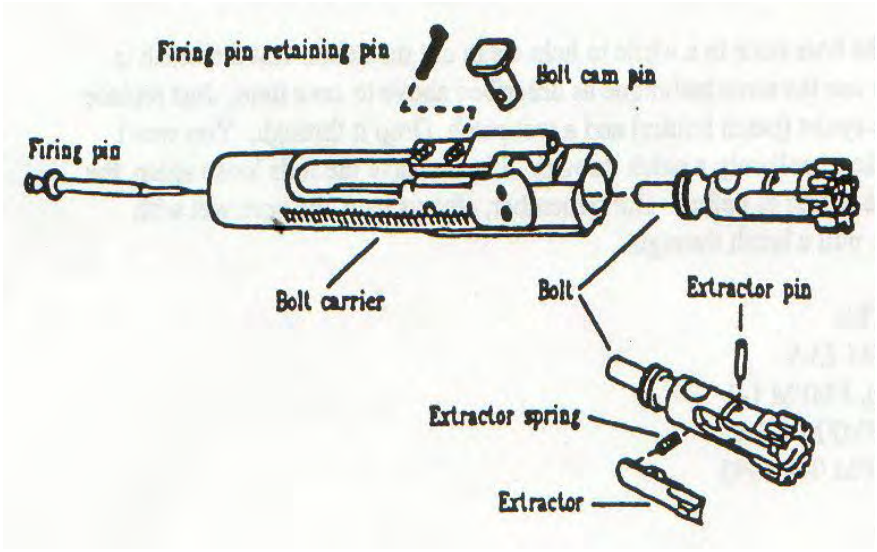

Figure 9. Bolt Carrier Group

Remove the buffer assembly

Push down on the buffer retainer. Allow the buffer assembly to move forward slowly until it is clear of the buffer retainer. Depress the hammer to the rear (downward) to allow the buffer assembly to clear the hammer. Remove the buffer assembly and the action spring.

7. CLEAN THE SERVICE RIFLE

Normal care and cleaning will result in proper functioning of all parts of the weapon. Improper maintenance causes stoppages and malfunctions. Only "issued" cleaning materials should be used. These cleaning materials are carried in the compartment provided in the stock of the weapon on the M16 or in the cleaning kit for the M4 Carbine. Do not use any abrasive material to clean the rifle. Cleaner Lubricant and Preservative (CLP) is the only authorized lubricant for the M16/M4 Carbine rifle.

Cleaning and lubrication of the upper receiver

Clean the upper receiver until free of powder.

After cleaning, coat the interior surfaces of the upper receiver with CLP. Pay particular attention to shiny surfaces which indicate areas of friction.

Cleaning and lubrication of the barrel

Attach a bore brush to the cleaning rod, dip it in CLP, and brush the bore thoroughly.

Brush from the chamber to the muzzle using straight-through strokes.

Push the brush through the bore until it extends beyond the muzzle compensator.

Continue this process until the bore is free of carbon and fouling (never reverse the direction of the brush while in the bore).

Remove the brush from the cleaning rod and dry the bore with clean patches.

Do NOT attempt to retract the patch until it has been pushed all the way out of the muzzle compensator.

CAUTION: The cleaning rod is to be supported by hand, one section at a time, to prevent flexing and damage to the bore.

Cleaning the chamber

Attach the chamber-cleaning brush to a section of the cleaning rod.

Dip it in CLP, and insert it in the chamber.

Scrub in a circular motion.

Remove the brush and dry the chamber thoroughly with clean patches.

Clean the locking lugs in the barrel extension, using a small bristle brush dipped in CLP to remove all carbon deposits.

Clean the protruding exterior of the gas tube in the receiver with the bore brush attached to a section of the cleaning rod.

After cleaning, lubricate the bore and locking lugs in the barrel extension by applying a light coat of CLP to prevent corrosion and pitting. If the hand guards have been removed, rub a light coat of CLP on the surface of the barrel.

Place one or two drops of CLP on the front sight post.

Cleaning and lubrication of the bolt carrier group

Thoroughly clean all parts with a patch or an all-purpose brush dipped in CLP.

Clean the locking lugs of the bolt, using an all purpose brush and CLP.

Ensure that all carbon and metal filings are removed; then wipe it clean with dry patches and lubricate lightly.

Use an all-purpose brush dipped in CLP to scrub the extractor to remove carbon and metal filings; also clean the firing pin recess and the firing pin.

When dry and before final assembly, apply a coat of CLP to the bolt body, rings and carrier key.

When bolt carrier group is reassembled, apply a liberal amount of CLP to all exterior surfaces with particular emphasis to the friction points (i.e., rails and cam area). Put one drop of CLP in the cam pin track and two drops in the gas ports.

Cleaning and lubrication of the lower receiver group

Wipe any particles of dirt from the trigger mechanism with a clean patch or brush and place a drop of CLP on each of the pins for lubrication. Components of the lower receiver group can be cleaned with CLP and a brush.

Use a scrubbing action to remove all carbon residue and foreign material and then drain the CLP from lower receiver and wipe dry.

Cleaning and lubrication of the magazine

Disassemble the magazine, being careful not to stretch or bend the spring.

Scrub the inside of the magazine with a bristle brush, dipped in CLP, and wipe it dry.

The magazine is made of aluminum and does not need any lubrication.

Scrub the spring clean of any foreign material using an all-purpose brush dipped in CLP.

Wipe dry and apply a very light coat of CLP to the spring.

8. ASSEMBLY OF THE Ml6/M4 CARBINE RIFLE

Lower receiver group assembly

Press hammer to the rear (downward).

Insert the buffer assembly into the recess in the stock of the weapon.

Depress the buffer retainer so that the buffer assembly will insert into the recess completely.

Release the pin so the buffer assembly is locked into place.

Set the bolt carrier group down on the table.

Bolt carrier group assembly

Insert the bolt through the front end of the carrier with the extractor facing at the 11 o'clock position.

Insert the cam pin into the carrier and rotate it ¼ turn.

Insert the firing pin through the rear of the carrier and let it drop into the recess for the firing pin.

Insert the firing pin retainer pin into the carrier from left to right.

Set the bolt carrier group down on the table.

Upper receiver group and charging handle assembly

Replace the charging handle by placing the charging handle inside the upper receiver. This is done by lining up the grooves on the charging handle with the slots in the upper receiver and pushing it in about one inch. Then, insert the bolt carrier group, with the carrier key resting in the charging handle, into the upper receiver until they lock into place.

Assembly of major parts

Align the upper receiver with the lower receiver together, push in the pivot, and take down pins to lock the receivers together.

Insert the top of each hand guard cap and pull down on the slip ring so the bottom lip of the hand guard will slip in and lock in place when you release the slip ring.

Lock the bolt to the rear by pulling on the charging handle and pressing the bolt catch and letting the carrier go forward slowly until the bolt catch engages the bolt carrier group.

Return the charging handle to the original position. Place the selector lever on safe.

Replace the sling on the weapon.

9. **FUNCTION CHECK** A function check of the rifle consists of checking the operation of the rifle while the selector lever is in each position; Safe, Semi, and Burst

    1. Pull the charging handle to the rear and release
    2. Place selector lever on SAFE
    3. Pull trigger – Hammer should not fall
    4. Place selector lever on SEMI
    5. Pull the trigger and hold to the rear – Hammer should fall
    6. Pull the charging handle to the rear and release
    7. Release trigger and pull to the rear again – Hammer should fall

    b. Place selector lever on BURST

    1. Pull charging handle to the rear and release
    2. Pull trigger and hold to the rear – Hammer should fall
    3. Pull charging handle to the rear three times and release
    4. Release the trigger and pull again – Hammer should fall

10. **WEAPONS TRANSPORTS** Transport carries are used when no immediate threat is present. They are also beneficial when both hands are needed.

Strong Side Sling Arms (see figure 10)

a. Release the pistol grip of the rifle
b. Lower the butt stock of the rifle and bring the rifle to a vertical position
c. With the right hand, grasp the sling above the left forearm.
d. Guide the rifle around the right shoulder with the left hand and extend the right arm through the sling
e. Place the sling on the right shoulder and apply downward pressure on the sling with the right hand to stabilize the rifle on the shoulder.
f. Release the hand guard

Figure 10 Strong Side Sling Arms

Weak Side Sling Arms (Inclement Weather) (see figure 11)

a. Release the pistol grip of the rifle
b. Lower the butt stock of the rifle and bring the rifle to a vertical position
c. Rotate the rifle outboard until the pistol grip is pointing toward the body
d. Reach over the left forearm and grasp the sling with the right hand.
e. Rotate the muzzle down with the left hand while sliding the right hand up the sling. Place the sling on the left shoulder
f. Grasp the sling with the left hand and apply downward pressure to stabilize the rifle on the shoulder.
g. Release the hand guard

Figure 11 Weak Side Sling Arms

Cross Body Sling Arms

The cross body transport is used when both hands are required for work, such as digging a fighting hole. It is employed with the web sling. The rifle is slung across the back with the muzzle up or down. Normally, the weapon will be carried with the muzzle down to prevent pointing the muzzle in an unsafe direction, unless the situation dictates otherwise. To assume this transport

a. Muzzle Down (Weak Side) (see figure 12)

1) With your right hand, grasp the sling.
2) With your left hand, grasp the hand guards.
3) Pull up on the rifle with both hands.
4) Slide the sling over your head.
5) Position the rifle so it is comfortable across your back.

Figure 12 Cross Body Muzzle Down

b. Muzzle Up (Strong Side) (see figure 13)

1) With your left hand, grasp the sling.
2) With your right hand, grasp the pistol grip.
3) Pull up on the rifle with both hands.
4) Slide the sling over your head.
5) Position the rifle so it is comfortable across your back

Figure 13 Cross Body Muzzle Up

REFERENCES
MCO 3574.2K

M16/M4 Review

1. Describe the characteristics of the M16/M4 Service Rifle.

2. Describe the difference between weapons condition 3 and condition 1.

3. List the differences between the M16 and the M4 Carbine.

4. What product is used to clean the service rifle?

NOTE: The following questions are offered for review purposes. This is NOT intended as a sole source of test preparation. Remember all test questions are based on an ELO and any ELO can be used to create a test question.

1. A MEF is commanded by what ranking officer?
2. What year was the Marine Corps founded?
3. What are the characteristics of weapon condition four of the M16/ M4 service rifle?
4. What is combat stress?
5. When was the Code of Conduct promulgated?
6. On which side of the collar, right or left, is the rank insignia worn?
7. Who is the most highly decorated Marine in history?
8. What pre-deployment steps can be taken to prevent combat stress?
9. What is the maximum effective rate of fire for a semiautomatic service rifle?
10. If a person has more than one warfare device, how far apart are they worn on the MCCUU?
11. Commanders of combatant commands come under which chain of command?
12. What are the four core elements of a MAGTF?
13. When was the battle of Guadalcanal?
14. What is the maximum effective range of individual/point targets of the M4 service rifle?
15. What factors decrease the risk of combat stress?
16. Who was in the battle of Nawa?
17. What is the maximum effective range of individual/point targets of the M16 service rifle?
18. What steps can be taken during deployment to prevent combat stress?
19. Where is 2nd Marine Aircraft Wing (2nd MAW) geographically located?
20. What is the approximate size of a MEF?
21. What are the four items of information a POW is bound to give if captured?
22. A leader who avoids profane and vulgar language displays what leadership trait?
23. How far from the edge of the collar is the collar device worn?
24. An E-8 in the Marine Corps who is a technical expert is a _____.
25. Who is the most senior officer of the Marine Corps?
26. When was the Marine Corps Women's Reserve established?
27. What are the four broad categories of the Marine Corps?
28. The certainty of proper performance of duty is the definition of which Marine Corps leadership trait?
29. What are the characteristics of the M16/ M4 service rifle?

30. What personal factors increase the risk of combat stress?

31. What is the Marine Corps equivalent to a Navy Commander?

PREVENTIVE MEDICINE

PREVENTIVE MEDICINE

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
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FMST 201

Treat Dehydration Casualties

TERMINAL LEARNING OBJECTIVE

1. Given a casualty, equipment and supplies**, treat dehydration casualties** within the scope of care reducing the risk of further injury or death. (8404-MED-2017)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify the predisposing factors associated with dehydration**, within 80% accuracy, in accordance with the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2017a)

2 . Without the aid of reference, given a description or list, **identify signs and symptoms of dehydration**, within 80% accuracy, in accordance with the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2017b)

3 . Without the aid of reference, given a description or list, **identify the treatments for dehydration casualties**, within 80% accuracy, in accordance with the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2017c)

4 . Without the aid of reference, given a description or list, **identify preventive measures for dehydration**, within 80% accuracy, in accordance with the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2017d)

5 . Without the aid of reference, given a description or list, **identify the treatment of hyponatremia**, within 80% accuracy, in accordance with the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2017e)

OVERVIEW

Water is the largest component of the human body, accounting for 45% to 70% of body weight. It is a fundamental component of all cells and is used to carry out normal functions in the body such as circulation of blood, respiration and elimination of waste. Water is the basis of blood, lymphatic fluids, perspiration, mucous, saliva, and digestive juices. Water lubricates the joints, moisturizes the skin, provides moisture to all of the muscles and internal organs and helps regulate body temperature.

Excessive changes in the normal body water balance resulting from either overconsumption of water or fluid loss alter homeostasis, producing specific signs and symptoms. Dehydration is loss of water and important blood salts like potassium (K+) and sodium (Na+). Vital organs such as the kidneys, brain and heart cannot function without a minimum amount of water and salt. Acute dehydration can be a serious outcome of both heat and cold exposure, but it is also seen as a dangerous side effect of diarrhea, vomiting and fever.

1. PREDISPOSING FACTORS

Key factors that contribute to dehydration include:

Alcohol consumption
Medications (especially for high blood pressure, colds or diarrhea)
Higher Body Mass Index/ Low level of physical fitness
Inadequate diet
Improper clothing
Medical Conditions (fevers, vomiting, diarrhea, heat rash or sunburn)
Age (Thermoregulatory capacity decreases with age)
Fatigue/lack of sleep
Lack of recent experience in a hot environment or improper acclimatization

2. SIGNS AND SYMPTOMS OF DEHYDRATION

Dehydration is divided into mild, moderate, and severe based upon its severity. With **mild to moderate** levels of dehydration, individuals experience fatigue, headache, decreased heat tolerance, cognitive deterioration, reduction in strength and aerobic physical capacity.

The following are the most common signs and symptoms of dehydration although each individual may experience symptoms differently:

Less frequent urination and dark color urine
Thirst
Fatigue
Light-headedness
Headaches
Dizziness
Dry skin, decreased turgor (see figure 1)
Confusion
Dry mouth and mucous membranes
Increased heart rate and breathing

Figure 1.

Casualties experiencing **severe dehydration** may exhibit any of the previous signs and symptoms along with:

Weak, rapid pulse
Cold hands or feet
Hypotension
Dysuria
Lethargy
Cyanotic lips

3. TREATMENT OF DEHYDRATION

Identify the cause and treat it. (i.e. vomiting/diarrhea)

Assess the level of dehydration based on signs or symptoms.

Re-hydrate the patient:

Oral re-hydration - drinking fluids usually relieves mild dehydration.

IV fluids - used for moderate to severe dehydration. We will discuss types of IV fluids later in the course.

4. PREVENTIVE MEASURES FOR DEHYDRATION

A common finding in dehydration casualties is that the individuals consume no fluid or low volumes of fluid during daily activities. We all lose body water daily through sweat, tears, urine, water vapor exhaled through respirations and stool. During heat exposure, body water is primarily lost as sweat. Individuals can sweat approximately 1 liter per hour. The key to avoiding the onset of heat illness is to maintain a body fluid balance and to minimize dehydration during daily activities. A key point to remember is that individuals normally do not perceive thirst until a deficit of approximately 2% body weight loss has resulted from sweating. So an individual weighing 200 pounds would not recognize being thirsty until he or she has lost 4 pounds of sweat! The following are examples of some measures to prevent dehydration:

Before activity - Drink extra fluid to produce urine output that is clear to straw color.

During activity - Take several fluid breaks per hour, drinking approximately 1 quart of fluid per hour **(do not exceed 12 canteens per day)**.

Maintain a balanced diet - You can recover fluid loss from the foods you eat as well as from the fluids you drink. Fruits and vegetables can be a significant source of fluid intake. MRE's are formulated to provide the important electrolytes while in the field.

Avoid diuretic beverages - minimize consumption of alcohol, coffee, tea and carbonated beverages with caffeine.

Educate troops - education of troops is the key to prevention. There are many myths regarding hydration handed down from Marine to Marine. You need to stress that once troops are properly acclimatized to hot conditions, it is necessary to continue to properly hydrate. Hydration is a daily requirement. Just because they drank enough water yesterday does not

decrease their need for today. Troops should not use salt tablets to assist with dehydration unless directed to by a medical officer.

5. HYPONATREMIA

Exertional hyponatremia and water intoxication can occur when sodium and water loss in sweat results in dehydration and sodium depletion. Low sodium concentration disturbs the osmotic balance across the blood-brain barrier resulting in a rapid influx of water into the brain, which in turn causes cerebral edema. As with similar signs and symptoms of intracranial pressure (ICP) in head trauma, a progression of neurologic symptoms with hyponatremia will occur, such as:

Headache

Malaise

Nausea

Confusion/mental status changes

Seizures

Coma

Permanent brain damage

Death

Hyponatremia is typically seen in individuals during prolonged activity in hot environments, drinking water that exceeds sweat rate, failing to replace sodium loss from sweat. When trying to prevent dehydration, the casualty overhydrates solely with water creating an over dilution of sodium in the blood. Typically, these casualties have not consumed electrolyte drinks or have consumed energy food supplements containing no salt or in quantities insufficient to balance the loss of sodium in sweat.

Risk factors that may predispose a person to hyponatremia are:

Exercise duration of greater than 4 hours or slow running/exercise pace

Low body weight (especially females)

Overhydration

Nonsteroidal anti-inflammatory drugs

Extreme hot or cold environments

The first step in treatment is recognizing the disorder and determining the severity. Mild symptoms should be managed by observing the patient and waiting for normal diuresis of excess fluid. Symptomatic patients should be placed in an upright position to maintain their airway and minimize any positional effect on ICP. Treatment of hyponatremia should only be performed by a medical officer. If you suspect a casualty has hyponatremia, TACEVAC as soon as possible.

Prevention of hyponatremia can be accomplished by educating troops on the importance of maintaining a proper balance of fluid and electrolytes in the field. MRE's provide a proper nutritional balance of sodium and electrolytes and should be consumed in their entirety throughout training.

REFERENCE

Pre-hospital Trauma Life Support, Current Military Edition

Dehydration Review

1. List predisposing factors for dehydration.

2. List signs and symptoms of dehydration.

3. Describe how to re-hydrate an individual.

4. Describe preventive measures for dehydration casualties.

5. Define hyponatremia.

UNITED STATES MARINE CORPS

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FMST 202

Manage Environmental Heat Injuries

TERMINAL LEARNING OBJECTIVES

1. Given a casualty in any environment, **treat environmental heat injuries** to reduce the risk of further injury or death. (8404-MED-2013)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify the predisposing factors associated with heat injuries**, within 80% accuracy, per the Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2013a)

2. Without the aid of reference, given a description or list, **identify the proper treatments of heat injuries**, within 80% accuracy, per the Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2013b)

3. Without the aid of reference, given a description or list, **identify the proper methods of cooling the heat casualty**, within 80% accuracy per the Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2013c)

4. Without the aid of reference, given a description or list, **identify preventive measures for heat injuries**, within 80% accuracy, per the Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2013d)

OVERVIEW

High internal temperatures produce stress on the body, which, if not effectively counterbalanced, may result in heat injury or death. Environmental as well as physiological factors influence the body's thermal equilibrium mechanism. Heat injuries can occur anywhere and at anytime of the year, depending upon physical activity and clothing worn. However, heat injuries most frequently occur during warm weather training and operations due to exposure to high temperatures, high humidity and sunlight. Sweating increases daily water requirements as well as electrolyte replacement. Dehydration leads to added heat stress, increased susceptibility to heat injury, reduced work performance and degraded mission capability.

Body temperature is regulated by the thermoregulatory center in the hypothalamus. The hypothalamus receives input from various thermal receptors located throughout the body. From this input, it can then tell the body to either conserve body heat or increase heat dissipation by increasing cardiac output, respiratory rate, vasodilatation and perspiration. Normal body temperature range is usually 97.6° - 99.6°F.

1. PREDISPOSING FACTORS ASSOCIATED WITH HEAT INJURIES

Chronic Conditions

Fitness and Body Mass Index - Low levels of physical fitness will reduce tolerance to heat exposure. Being physically fit provides a cardiovascular reserve to maintain cardiac output as needed to sustain thermoregulation.

Age - Thermoregulatory capacity and tolerance to heat diminish with age. However, this state can be improved by maintaining a low body weight and high level of physical fitness.

Medical Conditions - Medical conditions that can increase the risk for heat intolerance and heat illness are diabetes mellitus, thyroid disorders and renal disease. Cardiovascular disease and circulatory problems that increase cutaneous blood flow and circulatory demand are aggravated by heat exposure.

Previous History of Heat Injury - Personnel who have a history of heat injury are highly susceptible to repeated heat injury because the hypothalamus has been damaged. Even after the patient recovers, the body may not repair the hypothalamus to its former effectiveness, therefore, the patient will become more sensitive to heat stressors.

Skin Trauma - The skin is the largest organ of the body. It serves as a layer of protection, controls the invasion of microorganisms, maintains fluid balance, and helps regulate temperature. Personnel suffering from skin conditions that hamper the heat regulatory mechanism (sunburn, heat rash, windburn, and dermatologic disease) have an increased risk of heat related injuries.

Medications - The use of specific prescription or over-the-counter medications can place individuals at a greater risk for heat illness (see figure 1). Certain medications can increase metabolic heat production, suppress body cooling, reduce cardiac reserve, and alter renal electrolyte and fluid balance. Sedative and narcotic drugs will affect mental status and can affect logical reasoning and judgment, suppressing decision-making ability, when the individual is exposed to heat.

Increased Heat Production
- Thyroid hormone
- Cyclic antidepressants
- Hallucinogens (e.g. LSD)
- Cocaine
- Amphetamines

Decreased Thirst
- Haloperidol (anti-psychotic medication)
- Angiotensin-converting enzyme (ACE) inhibitors (BP medication)

Decreased Sweating
- Antihistamines (allergy medications)
- Anticholinergics
- Beta blockers (BP medication)

Increased Water Loss
- Diuretics
- Alcohol
- Nicotine

Figure 1 Medication Risk Factors

Transient Conditions

Transient conditions include those affecting individuals who travel from cooler climates and are not heat-acclimated to warmer climates. Other transient factors are common illnesses including colds, fever, vomiting and diarrhea, along with poor dietary and fluid intake.

2. **TYPES OF HEAT INJURIES**

Heat Cramps – short-term, painful muscle contractions frequently seen in the calf muscles but also in the voluntary muscles of the abdomen and extremities.

Cause – muscle fatigue, body water loss and large sodium loss. Commonly observed following prolonged physical activity in warm to hot temperatures.

Signs and Symptoms

- Muscle cramps and tenderness
- The skin is usually moist, pale and warm
- Core temperature may be normal or slightly elevated

Treatment

- Rest in a cool environment
- Prolonged stretching of the affected muscles
- Consuming oral fluids and food containing sodium (sports drinks, electrolyte pouches, salty snacks)

Heat Exhaustion - the most common heat-related disorder. A systemic reaction to prolonged heat exposure (hours to days) and is caused by excessive heat strain with inadequate water intake.

Cause – Results from cardiac output that is insufficient to support the increased circulatory load caused by competing blood flow, reduced plasma volume and sweat-induced depletion of salt and water.

Signs and Symptoms - Any of the signs and symptoms of heat cramps may accompany heat exhaustion along with:

- Frontal headache
- Decreased urine output
- Drowsiness
- Nausea
- Vomiting
- Light-headedness
- Anxiety
- Fatigue
- Irritability
- Decreased coordination
- Orthostatic hypotension
- Moist, pale, clammy skin
- Rectal temp usually below 104° F (temp not always a reliable finding)

Treatment

- Move to cooler location
- Loosen or remove clothing
- Assess vital signs
- Oral rehydration with electrolyte fluids is preferred
- IV fluids if patient is unable to consume liquids by mouth
- Active cooling by wetting head and torso with water and fanning
- Transport if patient is unconscious or does not recover rapidly

Heat Stroke - severe, life-threatening condition; **a true medical emergency**!

Cause - It is a total failure of the thermoregulatory mechanism, resulting in an excessive rise in body temperature.

Signs and Symptoms - Heatstroke is characterized by an elevated core temperature of 104° F or greater and mental status changes such as confusion, disorientation, combativeness or unconsciousness.

Classic Heatstroke - a disorder of children, the elderly and sick patients.

- Dry, hot, red skin

Exertional Heatstroke - typically seen in men age 15-45 with poor physical fitness or lack of heat acclimation who are involved short-term, strenuous physical activity during a hot humid environment.

- Sweat soaked and pale skin at the time of the collapse

Treatment

- Remove patient from the source of heat
- **Immediately** begin cooling the patient
- Maintain ABC's
- Give a 500 mL fluid challenge and reassess vital signs. Do not exceed 1-2 liters within the first hour.
- Monitor core temperature every 5 to 10 minutes. Active cooling should stop when the rectal temperature reaches 102.2° F.
- TACEVAC

3. METHODS OF COOLING THE BODY

Immersion

- Fastest method of cooling; uses conduction.
- Immerse the patient in a tub filled with ice water (usually not available in a field environment).
- Requires constant monitoring of the patient during the procedure.

Direct Cooling

- Apply ice packs on head, trunk and extremities.
- Place ice water towels/sheets over the casualty.

Room Temperature Water Misting

- Remove excess clothing and wet the patient down from head to toe.
- Provide fanning of the skin causing evaporation and convective heat loss.
- Most effective method when cold water or ice is not available.

4. PREVENTIVE MEASURES FOR HEAT INJURIES

Education of Personnel

- Most important prevention measure.

Physical Conditioning and Health

- A person's physical condition has been directly related to their susceptibility to heat related incidents

Proper Water Intake

- During hot weather operations, sweating can cause loss of body water in excess of 1 liter per hour. Personnel must be educated on drinking liberal quantities of water.
- Water alone will not prevent an individual from becoming a heat casualty. Sodium and potassium must be replaced along with water. Personnel must be educated that an adequate diet (MRE's/Messhall) is essential for proper water/electrolyte balance. (*See lesson on Dehydration Casualties*).

Proper Acclimatization

- In some areas this may take from two to four weeks (3 weeks optimal)
- Gradual introduction of physical training program

Proper Clothing

- When situation permits, wear the least allowable amount of clothing
- Avoid skin exposure to direct sunlight (burned skin is less able to regulate body temperature)
- Clothing should be loose fitting to permit air circulation, especially at the neck, arms, waist and lower legs

Work Schedules

- Tailor work schedules to the situation with careful consideration to heat/humidity index, acclimatization time, type of work and place.

5. **HEAT CONDITION FLAG WARNING SYSTEM**

Wet Bulb Globe Temperature (WBGT) Index - This index uses the combination of a dry bulb for ambient temperature, wet bulb for humidity measurement, black globe for radiant heat and air movement to provide a more accurate impact of the environmental conditions. It is NOT the same as regular air temperatures. The WBGT can be monitored hourly and the corresponding colored flag placed on a flagpole outdoors for all personnel to see. Where appropriate, adjustments of clothing, physical activity, work/rest cycles and fluid intake can then be made based on these conditions. (See figure 2)

Flag Warning System - Color-coded flags are used to help prevent heat casualties during hot weather. These flags will be prominently displayed by all commands so that every one can see them, particularly in areas where physical training takes place.

White Flag (78° F to 81.9° F) – Extremely intense physical exertion may precipitate heat injuries therefore caution must be taken.

Green Flag (82° F to 84.9° F) - heavy exercises for unacclimatized personnel will be conducted with caution and under constant supervision.

Yellow Flag (85° F to 87.9° F) - strenuous exercises, such as marching at standard cadence, will be suspended for unacclimatized troops in their first 3 weeks. Outdoor classes in the sun will be avoided.

Red Flag (88° F to 89.9° F) - all physical training will be halted for those troops who have not become thoroughly acclimatized by at least 12 weeks of living and working in the area. Those troops who are thoroughly acclimatized may carry on limited activity not to exceed 6 hours per day.

Black Flag (90° F and above) - **all** nonessential strenuous physical activity will be halted for **all** units.

Easy Work	Moderate Work	Hard Work
▪ Weapon Maintenance ▪ Walking Hard Surface at 2.5 mph, <30 lb Load ▪ Marksmanship Training ▪ Drill and Ceremony ▪ Manual of Arms	▪ Walking Loose Sand at 2.5 mph, No Load ▪ Walking Hard Surface at 3.5 mph, <40 lb Load ▪ Calisthenics ▪ Patrolling ▪ Individual Movement Techniques, i.e., Low Crawl or High Crawl ▪ Defensive Position Construction	▪ Walking Hard Surface at 3.5 mph, ≥ 40 lb Load ▪ Walking Loose Sand at 2.5 mph with Load ▪ Field Assaults

Heat Category	WBGT Index, F°	Easy Work		Moderate Work		Hard Work	
		Work/Rest (min)	*Water Intake (qt/hr)*	*Work/Rest (min)*	*Water Intake (qt/hr)*	*Work/Rest (min)*	*Water Intake (qt/hr)*
1	78° - 81.9°	NL	½	NL	¾	40/20 min	¾
2 (GREEN)	82° - 84.9°	NL	½	50/10 min	¾	30/30 min	1
3 (YELLOW)	85° - 87.9°	NL	¾	40/20 min	¾	30/30 min	1
4 (RED)	88° - 89.9°	NL	¾	30/30 min	¾	20/40 min	1
5 (BLACK)	>90°	50/10 min	1	20/40 min	1	10/50 min	1

- The work/rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hrs of work in the specified heat category. Fluid needs can vary based on individual differences (± ¼ qt/hr) and exposure to full sun or full shade (± ¼ qt/hr).
- **NL** = no limit to work time per hr.
- **Rest** = minimal physical activity (sitting or standing) accomplished in shade if possible.
- CAUTION: Hourly fluid intake should not exceed 1½ qts. Daily fluid intake should not exceed 12 qts.
- If wearing body armor, add 5°F to WBGT index in humid climates.
- If doing Easy Work and wearing NBC (MOPP 4) clothing, add 10°F to WBGT index.
- If doing Moderate or Hard Work and wearing NBC (MOPP 4) clothing, add 20°F to WBGT index.

Figure 2 WGBT Index Chart

REFERENCES

Pre-hospital Trauma Life Support, Current Military Edition

Heat Injuries Review

1. List two chronic and two transient predisposing factors associated with heat injuries.

2. List five signs or symptoms of heat exhaustion.

3. Identify the significant differences between heat stroke and heat exhaustion.

4. Name 3 ways to prevent heat injuries.

5. List and describe the three methods of cooling a patient suffering from a heat injury.

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FMST 203

Manage Environmental Cold Injuries

TERMINAL LEARNING OBJECTIVES

1. Given a casualty in an operational environment, **treat environmental cold injuries** reducing the risk of further injury or death. (8404-MED-2014)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list**, identify the risk factors associated with cold injuries**, within 80% accuracy, per the Prehospital Trauma Life Support, current military edition. (8404-MED-2014a)

2. Without the aid of reference, given a description or list, **identify proper management for cold injuries**, within 80% accuracy, per the Prehospital Trauma Life Support, current military edition. (8404-MED-2014b)

3. Without the aid of reference and given a list of symptoms, **identify the stages of hypothermia**, within 80% accuracy, per the Prehospital Trauma Life Support, current military edition. (8404-MED-2014c)

4. Without the aid of reference, given a description or list, **identify treatment for hypothermia**, per the Prehospital Trauma Life Support, current military edition. (8404-MED-2014d)

5. Without the aid of reference, given a description or list, **identify preventive measures for cold injuries**, within 80% accuracy, per the Prehospital Trauma Life Support, current military edition. (8404-MED-2014e)

OVERVIEW

Throughout history the most celebrated and extreme reports of cold related injuries have been in the field of military endeavors. From Hannibal losing half of his 46,000-man army crossing the Pyrenean Alps to frostbite and hypothermia, and the tens of thousands of cases of trench foot during World War I, we have learned much. Mild to severe cold weather conditions caused 13,970 unintentional hypothermia related deaths in the US between 1978 and 1998, with 6,857 of these deaths occurring in persons 65 years of age or older. When adjusted for age, death from hypothermia occurred approximately 2.5 times more often in men than women.

Cold injury is defined as tissue injury produced by exposure to cold. Cold itself is not the only factor in determining whether injury will occur. Duration of exposure, humidity, wind, altitude, clothing, medical conditions, behavior, and individual variability all contribute to the injury. Cold injuries can occur at nonfreezing and freezing temperatures. Trench foot, frostbite and hypothermia are the cold injuries of greatest military significance.

1. RISK FACTORS

Fatigue

Slow metabolic rate and inability to increase physical activity puts poorly conditioned personnel at increased risk. Mental and physical fatigue may cause apathy, leading to neglect of cold weather protection principles.

Age/Rank

Most cold injuries are suffered by military personnel from 17-25 years of age. The exact reason is unknown although these troops are generally “front line” troops who experience more exposure and are generally less experienced dealing with the cold. Decreased incidence of cold injury among higher ranks is a reflection of a combination of experience, less exposure and receptivity to training.

Nutrition

Poor nutrition or incomplete meals contribute to cold injury. During cold weather operations, encourage personnel to eat well-balanced meals (Meals Ready to Eat (MRE) or cold weather rations).

Discipline, Training, Experience

Well-trained and disciplined personnel are better able to care for themselves through personal hygiene, care of the feet, changing clothing and other simple, effective preventive measures. Personality and motivation are significant in determining adaptability. In intense cold, such as -25° F, the mind, as well as the body, is adversely affected. An individual becomes numb and indifferent to nonessential tasks. Essential tasks require more time to complete and are more difficult to accomplish. Lack of cold weather experience can greatly increase susceptibility.

Race/Geographic Origin

Military studies suggest that dark-skinned individuals and those from warmer regions are more susceptible to cold injuries. This relationship in race and cold is related to the greater susceptibility of pigmented cells to freeze compared with non-pigmented cells. However, with proper training and experience, a Sailor or Marine can compensate or overcome this predisposition.

Dehydration

Dehydration occurs very easily in the cold, particularly with increased physical activity. As with exposure to heat, adherence to proper fluid hydration while working in cold environments is necessary to minimize dehydration and the associated physical fatigue and cognitive changes. (*See lesson on Dehydration Casualties)*

Medication

Medications that cause vasoconstriction, increase urinary output or produce sweating should be avoided.

Tobacco/Caffeine/Alcohol

Tobacco and caffeine products (tea/coffee) cause vasoconstriction and poor circulation. Alcohol is a vasodilator, and because of its anesthetic effects, intoxicated subjects neither feel the cold nor respond to it appropriately.

Environmental Factors

Weather and temperature are predominant factors that will modify the rate of body heat loss. Freezing temperatures are not necessary for cold injury. Humidity affects the rate of freezing and nonfreezing injuries. Precipitation and wind also greatly accelerate body heat loss.

Activity

Too much or too little activity may cause or contribute to cold injuries. Over activity creates large amounts of heat loss through rapid and deep breathing, and perspiration trapped in clothing reduces its insulating value. Conversely, immobility causes decreased heat production with resultant cooling in the extremities.

2. **TYPES OF COLD INJURIES**

Chilblains (Pernio)

Small skin lesions that are itchy, tender and appear as red or purple bumps which occur on the extensor skin surface of the finger or any exposed skin surface (e.g. ears, face) from chronic cold exposure.

Cause - Cold causes constriction of the small arteries and veins in the skin and re-warming results in leakage of blood into the tissues and swelling of the skin.

Symptoms

- Usually occur several hours after exposure to cold
- Appear as nodular plaques (patches on the skin)
- Intense pruritus (itching)
- Burning paresthesia (numbness)

Treatment

- Supportive in nature
- Gradually re-warm the exposed area at room temperature
- Wash and dry the affected area
- Apply a dry, soft sterile bandage
- Symptoms usually subside with elimination of cold

Solar Keratitis (Snow Blindness)

Cause - Ultraviolet burns to the skin and eyes from exposure to dry air or bright reflections from the snow. Corneal burns can occur within an hour but do not become apparent for 6 to 12 hours.

Signs and Symptoms

- Excessive tearing
- Pain
- Redness
- Swollen eye lids
- Photophobia
- Headache
- Gritty sensation in the eyes
- Blurred vision

Treatment

- Prevent further ultraviolet exposure (sunglasses). If no sunglasses are available, patch affected eye.
- Topical ophthalmic anesthetic drops to provide symptomatic relief.
- Oral analgesics (NSAIDS, but do not put local analgesics into the eyes)
- Do NOT put steroid medications into the eye.
- TACEVAC as the operational environment permits.

Frostbite: Defined as the actual freezing of tissue fluids in the skin and subcutaneous tissues. Ice crystals form between and inside the cells with resulting tissue destruction. The most susceptible body parts are those areas farthest from the body's core, such as the hands, fingers, feet, toes and male genitalia.

Cause - Tissue does not freeze at 32°F because cells contain electrolytes that prevent tissue from freezing until skin temperature reaches approximately 28°F. When the tissue does freeze, ice crystals form and causes damage to surrounding tissue.

Depending upon wind velocity and air temperature, the exposure time necessary to produce frostbite varies from a few minutes to several hours.

Classification and Signs and Symptoms of Frostbite - frostbite is classified by depth of injury and clinical presentation. The degree of cold injury, just like burn injuries, in many cases will not be known for at least 24 to 72 hours. There are four degrees on injury based on physical findings.

First-Degree frostbite - an epidermal injury limited to skin that has brief contact with cold air or metal.

- Skin appears white or yellowish plaque at site of injury
- No blister or tissue loss
- Skin thaws quickly, feels numb and appears red with surrounding edema
- Healing occurs in 7 – 10 days

Second-Degree frostbite - involves all the epidermis and superficial dermis.

- Initially appears similar to first-degree however frozen tissues are deeper
- Tissue feels stiff to the touch, but gives way to pressure
- Thawing is rapid, results in superficial skin blister that has clear or milky fluid after several hours
- Surrounded by erythema and edema
- No permanent loss of tissue
- Healing occurs in 3 to 4 weeks

Third-Degree frostbite - involves the epidermis and dermis layers.

- Frozen skin is stiff with restricted mobility
- After tissue thaws, skin swells leaving blood-filled blister, indicating vascular trauma to deep tissue (hemorrhagic bulla)
- Skin loss occurs slowly leading to mummification and sloughing of tissue
- Healing is slow

Fourth-Degree frostbite – involves full thickness frozen tissue completely through dermis with muscle and bone involvement.

- No mobility to frozen tissue and only passive movement when thawed
- Poor skin perfusion
- Blisters and edema do NOT develop; will see early signs of necrotic tissue
- Slow mummification process will occur along with sloughing of tissue and auto-amputation of nonviable tissue.

Treatment (Superficial Frostbite) - Casualties with first and second-degree frostbite should be placed with the affected area against a warm body surface, such as covering the casualty's ears with warm hands or placing affected fingers into armpits or groin region.

Treatment (Deep Frostbite) - Management of casualties with third and fourth-degree frostbite includes:

- Move to warm shelter and provide supportive care

- If prolonged transport (1-2 hours) thaw in warm water bath at a temp no greater than 102°F. If re-freezing is a concern, do not thaw.
- Cover with loose, dry sterile dressing that is non-compressive and non-adherent
- Do NOT allow casualty to walk on affected feet
- Fingers and toes should be separated and protected with sterile cotton gauze
- Do NOT drain blisters in the field
- Provide pain meds as needed
- Start IV and give 250 mL bolus of warm saline to treat dehydration and reduce blood viscosity
- Do NOT give alcohol or cigarettes because of their vasoconstrictive properties
- Do NOT use direct heat source greater than 102°F on the affected area
- Do NOT allow the thawed part to refreeze.
- TACEVAC ASAP

3. **STAGES OF HYPOTHERMIA**

Hypothermia

A condition in which the core body temperature is below 95°F. Hypothermia renders a casualty unable to generate sufficient heat production to return to homeostasis. Hypothermia can occur in environments with temperatures well above freezing. Inadequate clothing and physical exhaustion contribute to the loss of body heat and the development of hypothermia.

Hypothermia, acidosis, and coagulopathy constitute the **"triad of death"** in trauma patients. The mortality in combat casualties with hypothermia is double that of normothermic casualties with similar injuries. Hypothermia occurs regardless of the ambient temperature; hypothermia can, and does, occur in both hot and cold climates.

Causes

- Prolonged exposure to cold and/or wet conditions
- Inadequate clothing/protection
- Dehydration and/or inadequate nutrition
- Poor physical condition; slow metabolic rate and inability to increase physical activity puts the poorly conditioned at increased risk.
- Resuscitation with cold fluids or blood after traumatic injuries

Mild Hypothermia

Individual response to cold varies. In general, body temperatures above 93° to below 97° F constitute mild hypothermia. In this temperature range, the casualty is in an excitation (responsive) stage. The casualty will be shivering and usually show signs of altered LOC such as confusion, slurred speech, altered gait and clumsiness. The body will attempt to retain and generate heat by increasing heart rate, blood pressure and cardiac output. The respiratory rate will increase, which, in the long run, only cools the body more by breathing in cold air and losing moisture through respirations.

Shivering - body's main mechanism to generate heat. Shivering increases the metabolic rate by increasing muscle tension, which leads to repeated bouts of muscular contraction and relaxation.

Moderate Hypothermia

Moderate hypothermia occurs when the core temperature is between 86° and 93° F. The patient will probably not complain of feeling cold, shivering will be absent and the LOC will be greatly decreased. Paradoxical undressing may be observed before the patient loses consciousness. The patient in this stage is at risk for lethal cardiac dysrhythmias.

Severe Hypothermia

When the core temperature is below 86° F, the patient is in severe hypothermia. The casualty will be unconscious with no response to pain. Vital signs will be barely detectable or non-detectable. Without immediate and intensive treatment, this patient will die!

4. TREATMENT OF HYPOTHERMIA

"A patient is not dead until they are warm and dead." This phrase was created after many patients survived prolonged hypothermic events and received CPR in the field. No matter what your initial impression of the casualty in the field, do NOT withhold basic or advanced life support until core temperature has returned to normal.

- Move casualty to a warm shelter to prevent further heat loss
- Remove wet clothing if situation allows
- Loosen or remove constrictive clothing
- Cover patient's head and body with warm blankets or sleeping bags
- Administer warmed oxygen if available
- Warm water bath (water temperature between 100°F and 108°F)
- Hot, sweet drinks (if conscious)
- Monitor vital signs. Observe for cardiac abnormalities
- Monitor core temperature rectally
- Warm IV solutions (Pre-warm solution in warm water or between MRE heaters)
- TACEVAC

5. PREVENTION MEASURES

Education

- Education of troops and leaders is the number one preventive measure.
- Because of the difficulty, time and energy required to actively re-warm casualties, significant attention should be paid to preventing hypothermia from occurring in the first place.

Activity Levels

- Activity should be maintained at a steady, constant rate.
- Quick bursts of activity and long periods of inactivity should be avoided.

Buddy System

- Train personnel to observe each other for symptoms.
- Train personnel to re-warm extremities (fingers/toes) by holding (not rubbing) their buddy's hands/feet.

Personal Measures

- The Marine Corps uses the acronym "**COLD**" to describe the cold weather protection principles and preventive measures:

  C - Keep clothing ***CLEAN*** and free of oil and dirt. Oily and dirty clothing quickly loses its insulating effectiveness.

  O - Avoid ***OVERHEATING***. There are more heat exhaustion cases in a cold environment because of overdressing for the type of work performed. Overdressing and over-exertion cause an increase in body heat production and decrease heat dissipation. As the body temperature increases, there is a corresponding increase in perspiration, which causes saturation of clothes with sweat. Both conditions lead to cold injuries.

  L - ***LAYER*** correctly. Clothes should be loose to trap air between the layers, which produces the insulating effect necessary for survival in the cold. Tight and constricting clothing produces cold injuries. There can be as many as seven layers of clothing used to protect personnel in a cold environment.

  D - Keep clothing ***DRY***. If clothing becomes wet so does the skin, which will promote cooling and frostbite. Change wet clothing at the first opportunity.

REFERENCES

Pre-hospital Trauma Life Support, current military edition

Cold Injuries Review

1. Explain the effect that age and rank have on an individual's chance for developing hypothermia.

2. Describe the symptoms for Chilblains.

3. List three signs or symptoms of Moderate Hypothermia.

4. Define the acronym C.O.L.D.

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FMST 204

Perform Care of the Feet

TERMINAL LEARNING OBJECTIVE

1. Given water and hygiene items, perform individual field hygiene to prevent injuries, maintain health and preserve the fighting force to accomplish the mission. (HSS-MCCS-2024)

ENABLING LEARNING OBJECTIVE

1. Without the aid of reference, given a description or list, **identify the anatomy of the foot**, within 80% accuracy, in accordance with FM 21-18 Foot Marches. (HSS-MCCS-2024e)

2. Without the aid of reference, given a description or list, **identify common foot disorders**, within 80% accuracy, in accordance with FM 21-18 Foot Marches. (HSS-MCCS-2024f)

3. Without the aid of reference, given a description or list, **identify preventive measures for foot disorders**, within 80% accuracy, in accordance with FM 21-18 Foot Marches. (HSS-MCCS-2024g)

1. **ANATOMY OF THE FOOT**

The feet are flexible structures of bones, joints, muscles, and soft tissues that let us stand upright and perform activities like walking, running, and jumping. The feet are divided into three sections (see fig 1):

The forefoot contains the five toes (phalanges) and the five longer bones (metatarsals).

The midfoot is a pyramid-like collection of bones that form the arches of the feet. These include the three cuneiform bones, the cuboid bone, and the navicular bone.

The hindfoot forms the heel and ankle. The talus bone supports the leg bones (tibia and fibula), forming the ankle. The calcaneus (heel bone) is the largest bone in the foot.

Muscles, tendons, and ligaments run along the surfaces of the feet, allowing the complex movements needed for motion and balance. The Achilles tendon connects the heel to the calf muscle and is essential for running, jumping, and standing on the toes.

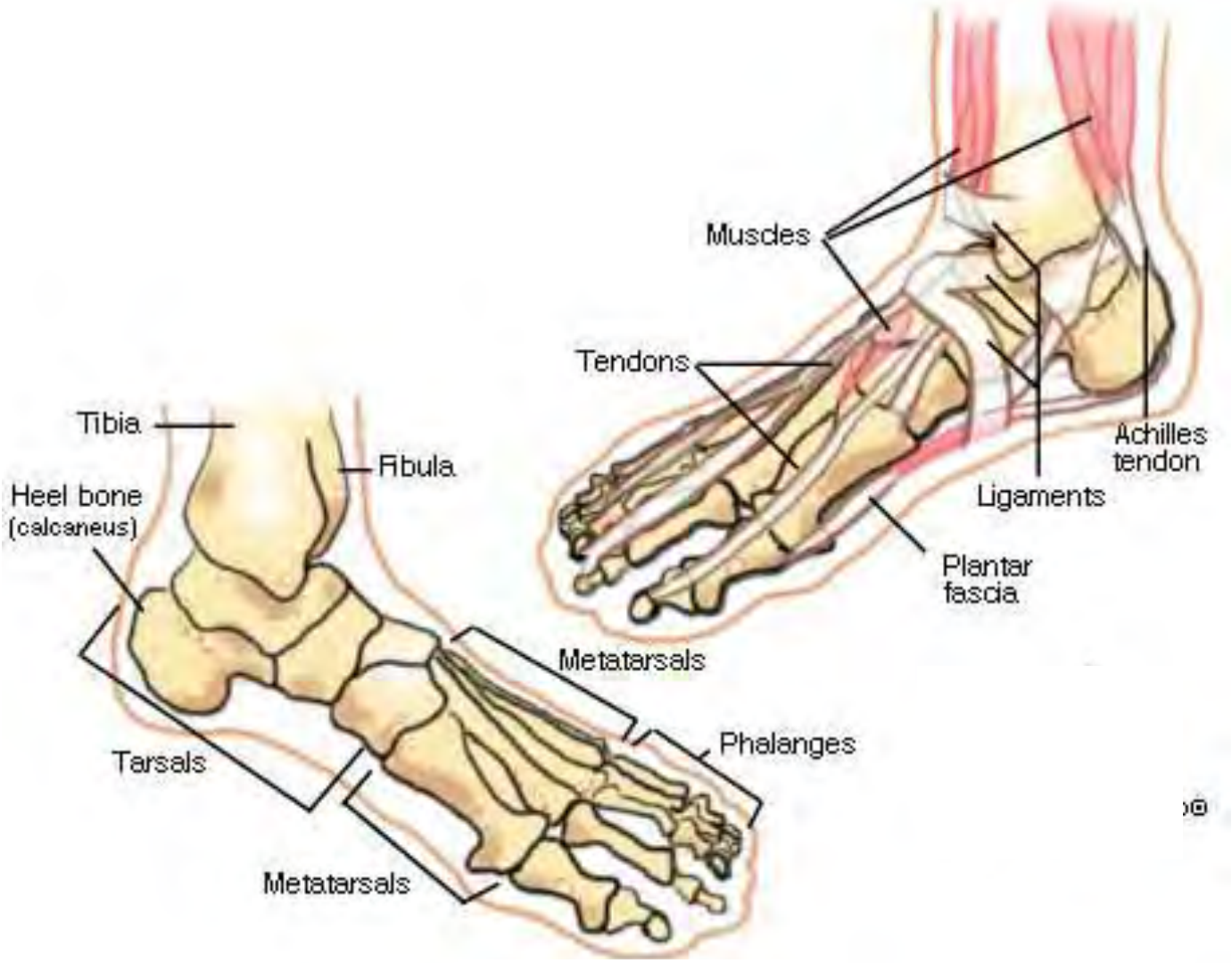

Figure 1. Anatomy of the foot

2. TYPES OF COMMON FOOT DISORDERS

Blister - a blister is a defense mechanism of the body. When the epidermis layer of the skin separates from the dermis, a pool of fluid collects between these layers while the skin re-grows from underneath. Blisters can be caused by chemical or physical injury. An example of chemical injury would be an allergic reaction. Physical injury can be caused by heat, frostbite, or friction.

Causes

- Improperly conditioned feet
- Heat and moisture
- Improperly fitting boots and/or socks
- Friction and pressure

Signs and Symptoms

- Fluid collection under the skin
- Mild edema and erythema around the site
- Sloughing of tissue exposing sub dermal tissue layer
- Localized discomfort and/or pain

Treatment

Small blisters usually need no treatment

- Clean area with soap and water
- Monitor for signs and symptoms of infection
- Apply a protective barrier (moleskin bandage) around the blister, to prevent further irritation

Closed, Large blisters (if affecting individuals gait)

- Wash the area around the blister with Betadine solution or alcohol pad
- Drain as close to the edge of the blister as possible to allow for drainage, and then apply gentle pressure to the blister dome expelling the clear fluid
- Apply moleskin (donut) to skin surrounding the blister, using tincture of benzoin as an adhesive.
- DO NOT PUT ANY ADHESIVE DIRECTLY ON THE BLISTER
- Dust entire foot with foot powder to lessen friction and prevent adhesive from adhering to the socks
- Monitor for signs and symptoms of infection

Open blisters

- Wash with Betadine solution or clean with soap and water
- Remove any loose skin with a surgical blade or scissors
- Apply moleskin (donut) to cover skin surrounding the blister, using tincture of benzoin as an adhesive.
- Place a small amount of antibiotic ointment over wound
- Cut a telfa pad and place over open blister
- Apply moleskin over entire treated area to include surrounding skin
- Monitor for signs and symptoms of infection

Athletes Foot (Tinea Pedis) - tinea pedis is a chronic fungal infection of the feet, often referred to as athlete's foot. Athlete's foot is very common and usually begins in early adulthood. Men are more often affected than women. Once affected, recurrences are common.

Causes
- Hot humid weather, excessive sweating and occlusive footwear
- Contact with contaminated footwear and floors
- Poor foot hygiene

Signs and Symptoms
- Reddened, cracked and peeling skin
- Itching, burning and stinging sensation usually between the toes
- Sore, purulent, weeping rash

Treatment
- Apply anti-fungal foot powder daily during work hours – i.e. Miconazole
- Apply anti-fungal ointment daily during rest hours – i.e. Clotrimazole
- Treatment should be continued for 1 week after clearing has occurred
- If the patient fails to respond to treatment, refer patient to medical officer

Ingrown Toenails - an ingrown nail occurs when the nail border or corner presses on the surrounding tissue. This condition is painful and often results in an infection once the skin is broken (see figure 2).

Figure 2. Infected Ingrown Toenail

Causes
- The most common causes are improper trimming of toenails and poor hygiene.
- Trauma to the nail plate or toe
- Improperly fitted footwear
- Abnormally shaped nail plate

Signs and Symptoms
- Pain along the margin(s) of the toenail. The great toe is the most common toe affected.
- Localized edema
- There may be signs of infection (drainage of pus, blood or watery discharge tinged with blood)

Treatment
- Trim a small point off the corner of the nail to relieve the pressure. Remove any dead skin that may have accumulated in the nail groove.
- Elevate the end of the nail to prevent further irritation of the soft tissue. Proper trimming should correct ingrown toenail. If not…
- Surgically correct a chronic ingrown toenail at the BAS, by complete or partial removal of toenail, under the supervision of a clinician.
- If there are signs of infection, antibiotics should be considered.

Corns and Calluses (see figure 3) - a callus is a thickening of the outer layer of skin, in response to pressure or friction that serves as a protective mechanism to prevent skin breakdown. A corn is similar to a callus except it involves a discrete pressure spot, typically over a bone, whereas a callus can form anywhere.

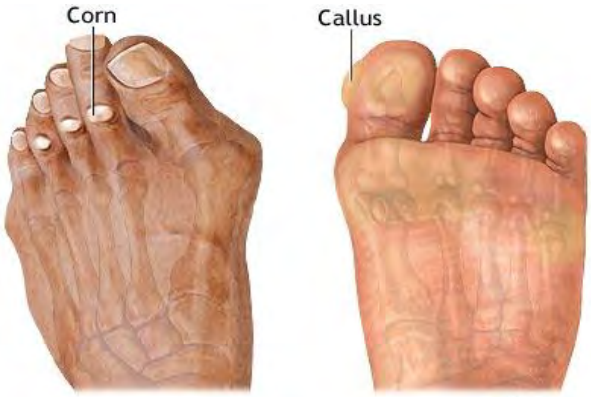

Figure 3. Corns and Calluses

Causes
- Tight fitting shoes, due to chronic friction and sheering pressure
- Deformed and crooked toes
- Prolonged walking on a downward slope

Signs and Symptoms
- Thickened, dry skin over prominent bones (corn)
- Large patches of thickened, dry skin over friction areas from walking (calluses)
- Pain on direct pressure against the corn
- Skin breakdown and possible infection with continued irritation

Treatment
- Debridement of excessive buildup of skin
- Apply pads and devices to the toes to relieve pressure (mole skin, corn pads, etc.)
- Fix the cause (improperly fitted boots)
- In extreme cases, refer to a medical officer

Bunion (see figure 4) - a bunion is an enlargement at the 1st metatarsal head of the great toe, which deviates laterally. Often there is no bump, but rather an angulation of the first metatarsal that makes the head of this bone more prominent.

Causes
- A minor bone deformity, called hallux valgus, in which the joint at the base of the big toe projects outward while forcing the tip of the toe to turn inward toward the other toes. As a result of the pressure on the deformity, the surrounding tissue thickens.
- This condition may be hereditary.
- Poorly fitted or excessively worn shoes.


Figure 4. Bunion (left)

Signs and Symptoms
- Thickened lump on the medial side of the foot at the base of the great toe
- Erythema
- Pain near first metatarsal head
- Joint stiffness

Treatment

- Wear comfortable, properly fitted shoes with plenty of room in the toe area
- Use of a special toe pad or corrective sock that straightens the big toe
- Non-steroidal, anti-inflammatory medications (NSAIDS)
- Orthotics
- In severe cases, surgery may be required

Plantar Fasciitis (see figure 5) - also known as heel spurs or heel bursitis. Plantar fasciitis is one of the most common foot problems. The plantar fascia's main function is to anchor the plantar skin to the bone, thus protecting the longitudinal arch of the foot. The plantar fascia is strained from overuse, causing pain along the sole of the foot, particularly where the fascia connects to the heel.

Causes

- Overuse in the physically active or a sudden increase in the volume or intensity of training
- Abnormal joint mechanics
- Tightness of the Achilles tendon
- Shoes with poor cushioning
- Abnormal foot anatomy
- Obesity
- Excess weight
- Improper shoes
- Bio-mechanical problems (mal-alignment of the heel)

Signs and Symptoms

- Tenderness along the medial fascia
- Constant pain that is worse in the morning upon rising or after physical activity
- Tearing and pulling sensation
- Altered gait

Treatment

- Stretching and strengthening exercises (lower leg muscles)
- RICE (Rest, Ice, Compression, Elevation)
- NSAIDS
- Heel and arch supports (orthotics)

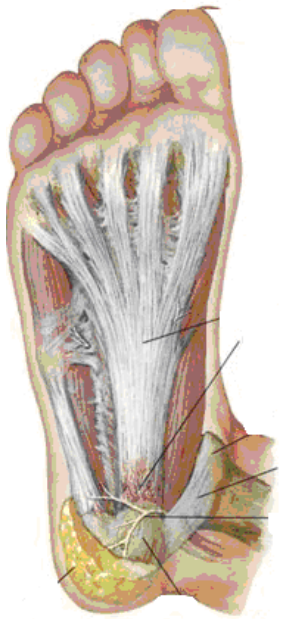

Figure 5. Plantar Fasciitis

Plantar Warts (see figure 6) - warts that are located on the sole of the foot are called plantar warts. A plantar wart can be found as a single lesion or grouped together. Most common areas include the ball of the foot and heel, where increased pressure and irritation is common. Warts are often ignored until they become painful.

Figure 6. Plantar Wart

Cause

- Caused by the Human Papilloma Virus (HPV)

Signs and Symptoms

- Plantar warts have tiny dots in the center. These dots are often black from dried blood, due to irritation. Small plantar corns are sometimes mistaken for warts.
- Tenderness

Treatment

- Shave down callus over wart and apply salicylic acid paste (metaplast).
- Apply dressing to keep paste isolated over wart. Apply donut bandage to relieve pressure.
- Leave paste in place for 3 days.
- Repeat treatment in one week.
- Refer to medical officer if no improvement.

Trench Foot/Immersion Foot (see figures 7a and 7b) - a medical condition caused by prolonged exposure of the feet to damp and cold. Trench Foot was given its current name after it was found frequently among World War I troops who had been confined for long periods in trenches filled with standing water. Immersion foot describes a more severe variant of trench foot usually seen in downed pilots and shipwrecked Sailors.

Figure 7a. Immersion (Trench) Foot

Causes

- Prolonged exposure to wet and cold conditions or outright immersion of feet in water at 32-50° F
- Condition can occur on hands due to damp or cold gloves

Signs and Symptoms (EARLY)

- Initially foot is pale, mottled, numb, pulseless and immobile
- After rewarming, severe burning pain and return of sensation

Signs and Symptoms (LATE 2-7days)

- Limb becomes hyperemic (increased amount of blood flow, skin will be warm and red). Numbness, edema, ulceration, and gangrene may develop.

Treatment

- Treatment is supportive
- Keep feet clean, warm, dry, and bandaged
- Gentle rewarming
- Elevate affected extremity to reduce edema
- Consider antibiotics if there are signs of infection
- Avoid wearing boots
- Do not drain blisters in the field
- Refer to medical officer
- TACEVAC severe cases

Figure 7b. Immersion (Trench) Foot

Metatarsal Stress Fracture (see figure 8) - a stress fracture is an incomplete break in the bone often seen in intense training programs around week four, when bone absorption exceeds bone-building activity. The most common stress fracture in the foot, known in the military as "March Fracture," is the second and third metatarsals.

Causes

- Repetitive stress on a metatarsal due to malposition or abnormal foot structure or mechanics (i.e. flatfoot)
- Increased levels of activity, especially without proper conditioning
- Obesity

Signs and Symptoms

- Edema in dorsum of foot
- Tenderness at the top of the foot during and after exercise

Treatment

- Treat as a fracture
- RICE
- NSAIDS
- Rest for two or three weeks until the pain is gone
- Slow return to activity to avoid recurring injury
- Refer to medical officer

Figure 8. Metatarsal Stress Fracture

3. **PREVENTIVE MEASURES**

Improperly fitting boots and socks are common causes of foot problems such as blisters, corns and calluses. Use the following preventive measures to educate and supervise personnel on proper foot care and wear. Improper foot hygiene will also lead to foot disorders such as ingrown toenail and athlete's foot.

Before Marches

1. Carefully fit new boots.
2. Bring a pair of socks/orthotics you intend to wear with the boots to the store.
3. The toe box should be roomy enough so you can wiggle your toes.
4. The ball of your foot should rest on the widest part of the sole.
5. The forefoot should not be wider than the boot.
6. Determine the boot length; there should be a ½ inch between the end of the longest toe and the end of the boot.
7. Socks should fit snugly on the foot without excess material over toes and the heel.
8. Trim toenails short and straight across.

During Marches

1. Keep feet clean and dry and use foot powder.
2. Wear clean, dry, unmended, well-fitting socks.
3. If a person wants to wear two pairs of socks, the outer pair should be ½ a size larger to comfortably fit over the inner sock.
4. During halts, lie with feet elevated at rest points.
5. If time permits, massage the feet, apply foot powder, change socks and take care of blisters.
6. Relieve swelling feet by slightly loosening the bootlaces where they cross the arch.

After Marches

1. EARLY ATTENTION IS ESSENTIAL!
2. Wash and dry feet.
3. Treat any blisters, abrasions, corns and calluses.
4. If red, swollen, tender skin develops along the edges of the foot, the foot requires aeration, elevation, rest and wider foot wear.

REFERENCES

Foot Marches, FM 21-18

Care of the Feet Review

1. Describe the appropriate treatment for large blisters.

2. Describe the difference between a corn and a callus.

3. List the signs and symptoms of plantar fasciitis.

4. “March Fracture” generally involves which two bones?

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FMST 205

Perform Water Purification for Individual Use

TERMINAL LEARNING OBJECTIVES

1. Given water and hygiene items**, perform individual field hygiene** to prevent injuries, maintain health and preserve the fighting force to accomplish the mission. (HSS-MCCS-2024)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify sources of water in a field environment**, within 80% accuracy, in accordance with NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024a)

2. Without the aid of reference, given a description or list, **identify factors affecting sources of water**, within 80% accuracy, in accordance with NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024b)

3. Without the aid of reference, given a description or list, **identify the procedures for water purification for individual use**, within 80% accuracy, in accordance with NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024c)

4. Without the aid of reference, given a description or list, **identify water testing requirements**, within 80% accuracy, in accordance with NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024d)

OVERVIEW

Safe water, in sufficient quantities, is essential. Insufficient quantity or quality of water is not only debilitating to the individual but will have a significant impact on unit operational readiness. Water that is not properly treated and disinfected can spread bacterial diseases such as cholera, shigellosis, typhoid, and paratyphoid fever. Untreated water can also transmit viral hepatitis, gastroenteritis and parasitic diseases such as amoebic dysentery, giardiasis and schistosomiasis. All personnel must be familiar with and follow proper water discipline. This includes drinking only water that has been properly treated, protected, and distributed. Every individual is responsible for ensuring that potable water does not become contaminated from careless or improper handling and being vigilant for the protection of a water supply from intentional or unintentional attack.

1. WATER SOURCES AND CHARACTERISTICS

Water may be obtained from various sources in the field to include the following:

Salt Water is considered the best source of water, if accessible, due to the fact that it is generally less contaminated than other sources and there is an unlimited supply. When considering salt water, however, the water must be desalinated and disinfected before it is used. This requires the use of a reverse osmosis water purification unit (ROWPU). Salt water cannot be purified for individual use.

Ground Water is water procured from wells and springs. Ground water is generally less susceptible to chemical and biological pollution than other sources and is considered the best source of water during an NBC attack. The quantity and quality may be hard to determine without proper equipment. Adequate disinfectant is required. Ground water may or may not be used for individual use, depending on its accessibility.

Surface Water is water procured from lakes, rivers, streams, and ponds. Moving or large bodies of water are generally considered less contaminated due to the aeration which significantly decreases growth of bacteria, algae, and fungus. Of the sources of water, surface water is the easiest to procure for individual use due to it being readily accessible. Adequate disinfectant is required.

Rain Water is water procured from rain, snow, or ice. This source should only be used when other sources of water are not available. It is not considered a reliable source due to the fluctuation in annual rainfall which results in inadequate quantities. Adequate disinfectant is required.

2. FACTORS AFFECTING SOURCES OF WATER

Water Quantity - the source should provide an adequate supply of potable water for all personnel for the expected length of stay.

Water Quality - water source should be free of significant contamination such as sewage, naturally occurring toxic elements and any NBC warfare agents. The water should not be objectionable due to turbidity, color, odor, or taste. Ensure source is protected from possible organic contamination by sewage fallout or runoff from latrines, showers, motor pools, etc.

Accessibility - the water source should be accessible and able to be treated with available resources.

3. PROCEDURES FOR INDIVIDUAL WATER PURIFICATION

Types of Water Containers

Canteen - intended for individual use. Typical issued canteen is 1 quart but can also come in a 2 quart size.

Jerry Can - 5 gallon container that must be labeled "Potable Water Only" if used for drinking water since they have various uses.

Lyster Bag - 36 gallon hanging bag used for hand washing.

Water Bull - 400 gallon insulated mobile potable water container that provides easily accessible water to troops.

Iodine tablets - intended to disinfect water contained in small containers such as canteens or water jugs. The tablets are subject to deterioration in storage. They must be inspected for signs of physical change before they are used; otherwise, they may not disinfect the water. Iodine tablets that are completely yellow or brown, that stick together, or crumble easily are no longer effective and must not be used. Iodine tablets in good condition will be solid and steel gray in color. The procedures for disinfecting small quantities of water with these tablets are as follows:

Water in canteens

(1) Fill the canteen with the cleanest, clearest water available.

(2) Add two iodine tablets to each 1-qt canteen full of water, or four tablets to 2-qt canteens. Tincture of iodine, 2 percent, may be used in place of the tablets. Five drops of the liquid are equivalent to one iodine tablet.

(3) Put the cap on the canteen. Shake the canteen to dissolve the tablets.

(4) Wait 5 min, loosen the cap slightly and tip the canteen over to allow leakage around the canteen threads.

(5) Tighten the cap and wait an additional 25 min before drinking.

Personal hydration systems

(1) Use four iodine tablets for 70 to 72 ounce water reservoirs and six for 100 to 102 ounce reservoirs.

(2) Allow 30 min of contact time before drinking the water.

Chlorine bleach - Household bleach is normally a 5 percent chlorine solution.

(1) Add two drops of bleach per quart of water to be disinfected and let it stand for 30 min before drinking. If a dropper is not available, wet a cloth or stick with bleach and allow it to drip into the water.

(2) Use four drops for a 70-oz reservoir, and six drops for the 100-oz reservoir. Mix the added bleach in the reservoir water and let it stand for 30 min before drinking it.

Micropur - the next generation of chemical water treatment. It's safer than iodine tablets and has no unpleasant taste. It is the only disinfectant system currently available that is effective against Cryptosporidium and viruses.

Water in canteens

(1) Fill the canteen with the cleanest, clearest water available.

(2) Add one tablet to 1-qt canteen full of water

(3) Put the cap on the canteen. Shake the canteen to dissolve the tablet.

(4) Wait 5 min, loosen the cap slightly and tip the canteen over to allow leakage around the canteen threads.

(5) Allow 30 min of contact time before consuming for clear water; 4 hours for cold or cloudy water.

Personal hydration systems

(1) Use two tablets for 70 to 72 ounce water reservoirs and three for 100- or 102-oz reservoirs.

(2) Allow 30 min of contact time before consuming for clear water; 4 hours for cold or cloudy water.

Boiling - this method should only be used in **emergency** situations and only with small quantities of water, i.e. canteen cup. Bringing the water to a vigorous boil for five minutes will kill pathogens such as Giardia and E. coli. This method does not provide for residual disinfectant capabilities and should not be used to store large quantities of water.

4. **WATER TESTING**

Frequency

- All bulk water supplied to personnel for drinking must be tested daily for Free Available Chlorine (FAC). FAC is the portion of the total chlorine remaining in chlorinated water that will react chemically with undesirable or pathogenic organisms.

- Perform weekly bacteriological testing.

Procedure for daily testing

- Add 1 DPD #1 (Diethylphenyline Diamine) tablet to water sample.

- Shake gently until tablet is dissolved.

- Use color comparator to determine the FAC.

Range

- 2.0 -5.0 ppm FAC for field water supplies

REFERENCES

Manual of Naval Preventive Medicine, NAVMED P-5010

Water Purification Review

1. List the three factors associated with selecting a water source.

2. Of the four sources of water, which is best suited for individual use?

3. What are the drawbacks to using boiling as a method of decontamination?

4. What is the total time needed to disinfect one standard canteen of water using iodine tablets?

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FMST 206

Supervise Field Waste Disposal

TERMINAL LEARNING OBJECTIVES

1. Given water and hygiene items, **perform individual field hygiene to prevent injuries**, maintain health and preserve the fighting force to accomplish the mission. (HSS-MCCS-2024)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify the four types of field waste**, within 80% accuracy, in accordance with NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024h)

2. Without the aid of reference, given a description or list, **identify the guidelines for latrine placement**, within 80% accuracy, in accordance NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024i)

3. Without the aid of reference, given a description or list, **identify the types of field sanitation devices used for human waste disposal**, within 80% accuracy, in accordance with NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024j)

4. Without the aid of reference, given a description or list, **identify the types of field sanitation devices used for liquid waste disposal**, within 80% accuracy, in accordance with NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024k)

5. Without the aid of reference, given a description or list, **identify the types of field sanitation devices used for garbage disposal**, within 80% accuracy, in accordance with NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024l)

6. Without the aid of reference, given a description or list, **identify the types of field sanitation devices used for rubbish disposal**, within 80% accuracy, in accordance with NAVMED P-5010 Manual of Naval Preventive Medicine. (HSS-MCCS-2024m)

OVERVIEW

Historically, in every conflict the US has been involved in, only 20% of all hospital admissions have been from combat injuries. The other 80% have been from diseases not related to battle, commonly referred to as Disease Non Battle Injury (DNBI). Excluded from these figures are vast numbers of service members with decreased combat effectiveness due to DNBI not serious enough for hospital admission. Preventive medicine measures are simple, common sense actions that any service member can perform and every leader must know. The application of preventive medicine measures can significantly reduce time lost due to DNBI. The intent of this lesson is not to make you preventive medicine experts. You will have access to them through the Environmental Preventive Medicine Units (EPMU) that deploy in times of war or conflict. This class is to give you knowledge of the basic skills necessary to employ safe preventive medicine practices for your Marines.

1. **WASTE**

Definition - all types of liquid and solid material excreted from the body as useless or unnecessary as a result of living activities of humans or animals.

Types of Waste

Human waste (black water): Liquid waste containing human urine, fecal matter and blood or body fluids.

Liquid Waste (Gray Water): Liquid waste containing water used for bathing or liquid waste from kitchen operation.

Garbage: Any kind of non-liquid organic materials resulting from food service operations.

Rubbish: Waste consisting of non-organic materials such as boxes, cans, paper, or plastics.

2. **GUIDELINES FOR LATRINE PLACEMENT**

When determining the location for latrines, give consideration to protecting food and water supplies from contamination as well as providing convenient accessibility.

- 100 feet from the nearest water source
- 100 yards from food service areas
- 50 feet from berthing areas

3. **FIELD SANITATION DEVICES USED FOR HUMAN WASTE DISPOSAL**

The devices for disposing human waste in the field vary with the tactical situation, length of stay, soil conditions, water table, weather conditions, availability of material and environmental regulations.

Cat Hole - used when troops are on the march, during short halts.

- Dug 12” in diameter and 12” deep
- Covered immediately after use

Straddle Trench (see figure 1) - used in temporary bivouac sites for one to three days. Four trenches required for 100 people.

- 1ft wide, 2 ½ ft deep, 4ft long
- Additional trenches will be 2 ft apart
- Wooden planks on sides for traction
- Each person covers their excreta after use

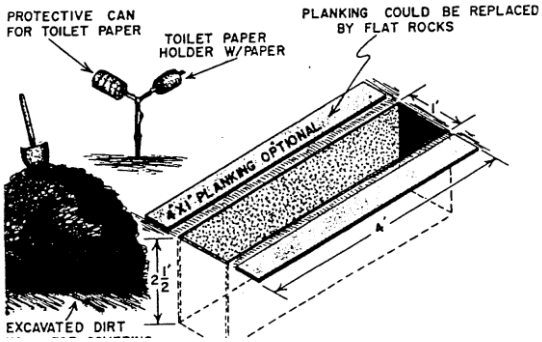

Figure 1 Straddle Trench

Burn Barrel Latrine (see figure 2) - the burn-barrel is a commonly used device for human waste disposal in the field. Best employed in areas where the water table is high or the ground does not permit digging. 8 seats required for 100 people.

- Encourage personnel to use other devices for urination since additional fuel is needed to burn urine and feces.
- Enclosed building constructed of plywood or other suitable material
- Contains 2 or 4 seats over 55 gallon drums cut in half
- Prime each drum with 3 inches of diesel fuel
- Burn out when drums are 1/2 to 2/3 full
- 4 parts diesel to 1 part gasoline until contents are covered
- Bury ashes at a depth of 12”

Figure 2 Burn-Barrel Latrine

Urine Soakage Pit (see fig 3) - temporary latrine used is sandy soils. One pipe can accommodate 20 men.

- Dug 4 ft square by 4 ft deep
- Filled with large rocks, rubble, bricks, etc
- Insert 6 pipes of one inch diameter at an angle
- Ventilation shaft at ends
- Cover ends of each tube with a funnel and mesh material

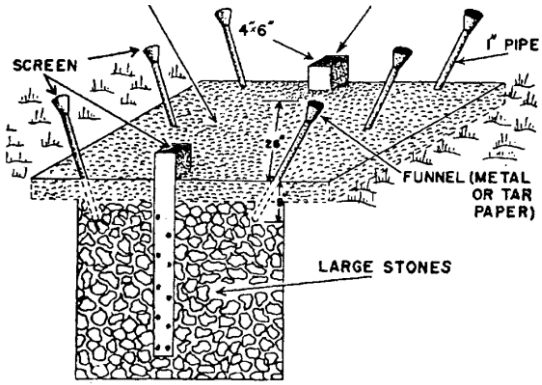

Figure 3 Urine Soakage Pit

Chemical Toilets - obtained as a contracted service. Requirements for chemical toilets:

- 1 to 15 personnel	1
- 16 to 35 personnel	2
- 36 to 55 personnel	3
- 56 to 80 personnel	4
- 61 to 110 personnel	5
- 111 to 150 personnel	6
- Over 150	Add 1 toilet for each additional 40 persons

4. FIELD SANITATION DEVICES USED FOR LIQUID WASTE DISPOSAL

Liquid waste disposal methods are primarily designed to maximize the evaporation of the waste. Using items such as rocks increases the surface area and allows the waste to dissipate quickly. Liquid kitchen or bathing waste disposal methods include:

Soakage pits - are constructed identical to the urine soakage pit (without tubes). One pit can accommodate 200 men.

Evaporation beds - are used in hot dry climates and are constructed in mounds and ridges.

5. FIELD SANITATION DEVICES FOR GARBAGE DISPOSAL

Every individual generates some type of garbage. The bigger the unit, the bigger the problem! It is important that you are able to make appropriate recommendations to the unit commander regarding the disposal of solid waste. The tactical situation must also be considered.

Garbage pit - the preferred method of garbage disposal for short overnight stops. A standard four feet by four feet pit will service 100 people per day.

Garbage trench - for longer stays, a garbage trench is used. The trench measures two feet wide by four feet deep and is extended as needed.

6. FIELD SANITATION DEVICES FOR RUBBISH DISPOSAL

Methods for rubbish disposal vary depending on the field situation. When tactical reasons do not permit the rubbish to be hauled off to a disposal site, the following methods can be used:

Garbage pit - for short stay rubbish is buried in pits with the garbage, taking care to flatten cans and break down boxes.

Incineration - in camps where the length of stay is expected to be over a week, rubbish is burned and the ash buried. Barrel incinerators are commonly used and must be at least 50 yards and downwind from the camp.

REFERENCES

Manual of Naval Preventive Medicine, NAVMED P-5010
Field Hygiene and Sanitation, MCRP 4-11.1

Field Waste Review

1. Describe the four types of waste.

2. How far should latrines be place away from the

   _____ nearest water source

   _____ food service areas

   _____ berthing areas

3. Describe a burn-barrel latrine.

4. What are the two devices used for liquid waste disposal?

5. Describe a garbage pit.

6. Give three requirements when using incinerators.

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FMST 207

Manage Envenomation Injuries

TERMINAL LEARNING OBJECTIVES

1. Given a casualty in any environment, **treat envenomation injuries** to reduce the risk of further injury or death. (8404-MED-2015)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify common definitions associated with envenomation injuries**, within 80% accuracy, in accordance with FM 4-25.11 First Aid. (8404-MED-2015a)

2. Without the aid of reference, given a description or list, **identify types of venomous snakes**, within 80% accuracy, in accordance with FM 4-25.11 First Aid. (8404-MED-2015b)

3. Without the aid of reference, given a description or list, **identify the proper treatment of venomous bites**, within 80% accuracy, in accordance with FM 4-25.11 First Aid. (8404-MED-2015c)

4. Without the aid of reference, given a description or list, **identify the management of arthropod envenomation**, within 80% accuracy, in accordance with FM 4-25.11 First Aid. (8404-MED-2015d)

5. Without the aid of reference, given a description or list, **identify the treatment for anaphylactic shock**, within 80% accuracy, in accordance with FM 4-25.11 First Aid. (8404-MED-2015e)

1. **DEFINITIONS**

Envenomation - an injury or illness caused by the poisonous secretion of an animal, such as a snake, spider or scorpion, usually transmitted by a bite or sting.

Hemotoxin - toxin that destroys red blood cells, disrupts blood clotting, can severely damage internal organs and causes tissue degeneration.

Neurotoxin - toxin that damages, destroys or impairs nerve tissue and disrupts the brain function.

Cytotoxin - typically attacks only a specific type of cell, muscle group or organ.

2. **TYPES OF VENOMOUS SNAKES**

Snake venom affects the human body in a number of ways, depending on the snake, the type of venom, and how much venom is released. Different snakes produce different types of venom, and even within a snake species, the components of venom appear to vary, depending on geographic location. This is why it is important to be able to identify the snake species involved when one is bitten.

Crotalinae Subfamily

The Crotalinae, commonly known as Pit Vipers, are a subfamily of venomous vipers found in Asia and the Americas. They are distinguished by the presence of a heat-sensing pit organ located between the eye and the nostril on either side of the head. The pit is a highly sensitive organ capable of picking up the slightest temperature variance.

Venom

- Hemotoxic

Characteristics (see figure 1)

- Retractable fangs

- Heat sensing pit located below the nostril

- Large triangular shaped head

- Slit-like pupils

Examples

- Rattlesnakes (U.S. through Central and South America)

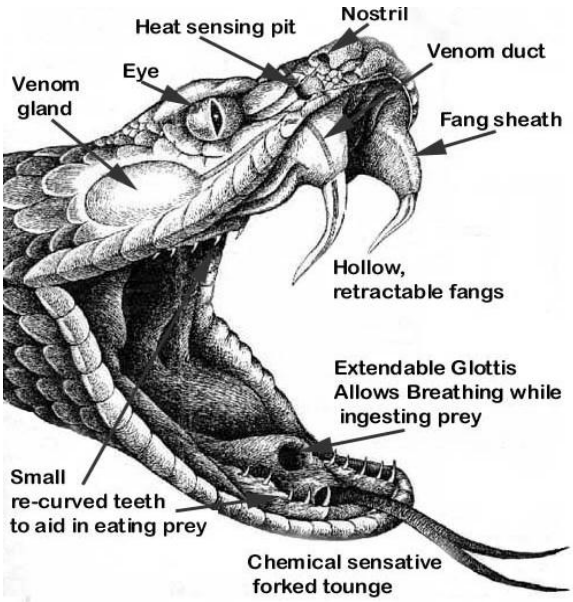


Figure 1. Pit Viper Anatomy

- Saw-Scaled Viper (Pakistan, throughout the Middle East to Africa)

- Water Moccasin (Southern and eastern US)

- Copperhead (Eastern U. S.)

- Habu (Southeast Asia, including Okinawa)

Signs and Symptoms

- Symptoms vary depending on the type of snake and the amount of venom deposited

- Excruciating pain at the bite site

- Discoloration and tissue swelling usually begins five to ten minutes after the bite and may continue for up to an hour with enough severity to break the skin

- Destruction of blood cells and other tissue cells, may present as hematuria

- Tingling or numbness

- Headache

- Nausea/vomiting

- Death may occur within 6-48 hours if left untreated. Even with treatment, there is the possibility of loss of affected extremity.

Colubrinae Subfamily

The Colubrinae are a subfamily of the largest family of snakes, which includes about two-thirds of all snakes worldwide. Most are completely harmless to man; the Boomslang is the only one that has caused human deaths.

Venom

- Hemotoxic

Characteristics (see figure 2)

- Fixed fangs in rear of mouth

- Egg-shaped head

- Large eyes

Figure 2. Boomslang

Signs and Symptoms

- Symptons may not manifest until hours after the bite
- Hemmorrhaging to the gums, nose or other orifices
- Headache
- Nausea
- Blood in the stool, urine or saliva
- Death due to internal bleeding

Example

- Boomslang (Sub-Saharran Africa)

Elapinae Subfamily

Members of this family are found in the tropical and subtropical regions of the world and are represented on every continent with the exception of Antartica.

Venom

- Neurotoxic

Characteristics

- Front, fixed, hollow fangs
- Round pupils
- Head width is proportionate to body size

Signs and Symptoms

- Stiffness, muscle aches, and spasms
- Severe headache, blurred vision, and drowsiness
- Moderate to severe pain to the affected limb
- Nausea, vomiting, and diarrhea
- Chills with rapid onset of fever
- Respiratory paralysis and death

Examples

- Coral Snakes (Southern US, through South America, and parts of Asia) see figure 3.

- Cobra (South Asia through Middle East and North Africa) see figure 4.

- Krait (South Asia, including Pakistan) see figure 5.

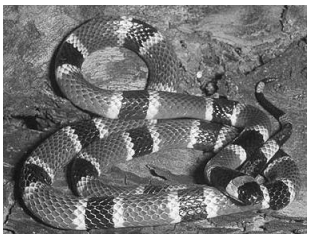


Figure 3. Coral Snake

Figure 4. Cobra

Figure 5. Krait

Hydrophiinae Subfamily. Also known as sea snakes, this group of venomous snakes inhabit marine environments (see figure 6). Though they evolved from terrestrial ancestors, most are extensively adapted to a fully aquatic life and are unable to move on land. They are found in warm coastal waters from the Indian Ocean to the Pacific.

Venom

- Neurotoxic

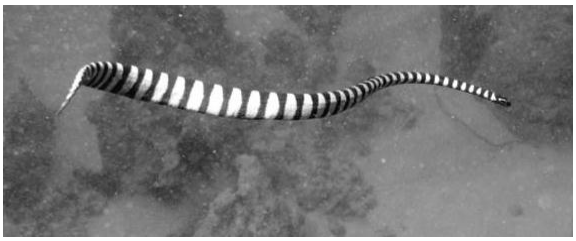


Figure 6. Sea Snake

Characteristics

- Fixed fangs

- Flat paddle-like tail

- Most are brightly colored

Signs and Symptoms

- Since both Elapinae and Hydrophiinae secrete neurotoxins, their signs and symptoms are mostly similar.
- Bites are usually painless and may not even be noticed when contact is made. Teeth may remain in the wound.
- There is usually little or no swelling.
- The most important symptoms are rhabdomyolysis (rapid breakdown of skeletal muscle tissue) and paralysis. Early symptoms include:
    - Headache
    - Thick-feeling tongue
    - Thirst

- Sweating

- Vomiting

- Symptoms that can occur after 30 minutes to several hours post-bite include:

  - Generalized aching

  - Stiffness and tenderness of muscles all over the body.

  - Paralysis of voluntary muscles. Paralysis of muscles involved in swallowing and respiration can be fatal.

- After 6 to 12 hours the result of muscle breakdown can lead to cardiac arrest.

3. **TREATMENT OF A SNAKE BITE**

Diagnosing a Snake Bite

- Fang Marks may be present as one or more well defined punctures, or as a series of small lacerations or scratches, or there may not be any noticeable or obvious markings where the bite occurred. The absence of fang marks does not exclude the possibility of envenomation, especially if a juvenile snake is involved.

- Rattlesnake envenomation - fang marks are invariably present and are generally seen on close examination. Bleeding may persist from the fang wounds. The presence of fang marks does not always indicate envenomation; rattlesnakes, when striking in defense, will frequently elect not to inject venom with the bite, resulting in a "dry bite." Younger rattlesnakes tend to dispense all of their venom, as opposed to a larger, older rattlesnake dispensing either none or a small amount.

- Snake venoms are complex chemical mixtures of proteins, which have mostly enzymatic properties. Some snake venom may include elements that produce both a hemotoxic and neurotoxic effect. The quantity, lethality and composition vary with the species and the age of the snake, the geographic location and the time of the year. Venom is highly stable and is resistant to temperature changes, drying, and drugs.

Manifestations of signs and symptoms of envenomation are necessary to confirm diagnosis of a snake venom poisoning.

Treatment

- Most definitive care for envenomation is anti-venom.

- Keep the victim calm and reassured. If possible, allow the limb to rest in a neutral position level with the victim's heart.

- Locate the bite site. If the bite is on the hands or feet, immediately remove any rings, bracelets, watches or any constricting items from the extremity.

- If the bite is on an arm or leg, place a constricting band above and below the bite (see figure 7). If the bite is on the hand or foot, place a single band above the wrist or ankle. The band should be tight enough to stop the flow of blood near the skin, but not tight enough to interfere with circulation.

- Apply a splint and check distal pulses.

- Monitor and TACEVAC.

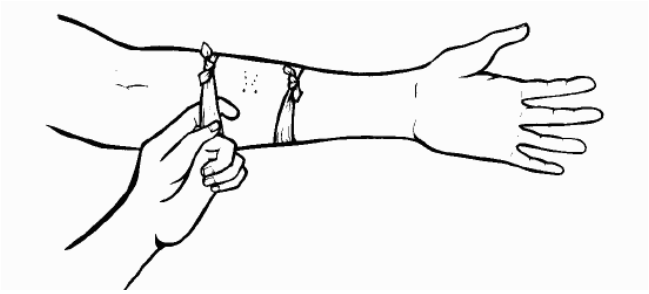


Figure 7 Constricting Band

Things You Should Not Do:

- **DO NOT** cut or incise the bite site.

- **DO NOT** apply ice or heat to the bite site.

- **DO NOT** apply oral (mouth) suction.

- **DO NOT** remove dressings/elastic wraps.

- **DO NOT** try to kill snake for identification as this may lead to others being bitten.

- **DO NOT** have the victim eat or drink anything.

Prevention of Snake Bites

- **LEAVE THE SNAKE ALONE!! This is the best way to avoid a snakebite.**

- Most snakes will only bite if threatened. Most snake bites occur when the victim is attempting to catch, kill or play with a snake.

- Keep hands out of areas that you cannot see (i.e. holes, under rocks and under logs).

4. ARTHROPOD ENVENOMATION

An arthropod is an invertebrate animal having an exoskeleton, a segmented body and jointed appendages. Arthropods include insects, arachnids and crustaceans. The arthropod body plan consists of repeated segments, each with a pair of appendages. They are so versatile that they have become the most species-rich members of all ecological guilds in most environments. They have over a million described species, making up more than 80% of all described living animal species.

Common Wasp and Bees - primary effect is from the strong histamine reaction they cause. Honey bees only sting once and leave the stingers and venom sac embedded in the skin. Wasps, hornets and bumble bees can sting multiple times.

Signs and Symptoms

- Pain

- Itching/burning sensation

- Wheal (raised, inflamed skin)

- If patient is allergic, monitor for anaphylactic reaction

Treatment

- Stingers should be removed immediately to prevent more venom from entering the victim. Remove the stinger by scraping across the skin with a knife blade or similar object. Do NOT use tweezers to grasp stinger, this only injects the remaining venom into the victim.

- Apply ice to the affected area

- Apply Hydrocortisone Cream 1% to affected area BID (twice a day)

- Monitor for Anaphalaxis

Ants - some species of ants, especially the fire ant, can bite repeatedly (see figure 8). Some also have stingers at the tip of their abdomen.

Signs and Symptoms

- Pain

- Itching/burning sensation

- Vesicles on skin

Figure 8. Fire Ant Bites

- Multiple bites can produce the following signs and symptoms:
  - Vomiting
  - Diarrhea
  - Generalized edema
  - Hypotension due to vasodilation

Treatment

- Apply ice to the affected area

- Apply Hydrocortisone Cream 1% to affected area BID (twice a day)

- Monitor for anaphylaxis

Figure 9. Millipede

Millipedes - some millipedes secrete a toxin on their skin, other large species can squirt secretions from distances up to 32 inches (see figure 9). They secrete their toxin as a defensive mechanism.

Signs and Symptoms

- Dermatitis (itching and burning) that begins with a brown stain on the skin.

- Secretions in the eye can cause immediate pain, lacrimation and blurry vision.

Treatment

- Wash skin with soap and water to remove secretions.

- If toxin is secreted in the eyes, irrigate with water or saline; an ophthalmologic evaluation is mandatory.

- Monitor for anaphylaxis

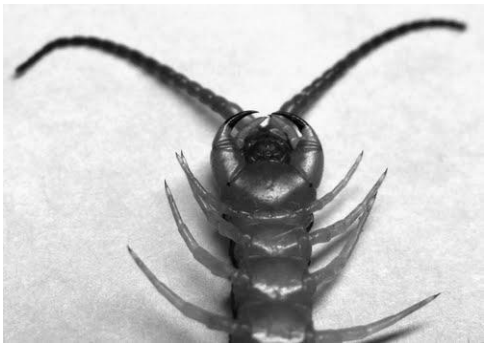


Figure 10. Centipede

Centipedes - any centipede whose fangs can penetrate human skin can cause local envenomation. Contrary to popular folklore, centipedes **do not** inject venom with their feet or head. Their injury is caused by a bite (see figure 10).

Signs and Symptoms

- Burning pain, tenderness

- Erythema (redness)

- Local swelling

- Superficial necrosis and ulceration may sometimes occur

Treatment

- NSAIDS

- Infiltrate area with lidocaine or other anesthetic

- Monitor for anaphylaxis

Caterpillars - venomous caterpillars have venom in hollow hairs all over their bodies (see figure 11). Their venom is purely defensive.

Figure 11. Caterpillar

Signs and Symptoms

- Dermatitis (severe burning, pain)

- Erythema and edema

- Conjunctivitis

- Necrosis

Treatment

- Use scotch tape to remove hairs from skin.

- Do not rub area

- Monitor for anaphylaxis

Black Widow Spider - glossy black with a red hourglass on the underside of the abdomen. Only the bite of the female is poisonous but all have a red hourglass pattern on the abdomen (see figure 12).

Figure 12. Black Widow Spider

Venom

- Neurotoxic

Signs and Symptoms

- Initial pain is not severe, but severe local pain rapidly develops

- Pain gradually spreads over the entire body and settles in the abdomen and legs

- Weakness

- Sweating

- Excessive salivation

- Rash may occur

- Tremors

- Nausea/vomiting

- Respiratory muscle weakness combined with pain may lead to respiratory arrest

- Anaphylactic reactions can occur but are rare

- Symptoms usually regress after several hours and are usually gone in a few days

Treatment

- Clean site with soap and water

- Intermittent ice for 30 minutes each hour

- Supportive care and antibiotics if needed

Brown Recluse Spider - they are small, light brown and have a dark brown violin design on the top of their thorax (see figure 13).

Venom

- Hemotoxic

- Cytotoxic

Signs and Symptoms

- Painless bite. Most often, the victim does not know they have been bitten.

- A painful red area with a cyanotic center appears after a few hours. If prompt treatment is not initiated, and sometimes in spite of, tissue damage can occur. The following represents the aftermath of a Brown Recluse Spider bite (see figure 14).

Figure 13. Brown Recluse Spider

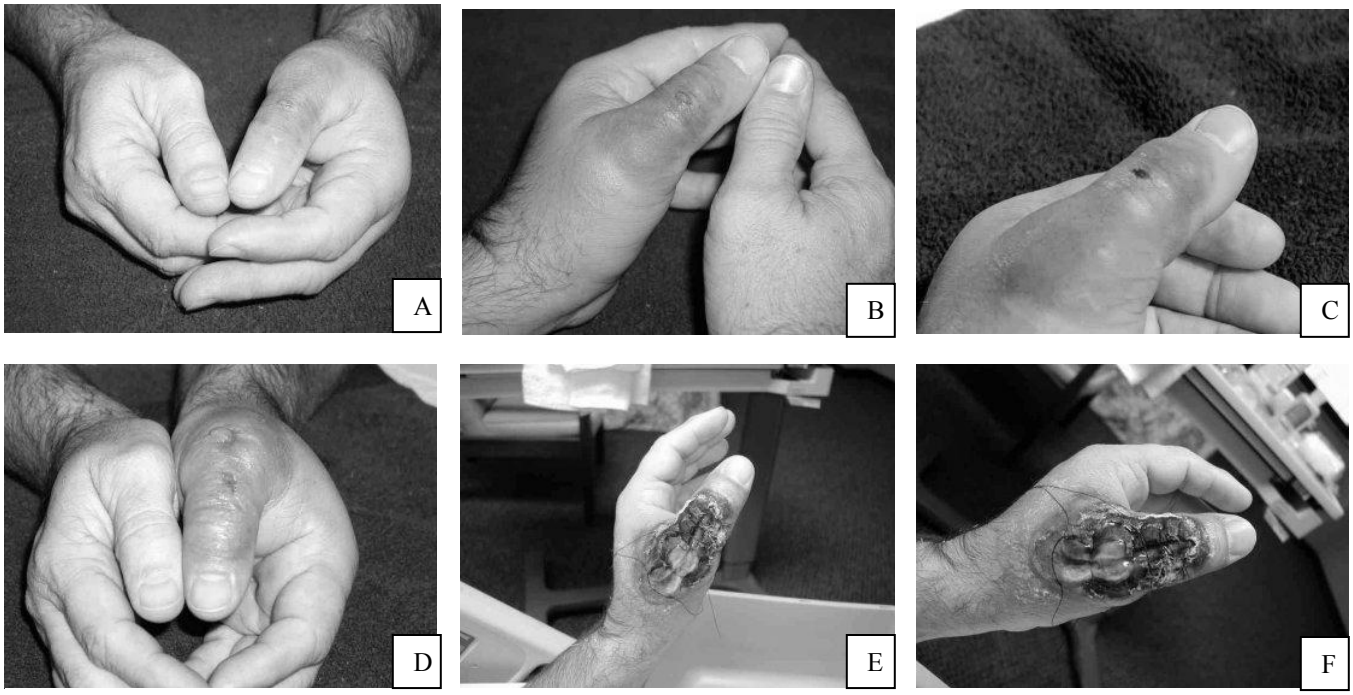


Figure 14. (From top left to right in order). A) Day three after initial spider bite. B) Notice swelling and erythemia indicating infection. C) Extreme erythemia and underlying tissue damage. D) Day 6, after antibiotic treatment. E) After incision and draining. F) Day 10, the wound looks as bad as it will look. Although it will be months before it is completely healed. Only time will tell if any permanent damage to the skin, muscles, or nerves.

Treatment

- Cold compresses intermittently
- Provide supportive care as necessary
- Refer to Medical Officer as it is necessary to excise all the indurated (hardened) skin and fascia before healing will begin
- Tetanus prophylaxis and antibiotics are necessary to control secondary infection
- Anaphylactic reactions may occur

Scorpions - Scorpions are predatory arthropod animals that have eight legs and are easily recognized by the pair of grasping claws and the narrow, segmented tail, often carried in a characteristic forward curve over the back, ending with a venomous stinger. Scorpions range in size from 9 mm to 21 cm and are found widely distributed over all continents. Scorpions number about 1,752 described species. Scorpion venom has a fearsome reputation and about 25 species are known to have venom capable of killing a human being.

Figure 15. Scorpion

Venom

- Neurotoxic

Signs and Symptoms

- Erythema and edema
- Local pain and/or parasthesia (an abnormal touch sensation such as burning or prickling often in the absence of external stimulus) at site of sting.
- Cranial nerve dysfunction - blurred vision, wandering eye movements, hypersalivation, trouble swallowing, tongue twitching/spasms, problems with upper airway, and slurred speech.
- Somatic skeletal neuromuscular dysfunction - jerking of extremity(ies), restlessness, and severe involuntary shaking that may be mistaken for a siezure.

Treatment

- Based on the level of envenomation
- Ice applied to the site for 30 minutes each hour until symptoms subside
- Oral analgesics
- Monitor for anaphylaxis

Prevention of Arthropod Envenomation

- Leave them alone
- Avoid nesting sites and hives
- Personnel with known allergies should carry an Epi-pen or Ana-kit
- Shake out sleeping bags and clothing and check boots before putting them on.
- Wear shoes
- Many scorpions inhabit brush and debris piles in search of prey. If you come in contact with this type of material, it is wise to wear gloves.
- Remove wood and rubbish piles around camp
- Cracks and recesses in rural desert dwellings should be filled

5. **ANAPHYLACTIC SHOCK**

Definition - life threatening reaction to an allergen. This reaction may have a rapid and severe onset. Without immediate emergency medical care, the patient may die.

Causes - exposure to an allergen that causes hypersensitivity reaction. Such exposure can be introduced to the body by the following:

POINT TO REMEMBER:
*Anaphylactic Shock is **NOT** just caused by insect stings. It may also be caused by the other reasons!*

- Injections (tetanus antitoxin, penicillin)
- Stings (honeybee, wasp, yellow jacket, hornet)
- Ingestion (medications and foods such as shellfish, chocolate, peanuts,etc.)
- Inhalation (dusts, pollen)
- Absorption (certain chemicals)

Signs and Symptoms

All signs & symptoms get progressively worse:

- Skin (Itching, redness and hives)
- Respiratory depression
- Sense of fullness in the throat, anxiety, chest tightness, shortness of breath and lightheadedness
- Decreased level of consciousness (LOC), respiratory distress and circulatory collapse
- In general, signs and symptoms begin within 60 minutes of exposure to an allergen. One-half of anaphylactic deaths occur within the first hour. **The faster the onset of symptoms, the more severe the reaction.**

Treatment

- Maintain ABC's
- Diphenhydramine Hydrochloride (Benadryl), a single injection of 25-50mg IM, used for skin allergies, urticaria and other mild anaphylactic reactions to allergens.

- **Epinephrine Injection** - the **most valuable drug** for the emergency treatment of severe allergic reactions such as asthma attacks characterized by wheezing, dyspnea and inability to breathe. Other symptoms may include bronchoconstriction, sneezing, hoarseness, urticaria, erythema and pruritis.

    - Epi-pen autoinjector delivers a single dose of 0.3 mg epinephrine IM

    - Repeat in five minutes if no improvement

- Fluid Resuscitation

- Documentation of the amount of medications and the times they were given is necessary in order to prevent an overdose of medication.

- TACEVAC

REFERENCES

FM 4-25.11 First Aid

Envenomation Review

1. Describe the difference between a hemotoxin and a neurotoxin.

2. Identify three characteristics of Pit Vipers.

   1)

   2)

   3)

3. Name four signs or symptoms of an Elapinae bite.

   1)

   2)

   3)

   4)

4. What is the most definitive care for a venomous snake bite?

5. Describe the treatment for a bee/wasp sting.

6. List three signs or symptoms of scorpion envenomation.

1)

2)

3)

7. What are the two medications used to treat anaphylaxis? Which is the most valuable for severe reactions?

1)

2)

NOTE: The following questions are offered for review purposes. This is NOT intended as a sole source of test preparation. Remember all test questions are based on an ELO and any ELO can be used to create a test question.

1. A chronic fungal infection of the feet would be known as what?
2. What are the most common causes of ingrown toenails?
3. What are the characteristics and examples of the Elapinae family of snakes?
4. What are the four types of waste?
5. What are the causes of blisters?
6. What causes exertional hyponatremia?
7. What are the stages of hypothermia?
8. What are the common causes of dehydration?
9. What are the physiological (host) predisposing factors associated with heat injuries?
10. What is the normal range of the body's temperature?
11. What are the predisposing factors of cold injuries?
12. What is the total time needed to disinfect a canteen using iodine tablets?
13. What are the characteristics and examples of the Colubrinae family of snakes?
14. What is the primary device for human waste disposal in the field?
15. What are the four sources of water?
16. Muscle cramps and tenderness in the extremities and abdomen, moist, pale, and warm skin, and a normal or slightly elevated core temperature are signs and symptoms of what?
17. What is the maximum amount of fluids you should drink per day?
18. What is plantar fasciitis?
19. Which heat injury is a severe, life-threatening condition; a true medical emergency?
20. What are the environmental factors that contribute to cold injuries?
21. What are the two methods of water disinfection?
22. What are the characteristics of the Hydrophinnae family of snakes?
23. What are the signs and symptoms of Black Widow spider bites?
24. Why are cat holes immediately covered after use?
25. What are the three classification levels of dehydration?
26. What are the causes of heat exhaustion?
27. What is the most important prevention measure for managing heat injuries?
28. Where does Chilblains (Pernio) usually occur?
29. What does the acronym COLD stand for?

30. What is the cause of Immersion foot (Trench foot)?
31. What are the four colored flags of the heat condition flag warning system?
32. What are the characteristics and examples of the Crotalinae family of snakes?
33. When treating snake bites, what are the common DON'Ts?
34. What causes anaphylactic shock?
35. What type of bee/wasp can only sting once and why?

MARINE CORPS FUNDAMENTALS

MARINE CORPS FUNDAMENTALS

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 301

Field Communications

TERMINAL LEARNING OBJECTIVE.

1. Given a SL-3 complete VHF radio with a fill, a frequency or net ID, and a distant station, while wearing a fighting load, **operate a VHF field radio** to establish communication with the distant station. (HSS-MCCS-2015)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, and in writing, **identify the nomenclature of the VHF field radio**, within 80% accuracy, per MCRP 3-40-3_ Multi-Service Communications Procedures. (HSS-MCCS-2015b)

2. Without the aid of reference, and in writing, **identify the components of the VHF field radio**, within 80% accuracy, per MCRP 3-40-3_ Multi-Service Communications Procedures. (HSS-MCCS-2015a)

3. Without the aid of reference and given a list, **identify VHF radio assembly procedures without error**, per MCRP 3-40-3_ Multi-Service Communications Procedures. (HSS-MCCS-2015c)

4. Without the aid of reference and given a list, **identify proper phonetic terms within** 80% accuracy and per MCRP 3-40-3_ Multi-Service Communications Procedures. (HSS-MCCS-2015d)

5. Without the aid of reference and in writing**, identify the control functionality of the VHF radio controls** in order to transmit field communications per MCRP 3-40-3_ Multi-Service Communications Procedures. (HSS-MCCS-2015e)

6. Without the aid of reference and given a list of steps, **sequence the procedures to load single channel frequencies** on a VHF field radio without any errors, per MCRP 3-40-3_ Multi-Service Communications Procedures. (HSS-MCCS-2015f)

7. Without the aid of reference and given a list, **identify trouble shooting procedures** to reestablish field communications per TM 11-5820-890-10-6. (HSS-MCCS-2015g)

1. **NOMENCLATURE OF THE SINCGARS (AN/PRC-119A)** The Single Channel Ground & Airborne Radio Systems (SINCGARS)**.** This radio is in a family of VHF-FM combat net radios designed to provide the primary means of command and control for combat, combat service, and combat service support units.

Single Channel (SC) Mode – When using the single channel mode of operation, the radio communicates using a single frequency. For the SINCGARS radio, this single channel can be selected by use of the Receiver-Transmitter keyboard (like a telephone keypad). The advantage of SINCGARS is that eight (8) individual single channel frequencies can be loaded into the radio, and the operator can select any one of those channels by flipping a switch.

Frequency Hopping (FH) Mode – Another method of secure transmissions is using the SINCGARS in the FH mode. This mode reduces the enemy's capability to jam your traffic or to use direction-finding equipment to establish your location. When properly loaded with data, the SINCGARS hops (cycles) through more than 100 frequencies per second during transmissions in the FH mode. When communicating in the FH mode, the communicating stations must be on the same net. This means that they both must be operating on the same time (clock) and have the same data loaded and on the same hop-set (channel). Up to six (6) channels can be loaded for FH operations at any given time.

Remote Operations – The SINCGARS radio can be operated by the use of remote equipment

Retransmission – The radio is capable of conducting retransmission operations in conjunction with other radios. Because of the SINCGARS capabilities (SC and FH) the retransmit function allows a wider use of retransmitting functions than with older radios.

Frequency Range – The SINCGARS operates in the VHF range from 30.000 to 87.975 MHz.

Range – One of the features of the SINCGARS radio is the operator's ability to select the power output of the radio by use of a selector switch. This feature allows you to reduce your electronic footprint by operating in a lower power or to reach far away stations using a higher setting. The switch has four positions: LO, M, HI, and PA. The maximum transmission ranges for each of the settings is as follows:

(1) LO (low power) – 200 to 400 meters

(2) M (medium power) – 400 meters to 5 kilometers

(3) HI (high power) – 5 kilometers to 10 kilometers

(4) PA (power amplifier) – 10 kilometers to 40 kilometers.

Only vehicle-mounted radios equipped with a power amplifier can utilize this setting. Manpack and vehicle radios not equipped with the power amplifier can only use settings LO, M, and HI. When using the SINCGARS radio, the operator should always attempt communication with the lowest setting first, thereby reducing the radios electronic signature. Once communication is established, the operator should maintain the lowest possible setting. PA should only be used when necessary to achieve communication.

2. **COMPONENTS OF THE MANPACK CONFIGURATION (AN/PRC-119A)**

The Manpack configuration is made up of the following components: (Figure 1)

1. Receiver-Transmitter (RT) – This is the common item of all of the configurations. The RT is actually the SINCGARS radio itself
2. Handset- This is used for transmitting voice communication. The handset looks the same as the handsets you may have worked with operating other radios.
3. Manpack Antenna- The antenna radiates/receives the signals.
4. Battery Box – The battery box connects to the bottom of the RT and provides housing for the battery that powers the RT in the Manpack configuration.
5. Battery – Connects to a fitting in the battery box and supplies primary power to the RT for operation.
6. Field Pack – The pack carries the RT and the components.

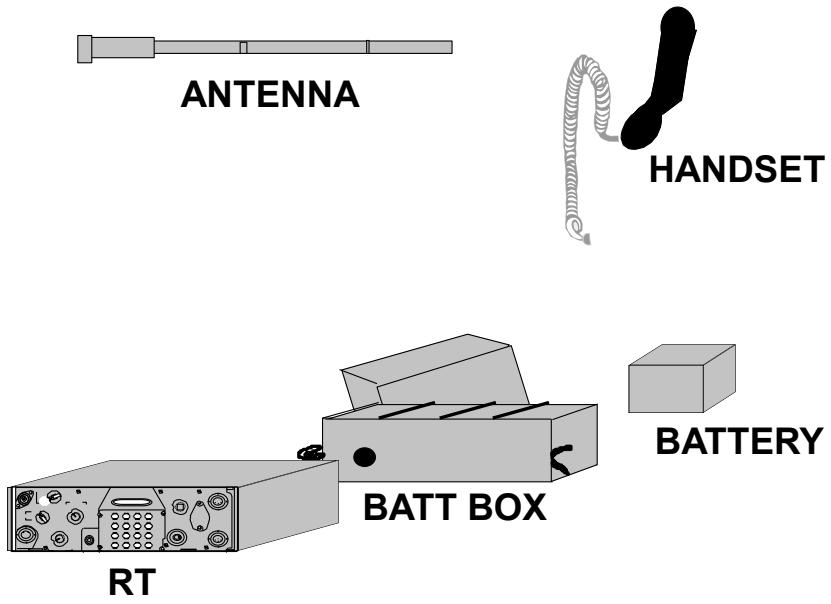


Figure 1 Components

3. **ASSEMBLY OF THE AN/PRC-119** (Figures 2-3) Visually inspect battery box for dirt and damage. If the battery has been previously used, note battery life if it is written on the battery.

a. Stand RT on front panel guards, place battery box on RT and secure it to latches
b. Place battery in battery box and mate connectors
c. Close battery box cover and secure latches
d. Return radio in upright position

e. If used battery was installed, enter the battery life condition into the radio by performing the following

(1) Set FCTN to LD

(2) Press BATT then CLR

(3) Enter number recorded on side of battery

(4) Press STO

(5) Set FCTN switch to SQ ON

f. Screw whip antenna into base, only hand tighten

g. Carefully mate antenna base with RT antenna connector. Make sure you line up the grooves and only hand tightened. It is important not to tighten by other means.

h. Attach handset by lining up red dots and then pressing and turning clockwise.

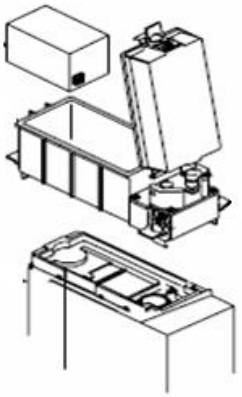


Figure 2

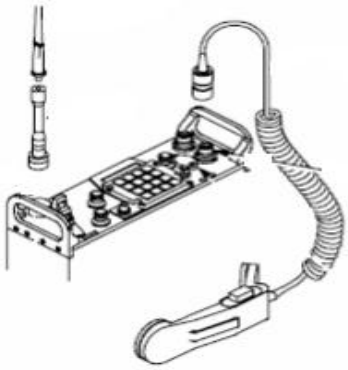


Figure 3

4. **PHONETIC TERMS**. The phonetic alphabet identifies spoken letters through a set of easily understood words. Each of these words begins with the letter being identified. The phonetic alphabet is used to:

A: ALPHA	**D: DELTA**	**G: GOLF**	**J: JULIET**	**M: MIKE**
B: BRAVO	**E: ECHO**	**H: HOTEL**	**K: KILO**	**N: NOVEMBER**
C: CHARLIE	**F: FOXTROT**	**I: INDIA**	**L: LIMA**	

O: OSCAR	**R: ROMEO**	**U: UNIFORM**	**X: X-RAY**
P: PAPA	**S: SIERRA**	**V: VICTOR**	**Y: YANKEE**
Q: QUEBEC	**T: TANGO**	**W: WHISKEY**	**Z: ZULU**

Transmit isolated letters such as E5K, which is transmitted ECHO-FIFE-KILO.

a. Transmit each letter of an abbreviation such as ITB, which is transmitted INDIA-TANGO-BRAVO.

b. Spell unusual or difficult words such as HOSE, which is transmitted HOTEL-OSCAR-SIERRA-ECHO.

c. The following list depicts the pronunciation of each letter in the phonetic alphabet:

Phonetic Numerals. The specific pronunciation of numerals has been determined in order to avoid misinterpreted transmissions. The following are the pronunciations of the phonetic numerals 0 through 9:

0: ZE-RO	**3: TREE**	**6: SIX**	**9: NINER**
1: WUN	**4: FOW-ER**	**7: SEV-EN**	
2: TOO	**5: FIFE**	**8: ATE**	

Procedure Words (Pro Words). Procedure words are pronounceable words or phrases, which have been assigned a meaning for the purpose of expediting message handling over radios or field telephones. Understanding the following PROWORDS and their respective definitions is the key to clear and concise communication procedures.

This Is: This transmission is from the station whose designation immediately follows.

Over: This is the end of my transmission to you, and a response is necessary. Go ahead and transmit.

Out: This is the end of my transmission to you and no answer is required or expected. Since the phrases OVER and OUT have opposite meanings, they are never used together.

Roger: I have received your last transmission satisfactorily and understand it.

Wilco: I have received your last transmission and will comply. Since the meaning of ROGER is included in that of WILCO, these two prowords are never used together.

Say Again: I did not receive or understand your last transmission, repeat all of your last transmission, or use with ALL AFTER or ALL BEFORE. Do not substitute SAY AGAIN for REPEAT, which is a proword specific to call for fire.

Say Again: I am repeating the transmission or portion indicated.

All After: The portion of the message to which I have referred is all that which follows _____.

All Before: The portion of the message to which I have referred is all that which precedes _____.

Wait Over: I must pause for a few seconds.

Wait Out: I must pause for longer than a few seconds. I will call you back.

Read Back: Repeat this entire transmission back to me.

I Read Back: The following is my response to your instruction to read back.

Correction: I have made an error in this transmission. Transmission will continue with the last word correctly sent.

Radio Check: I want a response indicating the strength and readability of my transmission.

(1) A response of ROGER indicates transmission is loud and clear.

(2) A response of WEAK BUT READABLE indicates a weak signal but I can understand.

(3) A response of WEAK AND GARBLED indicates a weak signal and unreadable.

(4) A response of STRONG BUT GARBLED indicates a strong signal but unreadable.

5. FUNCTIONALITY OF THE AN/PRC-119 CONTROLS

Although the SINCGARS radio demands more of the operator than turning the radio on, operator tasks primarily involve entering data using the keyboard, turning knobs and following instructions from the net control station. In order to operate the radio, the operator needs to understand terminology of the radio so that when he receives instructions over the radio, he can follow them. Additionally, the primary function of each control will aid the operator in achieving a properly functioning radio.

NOTE: Anytime the operator moves a switch to a setting with a box around the letters, the knob must first be pulled before it is turned. This feature ensures that the knob is not accidentally moved to the position.

Receiver-Transmitter (RT) - Most of the controls that the operator will use are placed on the face of the RT.(See fig. 4)

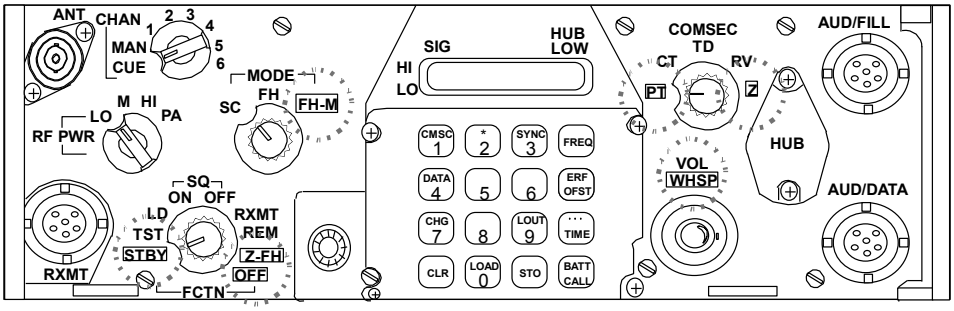
(1) FCTN (function) Switch – The function switch sets the RT function. The function switch has four operating positions (SQ ON, SQ OFF, REM and RXMT) and five other positions (STBY, TST, LD, Z-FH and OFF). The function of each position is as follows:

(a) SQ ON (squelch on) – This turns on the RT and the squelch. This feature will prevent the rushing noise from being heard in the handset/helmet. This is the normal operating position for the SINCGARS radio.

(b) SQ OFF (squelch off) – This turns on the RT but not the squelch. This position is used when communicating in the SC mode with radios having a different squelch system.

(c) REM (remote) – This position actually disables all of the RTs front panel controls and allows the remote device used with the radio to have complete access to the controls.

(d) RXMT (retransmit) – This position is used when the radio is operating in the retransmit mode.



NOTE: PULL TO TURN

Figure 4. Face of Receiver Transmitter

(e) STBY (stand by) - The STBY position will cut the primary (battery/vehicle) power to the RT. The RTs battery (hub battery) will maintain the memory of the radio including frequencies and times. This position is used as an alternative to OFF when the operator is concerned about conserving power during non-operating periods, but wants to retain all of the data loaded for operations occurring in the near future (same day).

(f) TST (test) - When this position is selected, the RT conducts a self-test of its internal circuits. At the completion of the test, the radio will display results. Whenever the radio is put into operation, the operator should conduct a self-test.

(g) LD (load) - Putting the radio in this position allows the operator to load frequencies, data and COMSEC into the radio. In order to load any of this information into

the radio for use, the operator must ensure that LD is positioned so the radio will receive the input.

(h) Z-FH (zero-FH) - Placing the function switch in this position and waiting five (5) seconds will clear all of the frequency hopping (FH) data within the radio.

(i) OFF - Turns off all of the power to the RT. When the radio is in the OFF position for more than five (5) seconds, the memory is completely cleared. This switch is used when it is the operator's intent to take the radio completely out of action.

Mode Switch - Sets the receiver-transmitter mode. The mode switch has three (3) settings that allow the operator to select the mode of operation.

(1) SC (single channel) - Placing the mode switch in this position places the RT in the single channel mode of operation.

(2) FH (frequency hopping) - This position allows the operator to use the RT in the FH mode.

(3) FH-M (frequency hopping master) - This setting places the RT in frequency hopping master mode. This mode is used only by the net control station (NCS). The NCS is basically the foundation of a FH net. If more than one station use the FH-M mode, then communication can be lost. Operators do not use this position.

COMSEC Switch - Sets the RT to the COMSEC mode. This switch has five (5) settings that allow the operator to use or manage COMSEC data.

(1) PT (plain text) - Placing the switch at this setting places the RT in the plain text, not a secure, mode of transmission.

(2) CT (cipher text) - This setting allows the operator to use cipher, secure, transmissions when placed to this position.

(3) TD (time delay) - Places the RT in secure mode. This setting is used when necessary to compensate for transmission delays due to the distance between communication links. This setting is also used when operating some data devices with the SINCGARS in order to compensate for the data rate differences.

(4) RV (receive variable) - This setting is used when receiving remote fill of the COMSEC key.

(5) Z (zero) - Used to clear the COMSEC fills. When turned to Z, the fills in channel 1-5 are instantly cleared. After 5 seconds in the Z position, the key in channel 6 is cleared.

CHAN (channel) Switch - Selects manual, preset and cue frequencies. Operating this switch allows the operator access to any of the frequencies loaded into the channels. This switch is the means that the operator changes frequencies that are preset.

(1) MAN (manual) - This position selects the loaded manual frequency. The manual frequency is used during FH operations and will be discussed later.

(2) CUE - This setting selects the loaded CUE frequency. This frequency is also used in FH operations and will be discussed later.

(3) 1 through 6. These are the channels that may be loaded with operating frequencies or hopsets. COMSECs are also loaded into these channels.

RF Switch - Adjusts power level of transmissions. As earlier discussed, the SINCGARS has a variable power output. This is the switch that enables the operator to change the power output of the radio.

SIG (signal) Display - Shows appropriate signal strength. The signal display is contained in the left hand part of the LED (Light emitting diode) display. There is a bar that lights from LO to HI adjacent to the letters. The RF switch setting determines the signal output that is displayed on the SIG display.

HUB/LOW (Hold Up Battery) Display - Indicates the power level of the HUB battery. The hub battery is the source of energy for the stand by mode. This indicator notifies the operator when the HUB battery is low, empty or missing. A diamond shape symbol will flash if the HUB battery is weak. If the diamond shaped symbol appears as a steady light, the battery is extremely weak or missing.

DIM Control- Adjusts display brightness. The knob is turned clockwise to brighten the display and counterclockwise to dim the display.

VOL/WHSP (volume/whisper) control - Adjusts audio volume. Clockwise increases volume, counterclockwise to decrease volume. Pulling the knob out allows the operator to receive as normal, but give the operator the additional feature of being able to talk very softly and still transmit.

Keyboard Display - Displays keyboard information and other data to the operator. A variety of information is displayed in response to keyboard functions and operation of the radio.

Keyboard - Used for entering, holding and checking data. By using the knobs and the keyboard in conjunction, the operator is able to complete all functions required when operating the radio. The keyboard is laid out similar to a telephone keypad. Some of the keys have dual functions.

(1) FREQ (frequency) Button - This button is used to check the data entered in the RT. Additionally, this button is used to load and clear the frequencies.

(2) ERF (electronic remote fill) Button - Used only by the NCS (net control station) to transmit fills to other stations.

(3) OFST (offset) Button - This button is used during SC operations when it becomes necessary to offset SC frequencies.

(4) TIME Button - This button is used by the NCS to load and check the FH time clock. A requirement of operating an FH net is that all stations have the same time set. The NCS is responsible for this, and the time button is one of the NCS tools.

(5) BATT (battery) Button - This button is used with the Manpack configuration to check the battery life of the primary battery. This button, when pressed, will show the life remaining on the battery.

(6) CALL Button - The call button is used to communicate with the remote when running remote operations.

(7) STO (store) Button - This button is used for data loading. Pushing this button when required transfer data from the holding (temporary) memory to the permanent memory. When loading ERF data this button is used.

(8) LOAD Button - This button will load information into the holding memory and retrieve information from the permanent memory into the holding memory.

(9) CLR (clear) Button - Clears data from the keyboard display if a mistake was made.

(10) LOUT (lockout) Button - Used by the NCS when managing an FH net.

(11) CHG (change) Button - This button is used in conjunction with other buttons in order to change data when required.

(12) SYNC (late entry) Button - During FH operations, this button is used when performing late entry procedures.

(13) DATA Button - The SINCGARS radio can operate in the data mode where this button selects the data rate. During this period of instruction, we will only discuss the voice mode of operation.

(14) CMSC (COMSEC) Button - Pressing this button causes the COMSEC key to be displayed.

(15) Number Buttons - Used to enter numerical data such as SC frequencies, and channel numbers.

AUD/FILL (audio/fill) Connector - Connects to fill devices or handsets. When loading FH data or COMSEC data, the fill device is hooked to this connector via cable. Handsets can be attached to this connector as necessary.

AUD/DATA (audio/data) Connector - Connects to external data devices during data operations and handsets during normal operations.

ANT (antenna) connector - Connects to the manpack antenna or vehicle antenna cable. If the RT is to be functioning with PA, the antenna connector connects the RT to the PA. The PA will connect to the antenna.

RXMT (retransmit) Connector - Connects to another RT during retransmit operations.

6. LOADING SINGLE CHANNEL FREQUENCIES ON THE SINCGARS RADIO

The most basic of SINCGARS operation is operating the radio in the single channel (SC) mode. When operating in the SC mode, the user is using the radio to communicate on a single frequency. The procedures for loading SC frequencies require setting the proper switches, pressing the correct number keys and storing the information in the channel desired. As discussed earlier, the SINCGARS radio is capable of accepting up to 8 single channel frequencies. Those frequencies are loaded in the manual, cue and 1 through 6 channels. The procedures for loading frequencies into the channels are identical with the exception of which channel is selected during the procedure. The first channel we will load is the manual channel.

TURNING ON THE RT (Receiver-Transmitter)

(1) Place mode switch to SC

(2) Place RF power switch to desired level

(3) Place channel switch to MAN

(4) Place COMSEC switch to CT

(5) Place volume switch to desired level

(6) Move FCTN switch to TST, complete test by following instructions on display window. When test is complete move FCTN switch to either STBY or SQ ON.

Loading SC Frequencies - Following are the procedures for loading single channel frequencies. The procedures are to be performed in order. In order to load additional channels with frequencies, go to step (3), change to the desired channel and repeat steps (4) through (8). Continue repeating those steps for each new channel desired.

(1) Set COMSEC switch to (P.T.) Plain Text prior to load.

(2) Set the function switch to load - The load setting allows the operator to input data to the radio.

(3) Set the mode switch to single channel (SC) - When loading single channel frequencies, the setting is appropriately set on SC.

(4) Set channel switch to desired channel - This step is different for each channel loaded. This setting will change the manual frequency. Turn the channel switch to the desired channel to change other frequencies.

(5) Press FREQ (frequency) button on keypad - This procedure displays the current frequency of the channel selected, or "00000" if there is not a frequency currently entered into the channel.

(6) Press the CLR (clear) button - After pressing the FREQ button and displaying the current frequency, pressing the CLR button will clear that frequency and display five lines "_ _ _ _ _". At this point, the radio is ready to accept frequencies.

(7) Enter the numbers of the new (desired) frequency - Using the keypad, the display will show each number replacing a line as you enter the number. If you make a mistake, push the CLR button and the five blank lines will reappear. An important note is that if there is no keyboard action for 7 seconds, the display will go blank, and you will have to reenter the numbers.

(8) Press the STO (store) button- The display will blink and the frequency you just entered is moved to the permanent memory in the channel selected.

(9) Set function switch to SQ ON or OFF (squelch on) - Placing the radio in SQ ON puts the radio into the normal SC operating position. Now the operator can call another channel using the handset.

Transmitting with the SINCGARS radio - When the push-to-talk button is activated (handset or helmet), the operator talks, and the radio transmit in the voice mode. The radio will transmit on the frequency that is entered into the channel that is selected on the channel switch. Transmissions should be no longer than 3 to 5 seconds.

(1) Changing Channels - In order to transmit on a different frequency, the operator simply moves the channel switch to the channel containing the desired frequency. Each time that the channel switch is turned to a new channel, the frequency entered into that channel is displayed for the operator's reference.

Clearing Single Channels - When the radio is turned OFF for more than 5 seconds, the memory is cleared. If the operator desires to clear a SC of a frequency without turning the radio OFF, thus clearing all channels, the following procedures are used

(1) Set the MODE switch to SC

(2) Set the CHAN switch to the channel to be cleared. The frequency will be displayed allowing the operator to confirm that the frequency is to be cleared.

(3) Press the FREQ button

(4) Press the CLR button. The display will show five blank lines.

(5) Press the LOAD button, the press the STO button.

(6) Pressing STO will enter NO, or a cleared, frequency into the RT.

7. TROUBLESHOOTING THE AN/PRC-119 CONTROLES

The troubleshooting tables found in TM11-5820-890-10-6 Pg's. 58-74 allow you to check out common malfunctions of your equipment. The table lists the common malfunctions which you may find during the operation or maintenance of the radio, or its components. You should perform the tests/inspections and corrective actions in the order listed. This outline cannot list all malfunctions that may occur, or all the tests, inspections and corrective actions. If a malfunction is not listed, or is not corrected by listed corrective actions, notify your supervisor.

2.3. TROUBLESHOOTING FLOWCHARTS.

Chart 1

VARIABLE WILL NOT LOAD.
(Sheet 1 of 1)

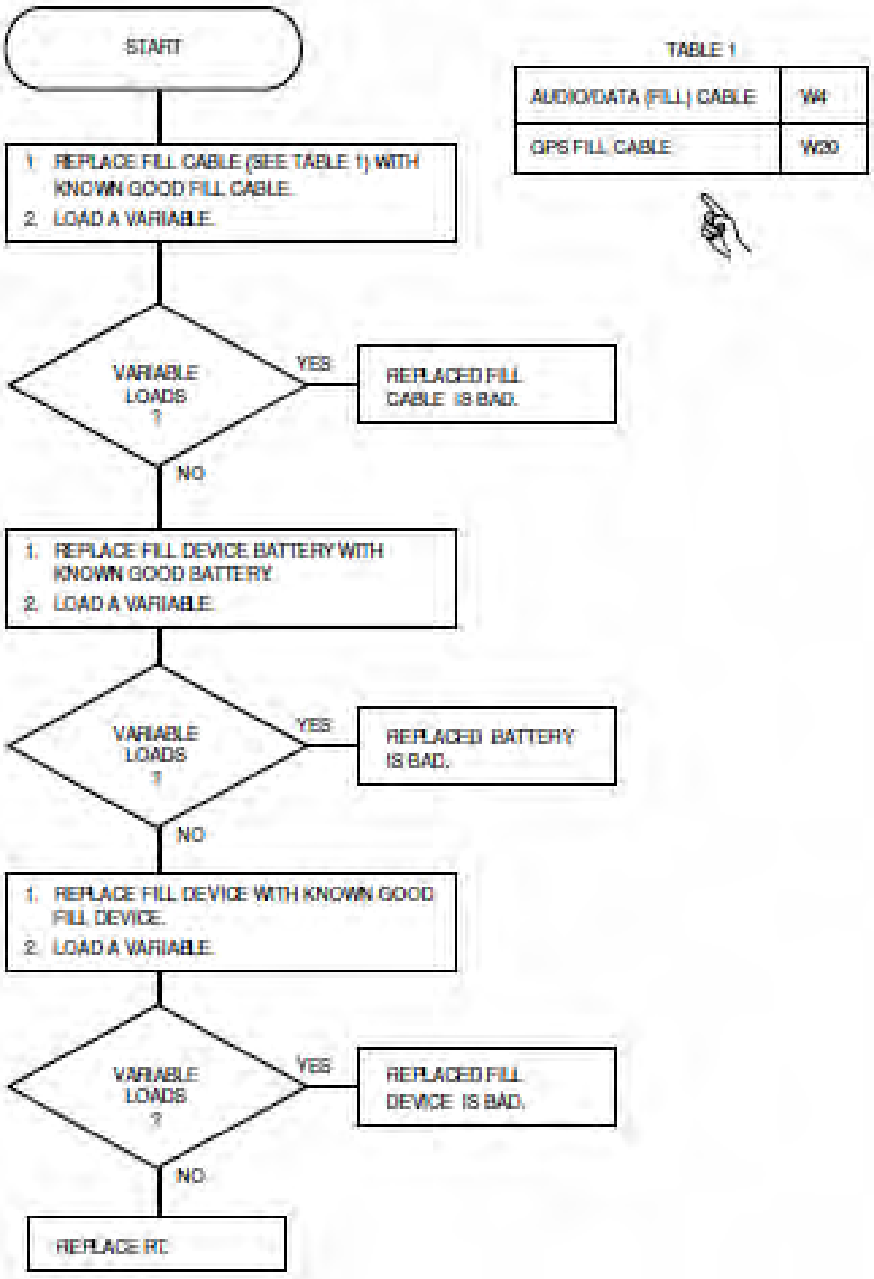


TABLE 1

AUDIO/DATA (FILL) CABLE	W4
GPS FILL CABLE	W20

REFERENCES
MCRP 3-40-3
TM11-5820-890-10-6

Field Communication Review

1. What does it mean when the squelch is switched to the “on” position?

1. What happens to the memory in a SINCGARS if it is turned off for more than 5 seconds?

2. Define the term “over” as it relates to Field Communication.

3. Provide the phonetic term for the following letters:

G-

O-

R-

E-

D-

S-

O-

X-

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FMST 302

Five Paragraph Order

TERMINAL LEARNING OBJECTIVE

1. Given an operational environment and a Commander's order, **utilize operation orders** to provide adequate medical support for the mission. (8404-HSS-2001)

ENABLING LEARNING OBJECTIVE(S)

1. Without the aid of reference, given a description or list, **identify the components of a five paragraph order**, within 80% accuracy, in accordance with MCWP 3-11.2 Marine Rifle Squad. (8404-HSS-2001a)

2. Without the aid of reference, given a description or list, **identify the components of a warning order**, within 80% accuracy, in accordance with MCWP 3-11.2 Marine Rifle Squad. (8404-HSS-2001b)

3. Without the aid of reference, given a description or list, **identify the components of a fragmentary order**, within 80% accuracy, in accordance with MCWP 3-11.2 Marine Rifle Squad. (8404-HSS-2001c)

1. **FIVE PARAGRAPH ORDER**

a. Orders generally adhere to the five paragraph format though each will differ due to time and information available or required.

b. **Order Writing Process** – The development of the combat order within **BAMCIS** begins at the receipt of the mission. It does not end with combat, but continues throughout and after the fight in anticipation of the next mission. It includes the techniques by which orders and instructions are organized, sequenced, and transmitted from leaders to subordinates. The combat order is a continuing process with accomplishment of the mission as its main goal. There are many types of orders, however we will discuss the three basic types of orders.

(1) **BAMCIS** – Six (6) troop leading steps by which a leader receives, plans, and executes his mission. Troop leading steps are a logical and orderly process for making the best use of time, facilities, and personnel in preparing for and executing an assigned mission. It can be viewed as elements of planning and decision making cycle.

(a) **B**egin Planning

(b) **A**rrange for Reconnaissance and Coordination

(c) **M**ake Reconnaissance

(d) **C**omplete Plan

(e) **I**ssue Order

(f) **S**upervise

c. **FIVE PARAGRAPH ORDER FORMAT**

The purpose of the five-paragraph order is to issue an order in a clear and concise manner by a thorough orientation of the area of operations. A five-paragraph order gives subordinates the essential information needed to carry out the operation. The order converts the leader's plan into action, gives direction to the efforts of his unit, and provides specific instructions to subordinate elements. At the rifle company level and below, orders are most commonly issued orally with the aid of a terrain model.

(1) **SMEAC** The acronym used for the five-paragraph order format.

(a) Orientation - Prior to issuing an order, the unit leader orients his subordinate leaders to the planned area of operation using a terrain model, map, or when possible, the area of operation. Keep the orientation simple and brief.

(b) Situation - The situation paragraph contains information on the overall status and disposition of both friendly and enemy forces. The situation paragraph contains three subparagraphs.

1. Enemy Forces - This subparagraph contains essential information concerning the enemy's composition, disposition, and strength based on its size, activity, location, unit, time, and equipment. While focusing on enemy forces there are two (2) acronyms that will assist you with the information you must recall.

a. **SALUTE** This acronym is an established method to remember how and what to report about the enemy. The purpose of SALUTE is to focus thinking about identifying and locating enemy weaknesses that can be exploited.

(1) **S**ize – Enemy squad, platoon...

(2) **A**ctivity – Enemy digging in, bivouacking

(3) **L**ocation – Six-digit grid if possible

(4) **U**nit – Type and designation

(5) **T**ime – When the enemy was last observed

(6) **E**quipment – Equipment they possess

b. **DRAW-D** - This acronym use to assist the leader in determining the enemy's capabilities and limitations.

(1) **D**efend

(2) **R**einforce

(3) **A**ttack

(4) **W**ithdraw

(5) **D**elay

2. Friendly Forces - Contains essential information concerning the mission of the next ***h****igher* unit, location and mission of ***a****djacent* units, and mission of non-organic ***s****upporting* units. Information in this subparagraph can be remembered with the acronym **HAS:**

a. **H**igher

b. **A**djacent

c. **S**upporting

d. Attachments and Detachments - Units attached or detached from a squad by higher headquarters, including the effective time of attachment or detachment.

(b) Mission - Provides a clear and concise statement of what the unit must accomplish. The mission statement is the heart of the order and should answer the following five (5) questions:

1. **W**ho

2. **W**hat

3. **W**hen

4. **W**here

5. **W**hy

(c) Execution - Contains the "how to" information needed to conduct the operation. The paragraph is divided into three subparagraphs:

1. Concept of Operations - This is a general explanation of the tactical plan; includes a brief scheme of maneuver from start to conclusion, type of attack and fire support plan.

2. Tasks - The specific mission to be accomplished by each subordinate element of the unit will be listed in a separate numbered subparagraph. It is the subordinate's unit mission statement.

3. Coordinating Instructions - The specific instructions and tasks that apply to two or more units; includes order of movement, planned combat formations, tactical and fire control measures (i.e. phase lines and checkpoints) and any other tasks that pertain to the mission.

(d) Administration and Logistics - This paragraph contains information or instructions pertaining to rations and ammunition, location of the distribution point, corpsman, aid station, handling of prisoners of war, other administrative and supply matters. This is also known as the four (4) **B's**.

1. **B**eans

2. **B**ullets

3. **B**and-Aids

4. **B**ad Guys

(d) Command and Signal - This paragraph contains instructions and information relating to command and communication functions. It contains two (2) subparagraphs:

1. Command - Identifies the chain of command and their location before, during, and after the operation.

2. Signal - Gives signal instructions for the operation such as frequencies, call signs, pyrotechnics, emergency signals, radio procedures, brevity codes, challenge and password.

2. **WARNING ORDER**

a. **Warning Order** - Warning orders give advance notice of an order or action.

(1) Purpose - to provide subordinates with maximum time available to prepare for an operation or action. Warning orders are either oral or written and must adhere as closely as possible at battalion and company level.

(2) Information - The format below contains the minimum items of information for inclusion in the warning order.

(a) Situation – A brief statement of the situation.

(b) Mission – Mission of the patrol.

(c) General Instructions

1. General and special organization. General tasks are assigned to units and teams. Specific details of tasks are given in the patrol leader's order.

2. Uniform and equipment common to all. The patrol leader specifies camouflage measures to be taken and the identification to carried.

3. Weapons, ammunition, and equipment. These items are assigned to units and teams. Subordinate leaders make further assignments to teams and individuals.

4. Chain of command. A chain of command is established when the patrol includes personnel from outside the squad.

5. A time schedule for the patrol's guidance. The patrol leader addresses all events from the present until the patrol departs. He also designates the place and uniform for receiving the patrol order, conducting inspections, and rehearsals.

(d) Specific Instructions

1. To subordinate leaders. The patrol leader gives out all information concerning the drawing of ammunition, equipment, ordnance, water, and rations; identifies the personnel he wants to accompany him on his reconnaissance; and gives guidance on any special preparation he believes will be necessary during the conduct of the mission, such as practicing stream crossings.

2. To special purpose teams or key individuals. The patrol leader should address requirements of designated personnel or teams, such as having point men, pacers, and navigators make a thorough map study and check their equipment.

3. **Fragmentation Order**

a. Fragmentation orders are issued when the time element precludes issuance of a complete order.

b. Purpose - to ensure continuous action as a situation develops or as decisions are made. Fragmentation orders omit elements found in a complete order that have not changed since the order was given or the order is unavailable or incomplete at the time of issuance.

c. Information - Fragmentation orders follow the sequence of the related standard order. At a minimum, they contain two (2) paragraphs from the five paragraph order format.

(1) Mission Statement – the second paragraph of the five paragraph order format. This will include the same kind of information as if you were preparing the whole order.

(2) Execution Statement – This is the HOW of the operation and should be as descriptive as possible given time constraints.

d. The commander uses the fragmentation order extensively in fast moving situations. Fragmentation orders are supplemented by visits, messages, and other fragmentation orders until the action is completed or a complete order is issued.

REFERENCES:
MCWP 3-11.2

ACRONYMS

BEGIN PLANNING
PLAN USE OF AVAILABLE TIME
INITIAL ESTIMATE OF THE SITUATION

MISSION
ENEMY

SIZE	**D**EFEND
ACTIVITY	**R**EINFORCE
LOCATION	**A**TTACK
UNIT	**W**IITHDRAW
TIME	**D**ELAY
EQUIPMENT	

TERRAIN AND WEATHER: **K**EY TERRAIN
OBSERVATION AND FIELDS OF FIRE
COVER AND CONCEALMENT
OBSTACLES
AVENUES OF APPROACH

TROOPS AND FIRE SUPPORT AVAILABLE
PRELIMINARY PLAN DECIDE **P**OINT
OF
MAIN
EFFORT

ARRANGE FOR
MAKE RECONNAISSANCE AND COORDINATION
COMPLETE PLAN
ISSUE ORDER
ORIENTATION
SITUATION
A. GENERAL
B. ENEMY FORCES (SALUTE/DRAWD)
C. FRIENDLY FORCE: **H**igher
ADJACENT
SUPPORTING
D. ATTACHMENTS AND DETACHMENTS
E. ASSUMPTIONS

MISSION: WHO, WHAT, WHEN, WHERE, WHY
EXECUTION: GIVE TASKS AND POINT OF MAIN EFFORT
ADMINISTRATION AND LOGISTICS:
BEANS, BULLETS, BANDAGES, BAD GUYS
COMMAND AND SIGNAL
SUPERVISE

OPERATION ORDER

1. SITUATION
   a. Enemy Forces: Situation, capabilities, Indications
   b. Friendly Forces: Mission and location of higher, adjacent and supporting units. State the higher units POME
   c. Mission of units in direct support
   d. Attachments and Detachments: Units attached to or detached from your unit by higher headquarters, and effective time

2. MISION
   Simply state the mission

3. EXECUTION
   In the first subparagraph give general summary of the tactical plan or operational concept
   In succeeding subparagraph assign missions to each organic and attached unit
   In the next to last subparagraph designate and assign missions to reserve (not normally used at platoon level)
   Assign a POME

4. ADMINISTRATIVE AND LOGISTICS
   Supply, evacuation, transportation, service, personnel and miscellaneous

5. COMMAND AND SIGNALS
   a. Signal Instructions and information
   b. Command posts, location of commander

5 Paragraph Order Review

1. A warning order must consist of how many paragraphs? What are they?

2. Define the acronym SMEAC?

3. What questions should be answered in the "M" portion of SMEAC?

4. Under which paragraph would you find information about medical support?

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FMST 303

Individual Movement Techniques

TERMINAL LEARNING OBJECTIVE(S)

1. Given an individual weapon, as a member of a unit, **perform individual movement techniques** to arrive at the objective. (HSS-MCCS-2013)

2. Given an operational environment, camouflage materials, individual field equipment, an individual weapon, and while wearing an assault load **camouflage self and equipment** to avoid detection and preserve the fighting force to accomplish the mission. (HSS-MCCS-2022)

ENABLING LEARNING OBJECTIVE(S)

1. Without the aid of reference while wearing individual combat equipment, **perform individual actions during fire and movement**, in accordance with the Marine Rifle Squad, MCRP 3-11.2. (HSS-MCCS-2013g)

2. Without the aid of reference while wearing individual combat equipment**, perform the techniques for negotiating obstacles**, in accordance with the Marine Rifle Squad, MCRP 3-11.2. (HSS-MCCS-2013h)

3. Without the aid of reference, given a description or list, identify types of cover, **concealment, and camouflage**, without any errors, per FM 21-75, Combat Skills of the Soldier and STP 21-1-SMCT, Soldiers Manual of Common Tasks. (HSS-MCCS-2022a)

1. **METHODS OF MOVEMENT:**

a. **LOW SILHOUETTE MOVEMENTS** - The rush is not always the best movement to use. Sometimes you will find yourself using one of the three types of crawls. The situation will dictate what type of crawl you will use. The three types of movements are: High, Low, and Back crawl.

(1) High Crawl - The high crawl permits faster movement and still allows for a low silhouette. Use this crawl when there is good concealment but enemy fire prevents you from getting up.

(a) Keep your body off the ground and rest on your forearms and lower legs. Carry the weapon at modified port arms with one hand on the stock and the other on the rail cover/heat shield. Keep the muzzle off the ground. Keep your knees well behind your buttocks so your body will stay low.

(b) To move alternately advance your right elbow and left knee, then your left elbow and right knee.

(2) Low Crawl - The low crawl gives you the lowest silhouette. Use it to cross places where the concealment is very low and enemy fire or observation prevents you from getting up.

(a) Keep your body flat against the ground. With your firing hand, hook your weapon sling at the upper sling swivel using your thumb. Let the rail cover/heat shield rest on your forearm, keeping the muzzle off the ground, and let the weapon butt drag.

(b) To move push your arms forward and pull your firing leg forward. Then pull with your arms and push with your leg. Continue this throughout the movement.

(c) Look forward by bending your neck, keeping the side of the helmet on the ground. Do not lift up your head.

(d) Be sure your dust cover is closed and don't stick the muzzle of your rifle in the dirt. You will want your weapon to function when you close with the enemy.

(3) Back Crawl - This will be used so that you can crawl under wire obstacles that the enemy sets up on the battlefield or around his defensive positions.

(a) To crawl under a wire obstacle, slide head first on your back. Use your weapon to push the wire away from your body, grasp the hand guards palm up. Push forward with your heels and keep your head slightly off the deck so you're not pushing dirt. Wiggle your shoulders to assist in movement. Rest the muzzle of the weapon on your helmet. To keep the wire from snagging on your clothes and equipment, let it slide along your weapon. Feel ahead with your free hand to find the next strand of wire and any tripwire or mines. Do not pull yourself through by tugging on the wire; it may be booby-trapped.

b. **RUSHING**

(1) Individual Rush - The rush is the fastest way to move from one position to another. Each rush should last from 3 to 5 seconds. (Remember, think to yourself "I'm up, he sees me, I'm down.") The rushes are kept short to keep enemy machine gunners or rifleman from tracking you. However, do not stop and hit the ground in the open just because 5 seconds have passed. Always try to hit the ground behind cover. If you hit the deck in the open, you are only presenting the enemy with an easy, stationary target. Before moving, pick out your next covered and concealed position and the best route to it. Start your movement from the prone position as follows:

(1) Slowly raise your head and pick your next position and the route to it.

(2) Slowly lower your head.

(3) Draw your arms into your body (keeping your elbows in).

(4) Pull your right leg forward.

(5) Raise your body by straightening your arms.

(6) Get up quickly.

(7) Run to the next position. Don't run in a straight line; zigzag to confuse anyone trying to track you.

(8) When you are ready to stop moving; plant both feet.

(9) Drop to your knees.

(10) Fall forward, breaking the fall with the butt of your rifle.

(11) Move to a prone position.

(12) If you do not make it to your next position, high crawl to the Covered position and assume a good prone posture sighting in down range.

(13) If you have been firing from one position for some time, the enemy may have spotted you and may be waiting for you to come up from behind cover. Before rushing forward, roll and crawl a short distance from your position. By coming up from another spot, you may fool an enemy who is aiming at one spot, waiting for you to rise. When the route to your position is through an open area, rush by zigzagging. If necessary, hit the ground, roll right or left, then rush again.

(2) Team Rushes - Occur when fire teams rush in a series of alternating team rushes. Fire team rushes are movement by one part of the team during cover by fire by the other part of the team. Generally, first the Rifleman and Team Leader will move ahead, being covered by the Automatic and Assistant Automatic Riflemen, then the Automatic and Assistant Automatic Riflemen will move up to

the Rifleman and Team Leader, being covered by the Rifleman and Team Leader. The process is repeated until no forward progress is possible without serious risk to the entire fire team. This theoretically increases the safety of the team members during movement

(a) Team member assignment "on my command" - When the fire team leader directs individuals to rush.

(b) Rushing without verbal commands - Rushing when you are the furthest fire team member back or when you are rushing in buddy teams and your buddy has completed their rush and it is your turn.

c. **Fire and Movement -** Is individuals, fire teams and squads providing cover fire while other individuals, fire teams or squads advance toward the enemy or assault the enemy position.

d. **Fire and Maneuver -** The process whereby elements of a unit establish a support by fire position to engage the enemy, while another element maneuvers to an advantageous position from which to close with and destroy, or capture the enemy.

2. **NEGOTIATING OBSTACLES**

a. **Small Wall -** Encountering short wall-like obstructions in your direction of movement

(1) Approach the wall at the alert carry. Brace your lead foot up against the wall and search the other side keeping the muzzle above the wall.

(2) "Short-stock" the weapon; Keep the muzzle above the bulkhead.

(3) Take a step back from the wall and step over with your lead foot first.

b. **Large Wall -** Used when there is no way to get around the wall.

(1) Approach and brace your shoulder against the wall. "Wall, body, weapon." Stay approx. 12-18 inches away from the wall to avoid ricochets.

(2) Carefully and stealthily feel the top edge of the wall for traps using the "piano feel" method for a length of 6 to 8 feet giving yourself enough room to go over the wall.

(3) Very quickly take a step back from the wall and "turkey peek" the other side to see if it is clear of obstacles and the enemy.

(4) With your weapon in your firing hand, reach up and grab the top of the wall placing the weapon on top and simultaneously swing your legs on top. Keep a low profile while rolling over the wall and quickly seek cover on the other side.

c. **Tangle Foot** - Used when encountering ankle level wire.

(1) Day walk through the tangle foot "boot top high."

d. **Clearing Culverts** - Used when encountering tunnels or similar openings.

(1) Both members will pie away from and converge together on the culvert entrance ensuring the muzzle stays out of the culvert.

(2) Utilize two Marines/Sailors by placing one on each side of the culvert entrance. Each member will check for booby traps by "piano feeling" from their 12 o'clock to their 6 o'clock around the culvert entrance.

(3) While communicating one member will enter the culvert while the other remains outside to cover.

(4) Member inside the culvert will walk to the end at will "piano feel" the outside opening.

(5) Once the opening has been cleared the member will yell "CLEAR" to the other member and exit the culvert providing cover. The other member will then make their way through the culvert.

e. **Wire** – Various methods are used to maneuver when encountering wire on the battlefield. The speed of advance will determine the method used.

(1) Back Crawl – Used to crawl under wire obstacles the enemy sets up on the battlefield or around defensive positions.

(2) Breeching - Used for rapid access through wire obstacles through cutting or use of explosives to open a hole in the wire for crossing. The enemy situation will determine which method should be used. Cut the bottom strands until you can crawl through but do not cut the entire obstacle unless it is necessary.

(3) Bridging – Used for rapid access over obstacles. The goal is to lay material over the top of the wire forming a make shift bridge allowing troop movement over the obstacle.

f. **Danger Areas** - A danger area is any place where one may be exposed to enemy observation or fire. Some danger areas that you may have to cross are open areas, trails, and enemy positions. Avoid these areas whenever possible and if they must be passed or crossed, use speed and caution.

g. **Booby Traps** - Always assume an obstacle or danger area is booby trapped. Attempt to go around them. If you cannot go around, visually and physically inspect them before crossing.

(1) When visually inspecting an obstacle, look for obvious signs such as trip wires or something attached to it. Then physically check the obstacle by feeling for wire, glass, or anything unusual.

(2) When visually inspecting a danger area, look for trip wires, mounds, depressions, or anything unusual.

3. **COVER, CONCEALMENT AND CAMOUFLAGE**

Each Marine/Sailor must use terrain to give themselves cover and concealment. They must supplement natural cover concealment, and comouflage.

a. **Cover** - Protection from the fire of enemy weapons. It may be natural or man made.

(1) Natural cover can be trees, logs, stumps, ravines, hollows, reverse slopes

(2) Man-made cover includes fighting holes, trenches, walls, rubble, abandoned equipment

b. **Concealment** - Anything that can hide a person from enemy. Concealment does not protect you from enemy fire, i.e. brush.

c. **Camouflage** - Anything that keeps yourself, equipment, and position from looking like what they really are.

(1) Movement

(2) Shadows

(3) Fighting Positions-not where enemy expects to find them

(4) Shiny Object/Light Source

(5) Shape (familiar shapes)-breakup outlines

(6) Colors-easily detected if contrasting

(7) Dispersion

REFERENCES:

MCRP 3-11.2

STP 21-1-SMCT

Individual Movement Techniques Review

1. Explain the different types of low silhouette moevment?

2. Explain the different types of rushes?

3. Explain the difference between Fire and Movement and Fire and Maneuver?

4. Explain the difference between cover, concealment and camouflage?

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FMST 304

Patrolling

TERMINAL LEARNING OBJECTIVE(S)

1. Given an individual weapon, as a member of a unit, **perform individual movement techniques** to arrive at the objective. (HSS-MCCS-2013)

2. Given a command or situation**, communicate using hand and arm signals** to exchange non-verbal signals proficiently. (HSS-MCCS-2012)

ENABLING LEARNING OBJECTIVE(S)

1. Without the aid of reference and in writing**, select the definition of a patrol**, in accordance with the Marine Rifle Squad, MCRP 3-11.2. (HSS-MCCS-2013a)

2. Without the aid of reference and in writing, **identify the two types of patrols**, in accordance with the Marine Rifle Squad, MCRP 3-11.2. (HSS-MCCS-2013b)

3. Without the aid of reference and in writing, **identify the organizational elements of a patrol**, in accordance with the Marine Rifle Squad, MCRP 3-11.2. (HSS-MCCS-2013c)

4. Without the aid of reference and in writing, **identify fire team formations**, in accordance with the Marine Rifle Squad, MCRP 3-11.2. (HSS-MCCS-2013d)

5. Without the aid of reference and in writing, **identify squad formations**, in accordance with the Marine Rifle Squad, MCRP 3-11.2. (HSS-MCCS-2013e)

6. Without the aid of reference and in writing, **identify the types of special signals**, in accordance with the Marine Rifle Squad, MCRP 3-11.2. (HSS-MCCS-2013f)

7. Without the aid of references, **identify commonly used hand and arm signals** without omission per MCWP 3-11.2 w/Ch 1. (HSS-MCCS-2012a)

8. Without the aid of references, **perform hand and arm signals**, to exercise control and pass information per MCWP 3-11.2 w/Ch 1. (HSS-MCCS-2012b)

1. **DEFINITION OF A PATROL**

A patrol is a detachment of ground forces sent out by a larger unit for the purpose of gathering information or carrying out a destructive, harassing, or security mission.

Patrols vary in size, depending on the type, its mission, and its distance from the parent unit. While most combat patrols should be platoon-sized, reinforced with crew-served weapons, the Marine rifle squad is ideally suited for patrols.

2. **TWO TYPES OF PATROL**

Patrols are classified according to the nature of the mission assigned. The two(2) types are Combat and Reconnaissance.

Combat Patrols - Usually assigned missions to engage in combat. They gather information as a secondary mission.

R.A.C.E.S.

R –Raid. Raid Patrols destroy or capture enemy personnel or equipment, destroy installations, or free friendly personnel who have been captured by the enemy.

A –Ambush. Ambush Patrol conduct ambushes of enemy patrols, carrying parties, foot columns, and convoys.

C –Contact. Contact patrols establish and/or maintain contact with friendly or enemy forces.

E –Economy of Force. Economy of Force patrols perform limited objective missions such as seizing and holding key terrain to allow maximum forces to be used elsewhere.

S –Security. Security patrols detect infiltration by the enemy, kill or capture infiltrators, and protect against surprise or ambush.

Reconnaissance Patrols – Missions for reconnaissance patrols include gaining information about the location and characteristics of friendly or hostile positions and installations, routes, stream/river crossings, obstacles, or terrain; identification of enemy units and equipment; enemy strength and disposition; movement of enemy troops or equipment; presence of mechanized units; presence of nuclear, bio-logical, and chemical equipment or contaminated areas; and unusual enemy activity. The types of reconnaissance patrols are:

Area Reconnaissance – An area reconnaissance is a directed effort to obtain detailed information concerning specific terrain or enemy activity within a specific location. The objective of the reconnaissance may be to obtain timely information about a particular town, bridge, road junction, or other terrain feature or enemy activity critical to operations. Emphasis is placed on reaching the area without being detected.

Zone Reconnaissance – A zone reconnaissance is a directed effort to obtain detailed information concerning all routes, obstacles (to include chemical or biological contamination), terrain, and enemy forces within a particular zone defined by specific boundaries.

Route Reconnaissance – A route reconnaissance is a reconnaissance along specific lines of communications, such as a road, railway, or waterway, to provide information on route conditions and activities along the route.

Reconnaissance of routes and axes of advance precede the movement of friendly forces. Lateral routes and terrain features that can control the use of the route must be reconsidered.

Considerations include traffic ability, danger areas, critical points, vehicle weight and size limitations and locations of obstacle emplacements.

The route reconnaissance is narrower in scope than the zone reconnaissance. The limits of the mission are normally described by a line of departure, a specific route, and a limit of advance.

3. ORGANIZATIONAL ELEMENTS OF A PATROL

The Platoon Commander - Designates a patrol leader, who is normally, one of his squad leaders, and gives him/her a mission. The patrol leader then establishes their patrol units required to accomplish the mission.

Patrol Units - Patrol units are subdivisions of patrols. Personnel are assigned to units based on the mission of the patrol and the individuals within the patrol.

Special Organization - Patrol units are further subdivided into teams, each of which performs essential, designated tasks. (EPW team, Litter team, Search team)

Elements of Combat Patrols

(1) Patrol Headquarters - This is the command group of the patrol. It is composed of the patrol leader, and other support personnel essential to the patrol such as the radio operator, corpsman, and forward observer.

(2) Assault Elements - Engage the enemy at the objective.

(3) Security Elements - Secures the objective rally point, isolates the objective, and covers the patrols return from the objective area.

(4) Support Elements - Provides supporting fires for the assault unit attack, and covering fires if required, for its withdrawal

Elements of Reconnaissance Patrols

(1) Patrol headquarters - The command group of the patrol. It consists of the same personnel as a combat patrol.

(2) Recon Element - Maintains surveillance over the objective.

(3) Security Element - Provides early warning, secures the objective rally point, and protects the reconnaissance unit.

4. **TYPES OF FIRE TEAM FORMATIONS**

Fire Team Column – It consist of a rifleman, fire team leader, automatic rifleman and assistant automatic rifleman. It is mainly used when you want speed and good control of your people. (See Fig. 1)

(1) Advantages:

(a) Permits fire and maneuver to the flanks

(b) Permits rapid controlled movement

(2) Disadvantages:

(a) Vulnerable to fire from the front

(b) The ability to fire to front is limited

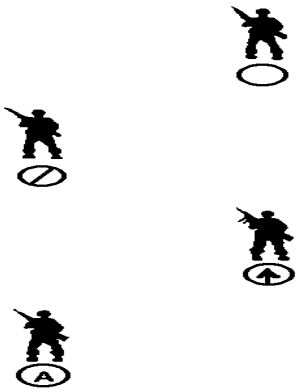


Figure 1. Fire Team Column

Fire Team Wedge - Diamond shape with the rifleman leading followed by the assistant automatic rifleman to his right, the fire team leader parallel to the assistant automatic rifleman, and-to the rifleman's left. The automatic rifleman brings up the rear and directly behind the rifleman. (See fig. 2)

(1) Advantages:

(1) It is easily controlled

(2) Provides all around security

(3) Fire is adequate in all directions

(4) It is flexible

(1) Disadvantages:

(1) It can not move as fast as a column

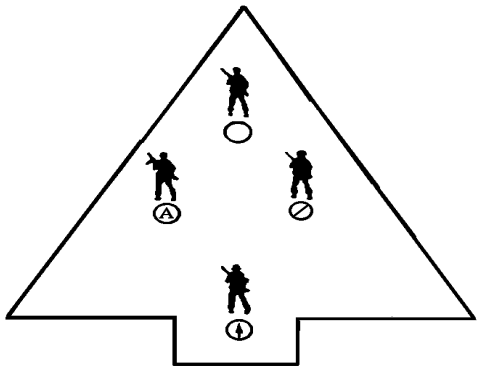


Figure 2. Fire Team Wedge

Skirmishers (Left) - This is a staggered formation starting with the rifleman on the right, the automatic rifleman is to the left and parallel to the rifleman. The assistant automatic rifleman is behind the automatic rifleman and to his left, and the fire team leader is parallel to the assistant automatic rifleman and in between the automatic rifleman and the rifleman. Skirmishers (right) is a mirror image of the Skirmishers (left). (See fig. 3)

(1) Advantages:

(a) Permits maximum firepower to the front

(b) Used when the location and strength of the enemy are known, during the assault, mopping up, and crossing short open areas.

(2) Disadvantages:

(a) It is extremely difficult to control

(b) Movement is slow

(c) The ability to fire to the flanks is limited

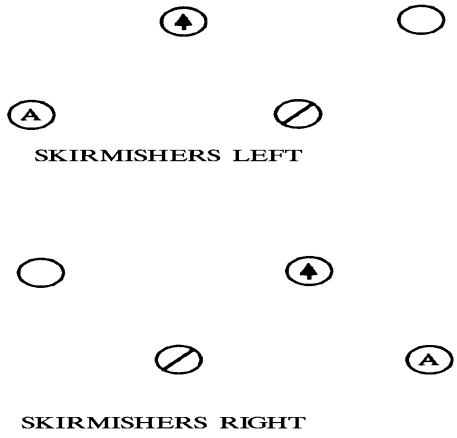


Figure 3. Skirmishers (Left and Right)

Echelon (Left and Right) - This formation is similar to skirmisher right and left except that one flank is angled to the rear. (See fig. 4)

(1) Advantages:

(a) Permits fire to the front and one flank

(b) It is used mainly to protect exposed flanks

(2) Disadvantages:

(a) It is extremely difficult to control

(b) Movement is slow

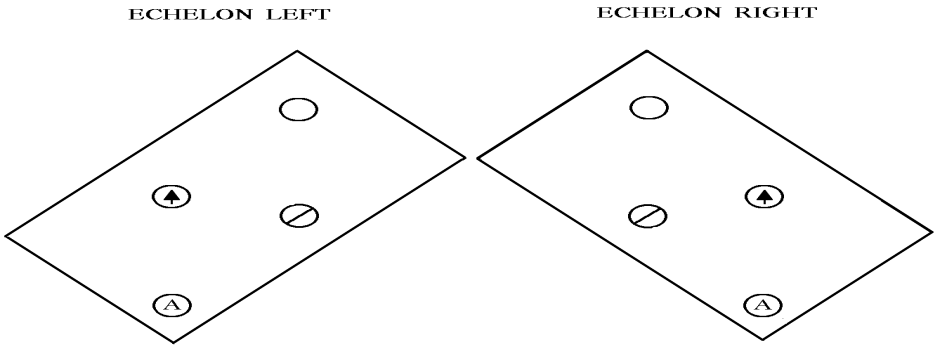


Figure 4. Echelon (Left and Right)

5. **TYPES OF SQUAD FORMATIONS**

Column - The same as a fire team column except all the fire teams are included one behind the other. (See fig. 5)

(1) Advantages:

(a) Permits rapid and easily controlled movement

(b) Permits fire and maneuver to the flanks (same as fire team)

(2) Disadvantages:

(a) Vulnerable to fire from the front

(b) The ability to fire to the front is limited

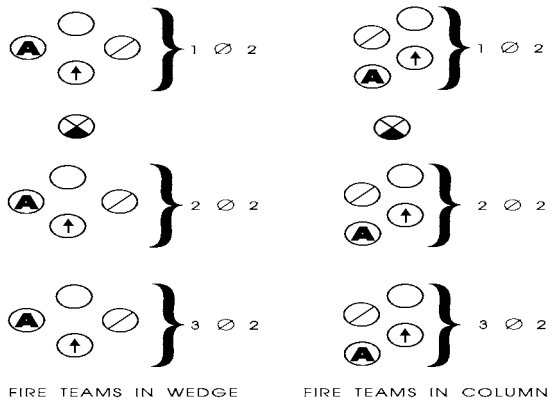


Figure 5. Fire Team in Column

Squad Line - The squad line places all three (3) fire teams abreast or on line and is normally used in the assault during rapid crossing of short, open areas. (See fig. 6)

(1) Advantages:

(a) Maximum firepower is concentrated to the front

(2) Disadvantages

(a) The ability to return fire to the flanks is limited

(b) Movement is slow

Figure 6. Squad Line

Echelon (Left and Right) - This formation is the same as for fire team except all fire teams are included. (See fig. 7)

(1) Advantages:

(a) It is used mainly to protect exposed flanks

(b) Provides heavy firepower to the front and in the direction of echelon

(2) Disadvantages:

(a) Difficult to control

(b) Movement is slow

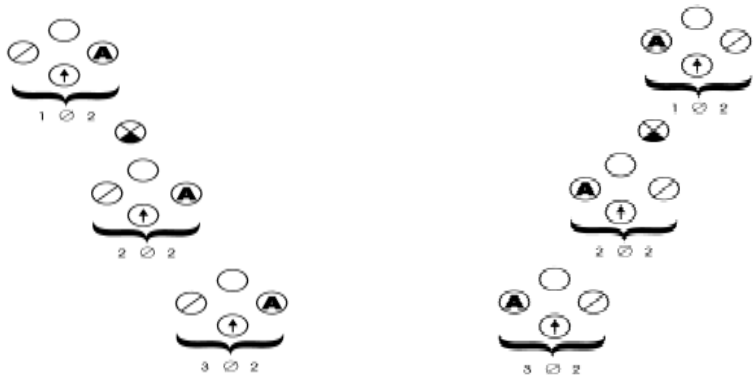


Figure 7. Echelon (Left/Right)

Squad Wedge -The squad wedge places one (1) fire team in the front of the formation followed by another fire team to the right and diagonally to the rear, with the last fire team to the left and parallel to the second fire team. (See fig. 8)

(1) Advantages:

(a) It is easily controlled

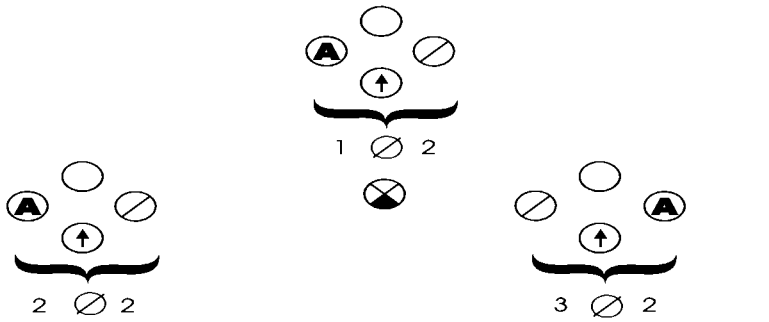
(b) Provides all around security

(c) It is flexible

(d) Fires adequately in all directions. (Same as fire team)

(2) Disadvantages:

(a) It cannot move as fast as a column. (Same as fire team)



(FIRE TEAMS IN WEDGE. TEAM LEADERS POSITIONED FOR EASE IN COMMUNICATING WITH SQUAD LEADER.)

Figure 8. Squad Wedge

Squad Vee - The squad vee is an inverted squad wedge. (See fig. 9)

(1) Advantages:

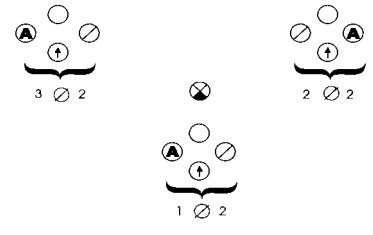
(a) Facilitates movement into squad line

(b) Provides excellent firepower to the front and to the flank

(c) Used when the enemy is to the front and his strength and location are known. May be used when crossing large open areas.

(2) Disadvantages

(a) It cannot move as fast as a column



(FIRE TEAMS IN WEDGE. TEAM LEADERS POSITIONED FOR EASE IN COMMUNICATING WITH SQUAD LEADER.)

Figure 9. Squad Vee

6. **TYPES OF SPECIAL SIGNALS**

Whistle

(1) Advantages/Uses

(a) Is an excellent and quick way a unit leader can transmit a message from one place to another.

(b) It provides a fast means of transmitting a message to a large group

(2) Disadvantages

(a) It must be prearranged and understood. It may by misinterpreted.

(b) Its effectiveness may be reduced by normal noise, which exist on the battlefield.

Pyrotechnics - Devices used to transmit command or information. Flares and smoke grenades are considered pyrotechnics.

(1) Purpose - It is used as a ground to ground or ground to air signaling device. It is used to identify units on the ground to other ground units and to air support. It can also be used to screen the movement of small units for short periods of time.

(a) Smoke Grenades

1. Body - Sheet metal

2. Color- Olive drab with yellow markings

3. Filler - Red, green, yellow, white and violet smoke

4. The color on the top will indicate the color of the smoke

(1) Advantages and Uses

(a) Used to mark enemy positions

(b) Signals to attack, withdraw, shift or cease-fire

(c) Mark landing zone

(2) Disadvantages

(a) Used by only one unit at a time

(b) Be sure your signal does not already have another set of meanings

(c) Gives away your position

Hand and Arm Signals - The most commonly used form of signaling is the hand and arm method. It must be remembered that the hand and arm signals are orders or commands that must be carried out.

(1) Advantages and Uses

(a) The noise of the battle does not hinder the use of the hand and arm signals.

(b) Used when silence must be maintained

(2) Disadvantages

(a) The signal must be seen

(b) Must be aware of other members location

7. COMMON HAND AND ARM SIGNALS

Decrease Speed - Extend the arm horizontally sideward, palm to the front, and wave arm downward several times, keeping the arm straight. Arm does not move above the horizontal plane.

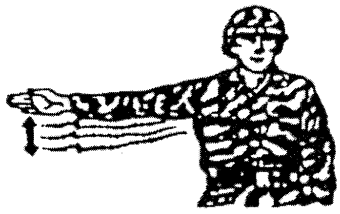


Figure 10

Change Direction - Extend arm horizontally to the side, palm to the front

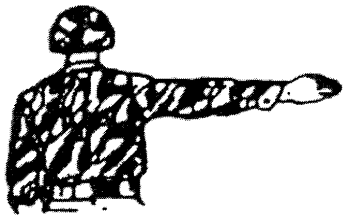


Figure 11

Enemy In Sight - Hold the rifle horizontally, with the stock on the shoulder, the muzzle pointing in the direction of the enemy.

Figure 12

Range - Extend the arm fully towards the leader or men for whom the signal is intended with fist closed. Open the fist exposing one finger for each 100 meters of range.

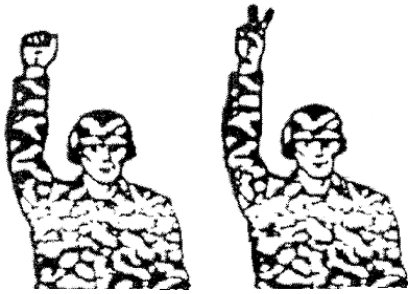


Figure 13

Commence Fire - Extend the arm in front of the body, hip high, palm down, and move it through a wide horizontal arc several times.

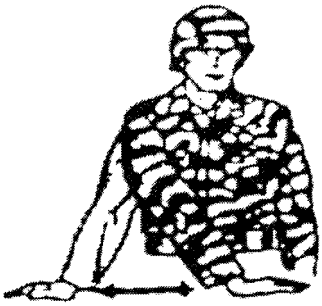


Figure 14

Fire Faster - Execute the Commences Fire signal rapidly.

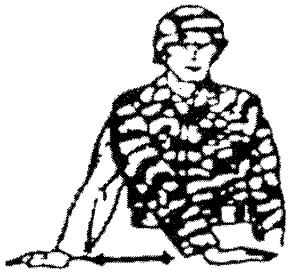


Figure 15

Fire Slower - Execute the Commences Fire signal slowly.

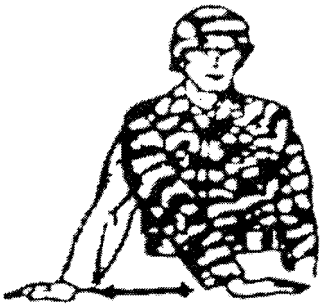


Figure 16

Cease Fire - Raise the hand in front of the forehead, palm to the front, and swing the arm and forearm up and down several times in the front of the face.

Figure 17

Assemble - Raise the arm vertically to the full extent of the arm, finger's extended and joined, palm to the front, and wave in large horizontal circles.

Figure 18

Form Column - Raise either arm to the vertical position. Drop the arm to the rear, making complete circles in a vertical plane parallel to the body.

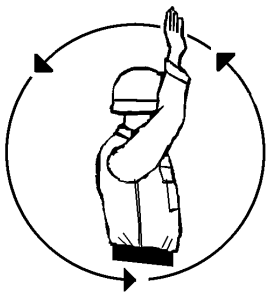


Figure 19

Are You Ready - Extend the arm toward the leader for whom the signal is intended, hand raised, fingers extended and joined, raise arm slightly above horizontal, palm facing outward.

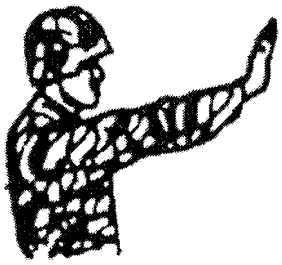


Figure 20

I Am Ready - Execute the signal, are you ready.

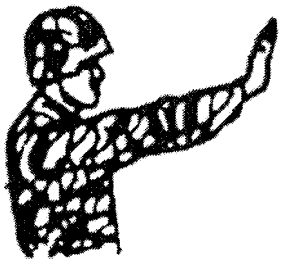


Figure 21

Shift - Raise the hand that is on the side toward the new direction across the body, palm to the front; then swing the arm in a horizontal arc, extending arm and hand to point in the new direction.

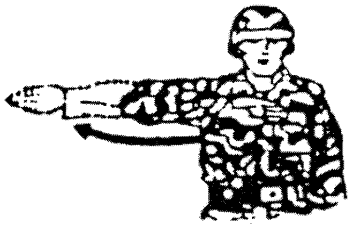


Figure 22

Echelon - Face the unit being signaled, and extend one arm 45 degrees above the other arm 45 degrees below the horizontal, palms to the front. The lower arm indicates the direction of echelon.

Figure 23

Skirmisher - Raise both arms laterally until horizontal, arms and hands extended, palms down. If it is necessary to indicate the direction, move in the desired direction at the same time.

Figure 24

Wedge - Extend both arms downward and to the side at an angle of 45 degrees below the horizontal plane, palms to the front.

Figure 25

Vee - Extend arms at an angle of 45 degrees above the horizontal plane forming the letter 'V' with the arms and torso.

Figure 26

Fireteam - Place the right arm diagonally across the chest.

Figure 27

Squad - Extend the arm and hand toward the squad leader, palm of the hand down, distinctly, moving the hand up and down several times from the wrist holding the arm steady.

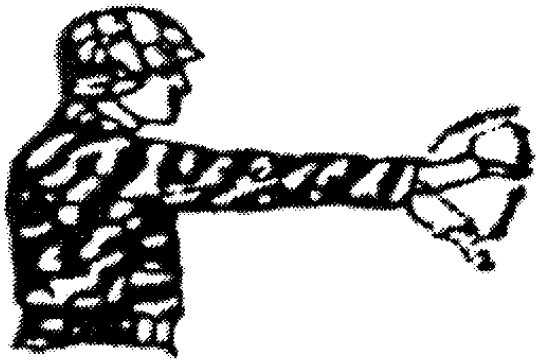


Figure 28

Platoon - Extend both arms forward, palm of the hands down and make large vertical circles with hands.

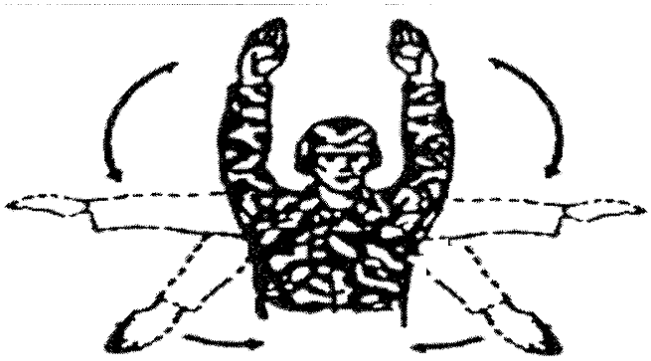


Figure 29

Close Up - Start signal with both arms extended horizontally, palm forward, and bring hands together in front of the body momentarily.

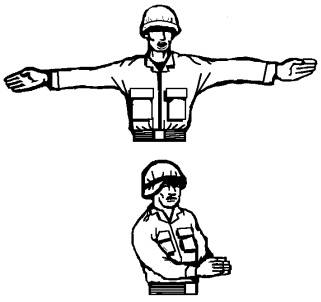


Figure 30

Open Up or Extend - Start signal with arms extended in the front of the body, palms together, and bring arms to the horizontal position, palms forward.

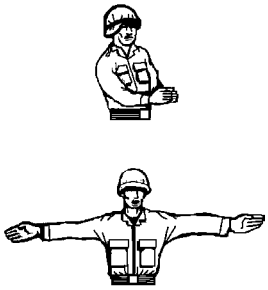


Figure 31

Disperse - Extend either arm vertically overhead, wave the hand and arm to the front, left, right, and rear, the palm toward the direction of each movement.

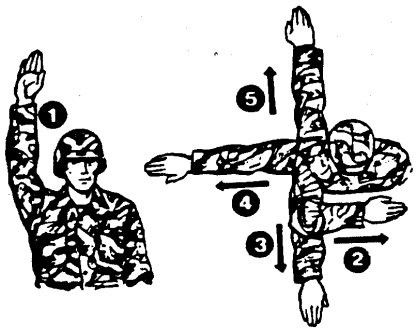


Figure 32

Leaders Join Me – Extend arm toward the leaers and beckon leaders with finger as shown.

Figure 33

I Do Not Understand - Raise both arms horizontally at the hip level, bend both arms at elbows, palms up, and shrug shoulders in the manner of universal "I don't understand."

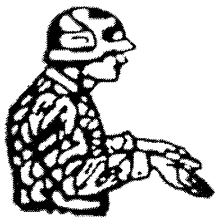


Figure 34

Forward - Face and move to the desired direction of march, at the same time extend the arm horizontally to the rear, then swing it overhead and forward in the direction of movement until it is horizontal, palm down.

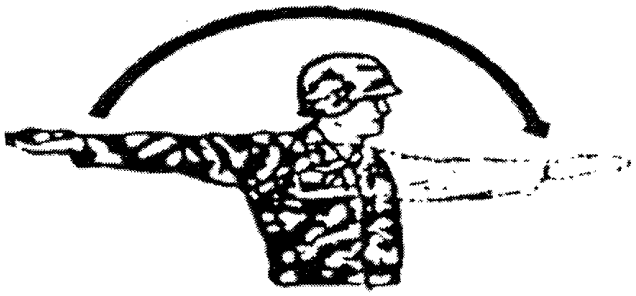


Figure 35

Halt - Carry the hand to the shoulder, palm to the front then thrust the hand upward vertically to the full extent of the arm and hold it in the position until the signal is understood.

Figure 36

Freeze - Make the signal for a halt and make a fist with the hand.

Figure 37

Dismount, Down, Take Cover - Extend arm sideward at an angle of 45 degrees above horizontal, palm down, and lower it to the side.

Figure 38

Mount – With the hand extended downward at the side with the palm out, raise arm sideward and upward to an angle of 45 degrees above the horizontal. Repoear until understood.

Figure 39

Disregard Previous Command – Face the unit or individual being signaled, then raise both arms and cross them over the head, palms to the front.

Figure 40

Right (Left) Flank – Extend both arms in direction of desired movement.

Figure 41

Double Time - Carry the hand to the shoulder, fist closed rapidly thrust the fist upward vertically to the full extent of the arm and back to the shoulder several times.

Figure 42

Hasty Ambush (LEFT OR RIGHT) - Raise fist to shoulder level and thrust it several times in the desired direction.

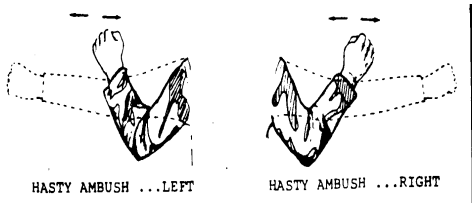


Figure 43

Rally Point - Touch the belt buckle with one hand and then point to the ground.

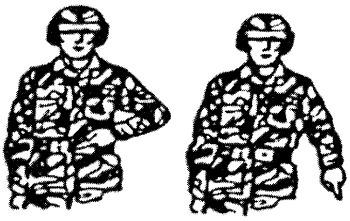


Figure 44

Objective Rally Point - Touch the belt buckle with one hand, point to the ground, and make a circular motion.

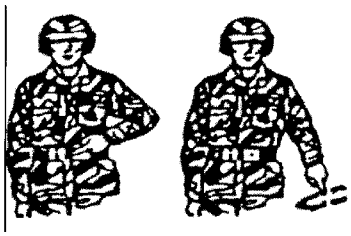


Figure 45

Pace Count – Tap the heel of the boot repeatedly with an open hand.

Figure 46

Head Count – Tap the back of the helmet repeatedly with and open hand.

Figure 47

Danger Area – Draw the right hand, palm down, across the neck in a throat-cutting motion from left to right.

Figure 48

REFERENCES:

Marine Rifle Squad	MCWP 3-11.2
Marine Rifle Squad	MCWP 3-11.2 w ch1
Scouting and Patrolling	MCWP 3-11.3
Visual Signals	FM 21-60

Patrolling Review

1. The acronym R.A.C.E.S. is used when defining the different mission of a Combat Patrole. Explain the acronym R.A.C.E.S.

2. Explain the different types of Reconnaissance Patrols?

3. Describe the different organzational elements of Combat and Reconnaissance Patrols?

4. Describe the advantages and disadvantages of fire team formations?

5. Describe the advantages and disadvantages of squad formations?

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 305

Land Navigation

TERMINAL LEARNING OBJECTIVE

1. Given a military topographic map, protractor, and objective, **navigate with a map and compass** to arrive within 100 meters of the objective. (HSS-MCCS-2014)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a list, **identify the information contained on a military map**, without any errors, per Map Reading and Land Navigation, FM 3-25.26. (HSS-MCCS-2014a)

2. Without the aid of reference, given a list, **identify the purpose of the 5 basic colors on a map**, without any errors, per Map Reading and Land Navigation, FM 3-25.26. (HSS-MCCS-2014b)

3. Without the aid of reference, given a list, **identify the purpose of contour lines on a military map**, without any errors, per Map Reading and Land Navigation, FM 3-25.26. (HSS-MCCS-2014c)

4. Without the aid of reference and given a list, **identify the procedure for measuring distance on a military map**, with no discrepancies, per Map Reading and Land Navigation, FM 3-25.26. (HSS-MCCS-2014d)

5. Without the aid of reference, given a military map, protractor, compass, and a set of 8 digit grid coordinates, **locate a position on a map**, without omission, per Map Reading and Land Navigation, FM 3-25.26. (HSS-MCCS-2014e)

6. Without the aid of reference, **utilize a lensatic compass**, per Map Reading and Land Navigation, FM 3-25.26. (HSS-MCCS-2014f)

7. Without the aid of references, given a military map and a lensatic compass, **orient the map to the ground**, without omission, per Map Reading and Land Navigation, FM 3-25.26. (HSS-MCCS-2014g)

8. Without the aid of references, given a military map, lensatic compass, and a minimum of an 8 digit grid coordinate**, locate specific points on a land navigation course**, without omission, per Map Reading and Land Navigation, FM 3-25.26. (HSS-MCCS-2014h)

1. **INFORMATION CONTAINED ON A MILITARY MAP**

Purpose - the purpose of a map is to provide information on the existence, the location, and the distance between ground features.

Definition - a geographic representation of the earth's surface drawn to scale as seen from above.

- Shows us what an area actually looks like without being there
- A clear and handy reference tool

Characteristics of a Map

- Designed to show us common information
- Location of ground objects
- Populated areas
- Routes of travel
- Communication Lines
- Extent of vegetation cover
- Elevation and relief of the earth's surface

Care and Importance

Maps are printed on paper and require protection from water, mud and tearing. When you mark on your map, use lighter lines, which are easily erased, without smearing. If trimming the map, be careful not to cut any of the marginal information. Maps must be protected because they can hold tactical information, such as:

- Friendly positions
- Friendly supply points

Map Illustrations

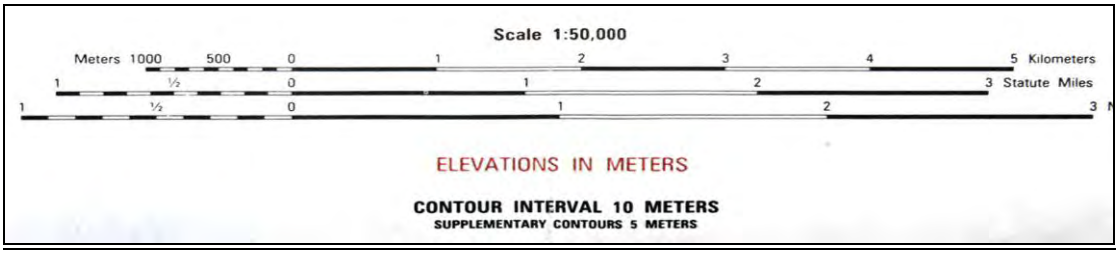
Symbols

- The mapmaker uses standard symbols
- They represent natural and manmade features
- Resemble as closely as possible, the actual features but as viewed from above

Marginal Information - instructions that are placed around the outer edges of the map are known as margin of information. All maps are not the same, so every time a different map is used, you must examine the margin of information carefully:

Sheet Name - found in two places: The center of the upper margin and the lower right margin

Contour Interval - appears in the center lower margin and states the vertical distance between adjacent contour lines on the map



Grid Box- The grid reference box is normally located in the center of the lower margin. It contains instructions for composing a grid reference.

Declination Diagram - located in the lower margin and indicates the angular relationship of true north, grid north and magnetic north (see figure 1):

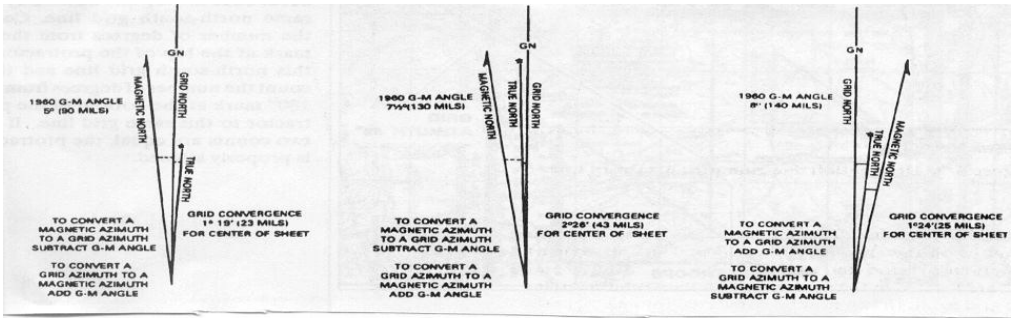


Figure 1. Declination Diagram

- True North - a line from any position on the earth's surface connects at the North Pole. Unlike grid lines, all lines of longitude are true north lines.
- Magnetic North - direction to the North Magnetic Pole, as indicated by the north-seeking needle of a magnetic compass. The North Magnetic Pole is located in Canada at Hudson Bay.
- Grid North - north that is established by the vertical grid lines on the map. The variation between grid north and true north is due to the curvature of the earth.

Grid Magnetic (GM) Angle - the GM angle is an important factor in map reading. The GM angle is used to convert magnetic azimuth to grid azimuth and vice versa:

Grid azimuth - determined with a protractor and is measured from grid north.
Magnetic azimuth - taken from a compass and measured from magnetic north.

Legend - located in the lower left margin. Illustrates and identifies some of the symbols on the map. Every time a map is used, refer to the legend to prevent errors in symbol identification (see figure 2). Other information found in the legend is the Sheet Name, Sheet Number, Series Name, Edition Number, Index to Boundaries, Index Adjoining Sheets, and Series Number.

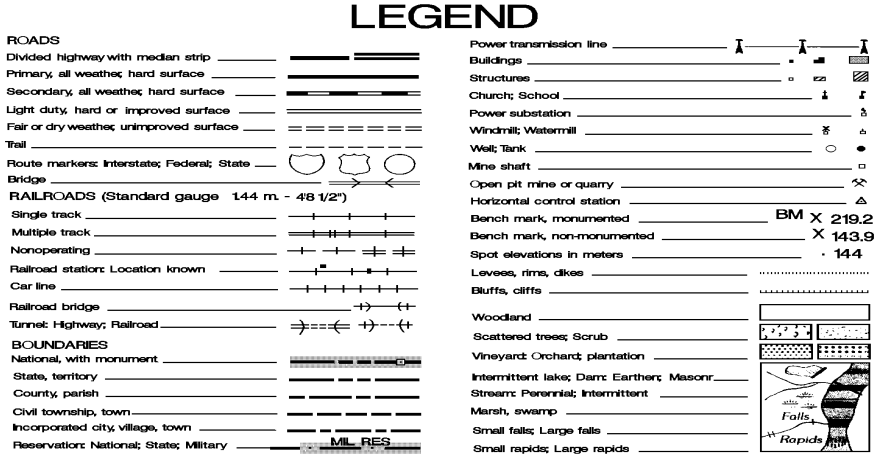


Figure 2. Legend

Bar Scale - located at the center bottom of the margin, below the map face. Special "rulers," ground distance may be measured directly without having to convert the map scale ratio. Normally, the scale for meters, yards, statute miles (land) and nautical miles (sea). Easy to use, but notice that "zero" is not at the end of the scale (see figure 3).

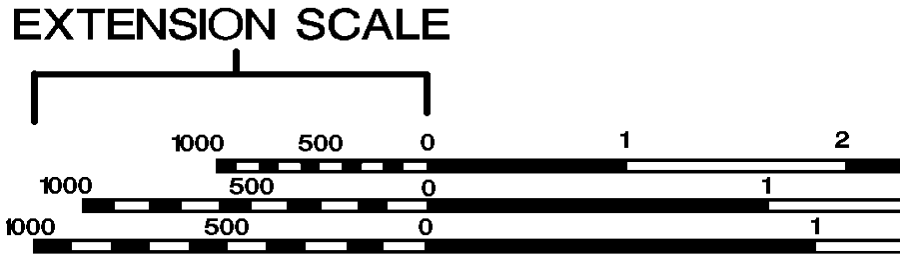


Figure 3. Bar Scale

2. **MAP COLORS** - To ease the identification of features on the map, the topographic symbols are usually printed in different colors, with each color identifying a class of features. The colors vary with different types of maps, but on a standard, large scale, topographic map, there are five basic colors.

Black - used to identify the majority of cultural or man-made features, such as buildings, bridges, and roads not shown in red
Red - main roads, built up areas, and special features such as dangerous or restricted areas
Blue - is for water features: lakes, rivers, swamps, and streams
Green - identifies vegetation such as woods and orchards
Red Brown - all landforms such as contours, fills, and cuts

NOTE: Occasionally other colors may be used to show special information. These, as a rule, will be indicated in the margin of information.

3. **CONTOUR LINES -** Contour lines indicate elevation and relief on maps. A line representing an imaginary line on the ground, along which all points are at the same elevation. Each contour line represents an elevation above sea level and the amount of the contour interval is given in the marginal information. On most maps, the contour lines are printed red-brown, starting at zero elevation. Every fifth contour line is a heavier brown line. These heavy lines are known as index contour lines. Also, the elevation will be given along this heavy brown line.

- The spacing of the lines indicates the nature of the slope. This has important military significance.

- The closer the contour lines the steeper the terrain.

Land Formations

Hill - a point or small area of high ground (see figure 4).

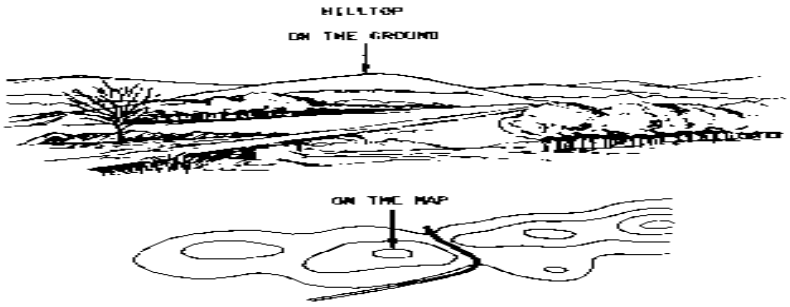


Figure 4

Valley - a stream course, which has at least, a limited extent of level ground bordered on the sides by higher ground. Contours indicate a valley that is a “U" shape, and the curve of the contour crossing always points up (see figure 5).

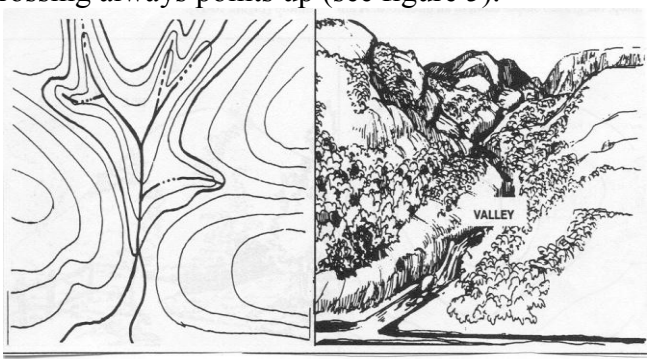


Figure 5

Draw - a less developed stream in which there is essentially no level ground and therefore, little or no maneuver room within its confines. The ground slopes upward on each side and towards the head of the draw. Contour lines indicating a draw are 'V" shaped, with the point of the 'V" toward the head of the draw (see figure 6).

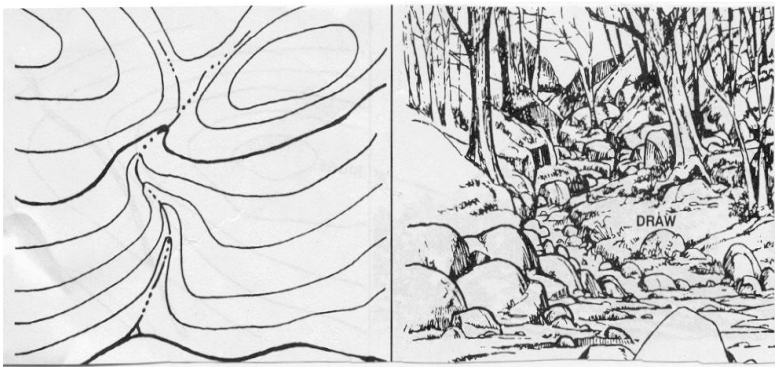


Figure 6

Ridge - a line of high ground, normally with minor variations along its crest. The ridge is not simply a line of hills but rather the ridge crest are higher than the ground on both sides of the ridge (see figure 7).

Figure 7

Saddle - a dip or low point along the crest of a ridge. A saddle is not necessarily the lower ground between two hilltops; it may simply be a dip or break along an otherwise level ridge rest (see figure 8).

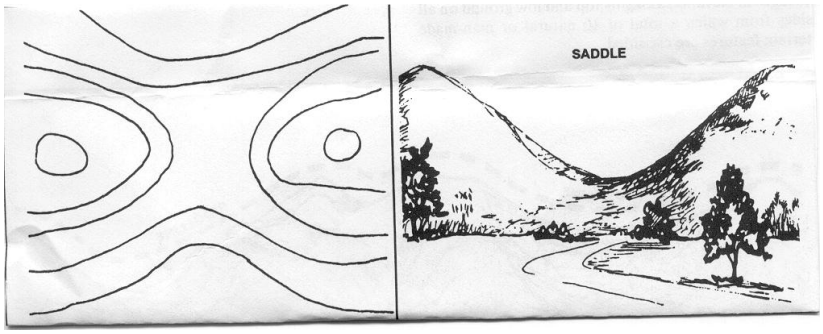


Figure 8

Depression - a low point or sinkhole surrounded on all sides by higher ground (see figure 9).

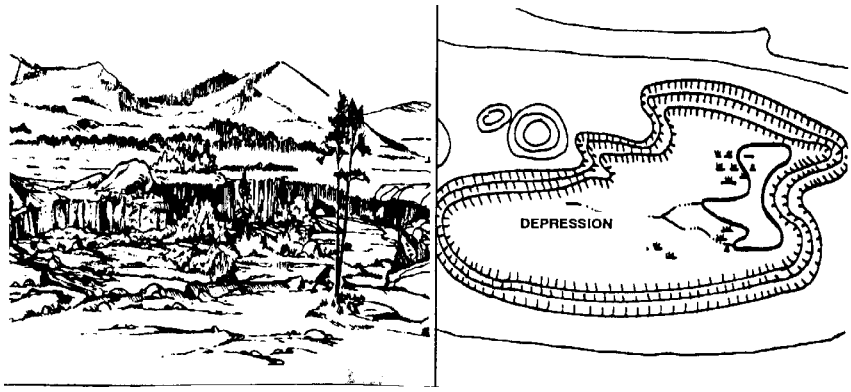


Figure 9

Cliff - a vertical, or near vertical, slope. When a slope is so steep that it cannot be shown at the contour interval, it is shown by a ticked line carrying contours. The ticks always point toward lower ground (see figure 10).

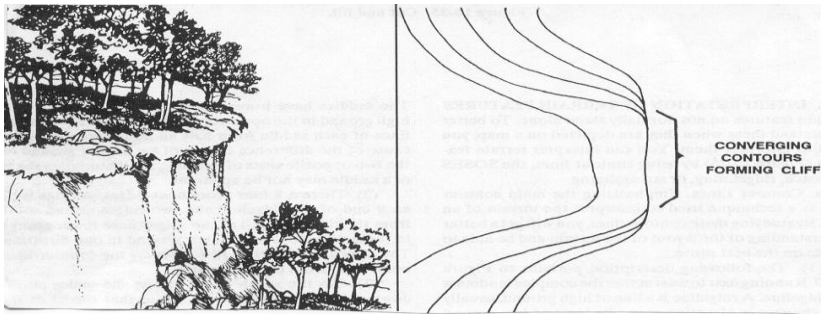


Figure 10

4. MEASURING DISTANCE

Straight Line Distance - to measure line distance between two points:

- Lay a straight strip of paper on the map so the edge touches the center of both points.
- Make a tick mark on the edge of the paper at each point.
- Lay the paper strip along the scale that corresponds to the unit of measure you are working with.
- Place the right tick mark of the paper strip on the largest full unit on the primary scale (to the right of zero), allowing the remainder to fall on the extension of the scale (to the left of zero).

Curved or Irregular Distance - to measure distance along a winding road, stream, or any other curved line:

- Make a tick mark near one end of the irregular line to be measured.
- Align the paper strip along the center of the first straight portion of line.
- Make a tick mark at the other end of that portion on both the paper strip and the map.
- Keeping both tick marks together, pivot the strip at the second tick mark until another straight portion of that line is aligned.
- Continue this process until the measurement is completed, then place the paper strip on the appropriate bar scale and determine the distance measured.

Pace Count

When navigating, one must know his or her pace count to accuratlry record distance covered:

- Record your count in 100-meter increments.
- Step off with your left foot and count every time it hits the deck.
- Record your 100-meter increments by putting a knot in a rope or piece of string. (Example: A student is walking an azimuth of 25°. That person must travel in this direction for 500 meters. The students pace count is 65 paces for 100 meters. To figure out how many paces the student must take – multiply your pace count by the distance.) DISTANCE divide by 100 x Pace Count (65).

5. **LOCATE POSITION ON A MAP** (see figure 11)

In order to locate the position on a map or navigate, there are certain tools that need to be utilized. One of these tools is the protractor. There are several types of protractors. All of them divide the circle into units of angular measure, and each has a scale around the outer edge and an index mark.

- The index mark is the center of the protractor circle from which all directions are measured.

- The military protractor contains two scales; one in degrees (inner scale) and one in mils (outer scale).

- This protractor represents the azimuth circle.

- The degree scale is graduated from 0° to 360°; each tick mark on the degree scale represents one degree. A line from 0° to 180° is called the base line of the protractor. Where the base line intersects the horizontal line, between 90° and 270°, is the index or center of the protractor.

- When using the protractor, the base line is always oriented parallel to a north-south grid line. The 0° or 360° mark is always toward the top or north on the map and the 90° mark is to the right.

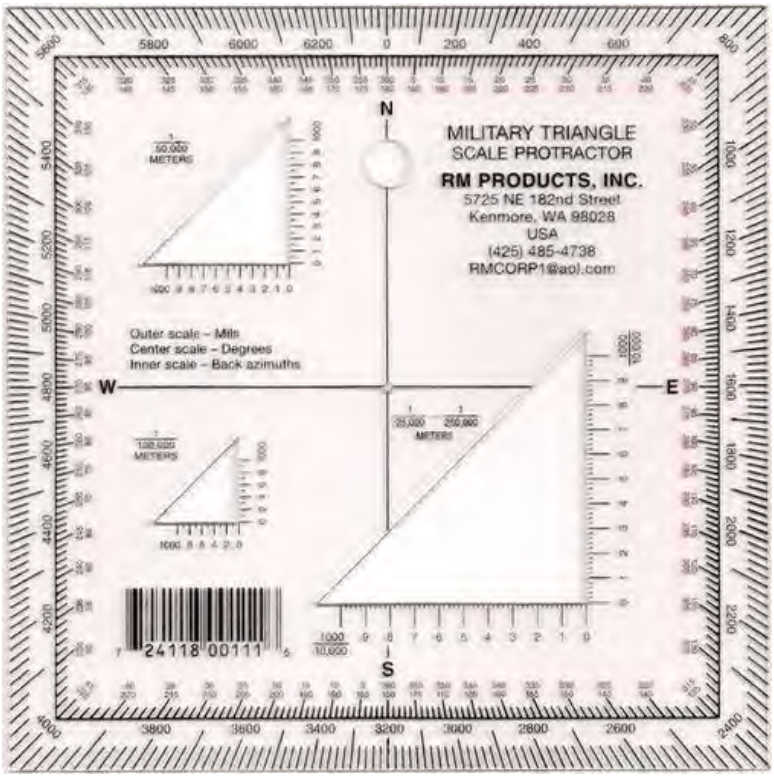
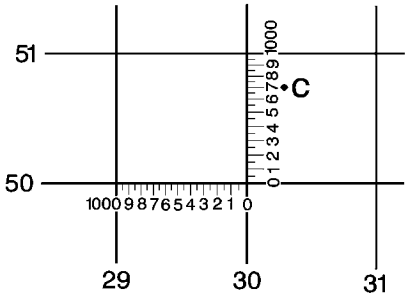


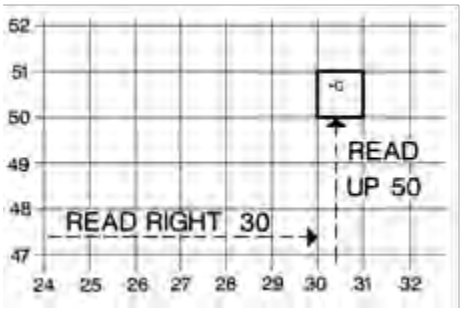
Figure 11. Protractor

The grid system

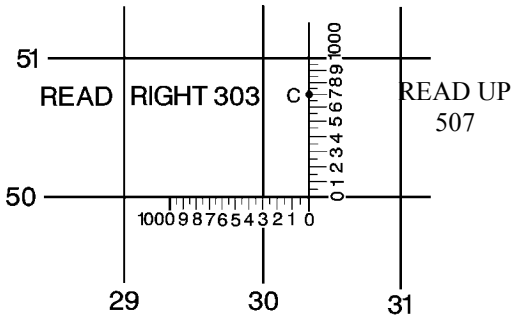
System which tells the reader where specific locations or points are (see figure 12). A network of lines, in the form of squares, placed on the face of the map. These squares are somewhat like the blocks formed by the street system of a city. The "streets" in a grid all have very simple names. The names are all numbers. Every tenth line is made heavier in weight. This will help you find the line you are looking for. Each grid line on the map has its own number. These numbers appear within the map on the line itself. Four digit numbers identify a 1000 square meter grid square. Six digits identify a 100-meter grid square. Eight digits identify a 10-meter grid square. To locate a point by grid reference is a simple matter. We follow a simple rule of map reading: READ RIGHT AND UP



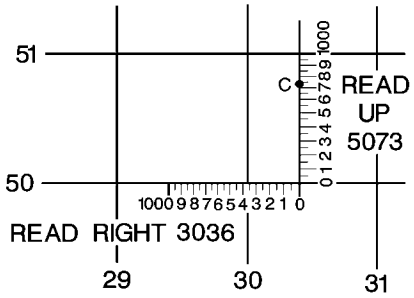
4 Digit Step 1



4 Digit Step 2



6 Digit Step 3



8 Digit Step 4

Figure 12. Grid System

6. **LENSATIC COMPASS** The primary instrument used to determine and maintain direction during land navigation.

Parts of the Compass (see figure 13)

- Thumb loop
- Short luminous line
- Luminous sighting dots
- Luminous magnetic arrow, "Magnetic North"
- Sighting slot
- Sighting wire
- Floating Dial – in both mils and degrees
- Graduated straight edge
- Lens
- Fixed index line
- Bezel ring
- Cover
- Rear sight
- Base

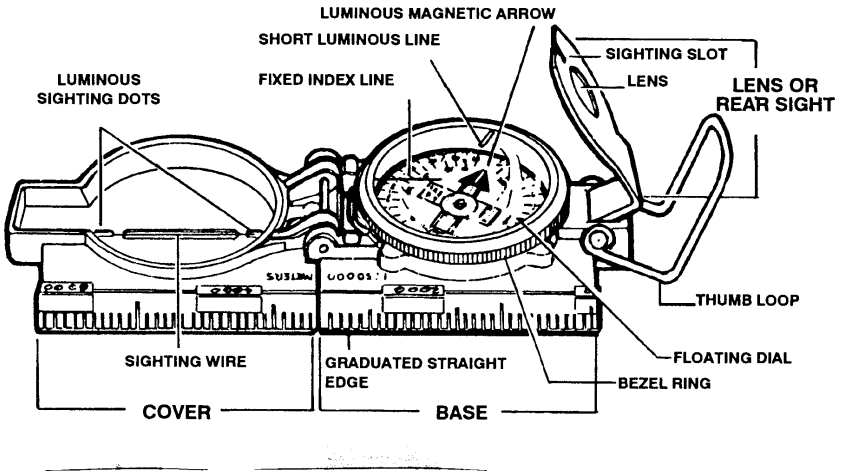


Figure 13. Lensatic Compass

Compass Precautions

- Handle the compass with care. The dial is set with a delicate balance and shock could damage it.
- Reading should never be taken near visible masses of metal or electrical circuits.
- In cold weather, always carry the compass in its carrier outside your outer layer of clothing. If it is carried inside your clothing close to your body, it will fog when exposed to the cold air.

Compass terms and concepts

Azimuth - an angle measured in a clockwise direction from a north base line.

Grid Azimuth

- The heading due east is an azimuth of 90°
- South - 180°
- West - 270°
- North - 360 or 0°. When using an azimuth, the point from which the azimuth originates is imagined to be the center of the azimuth circle.

Obtaining a Grid Azimuth

- On your map draw a line connecting two points
  Point A represents your present location
  Point B represents your destination
- Place the index of the protractor on point A.
- Ensure the 0° and the 180° base line is parallel with the vertical grid lines on your map.
- Read the azimuth from the degree (inside) scale; this is the grid azimuth from point A to point B.

Back Azimuth

- Back azimuth is the reverse direction of a forward azimuth.
- It is comparable to doing an about face. To obtain a back azimuth from an azimuth less than 180°, add 180°. If the azimuth is 180° or more, subtract 180.

LESS
ADD
MORE
SUBTRACT

Methods For Holding The Compass - The lensatic compass is used to determine or follow magnetic azimuth both day and night. There are two recommended positions for holding the compass when navigating:

Compass-to-Cheek Method - Recommended when determining the azimuth to a distant object.

- Raise the cover (with the sighting wire) straight up and raise the sight (lens) to an angle about 45° above the compass glass.
- Turn the thumb loop all the way down and put your thumb through it. Form a loose fist under the compass to steady it with your other hand, and raise up to eye level.
- Look through the sighting slot, and align the compass by centering the sighting wire in the sighting slot.
- Keeping the compass level and the sights aligned, rotate your entire body until the sighting wire is aligned on a distant object.
- Now glance down through the lens and read the magnetic azimuth under the fixed index line on the glass.

Center-Hold Position (see figure 14)

- Recommended holding position for a predetermined azimuth, both during the day and night (you do not need to remove your helmet, weapon, grenades, or magazines as long as they are not near the compass).
- Open the cover until it forms a straight edge.
- Pull the eyepiece to the rear most position.
- Next, place your thumb through the thumb loop.
- Form a steady base with your remaining fingers.
- Using your other hand, form a solid base for your compass.

- To measure an azimuth, simply turn your entire body toward the object. While pointing the compass cover directly at the object, look down and read the azimuth from beneath the black index line.

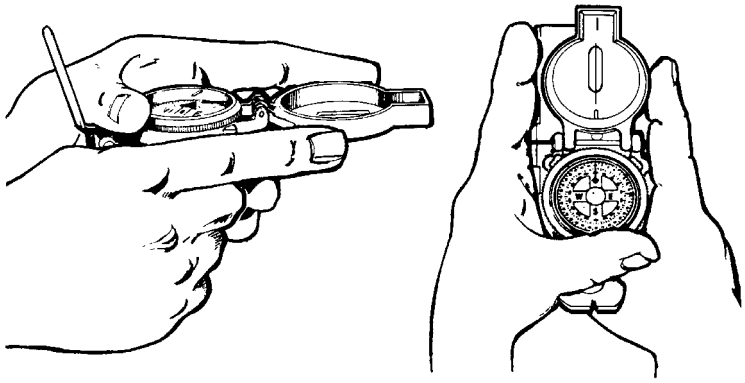


Figure 14. Center-Hold Position

Compass Use at Night

- All the luminous features on the compass will be used.
- The lensatic compass has two glass faces, one under the other. The top glass (bezel ring) rotates; **each click means it has turned three degrees.**
- Turn the bezel 30 clicks to the left (counter clockwise); this is a total of 90°.
- Using the center-hold method, rotate your body and compass until the magnetic north seeking arrow is directly aligned under the short luminous line on the bezel ring. Your compass is now set on magnetic azimuth of 90°.
- Now all you have to do to march on this azimuth line at night is keep the magnetic north seeking arrow and the short luminous line aligned and follow the direction of the luminous dots on the cover of the compass.

7. ORIENTATION OF A MAP

A map is oriented when it is in position with north and south corresponding to north and south on the ground**.**

Orienting a map with a compass

- With the map in a horizontal position, the compass straight edge is placed parallel to a north-south grid with the cover of the compass pointing toward the top of the map.
- This will place the black line on the dial of the compass parallel to grid north.
- Since the needle on the compass points to magnetic north, we have a declination diagram on the face of the compass formed by the index line and the compass needle.
- Rotate the map and compass until the direction on the declination diagram formed by the black index line and the compass needle match the directions shown on the declination diagram printed on the margin of the map. The map is then oriented.
- If the magnetic north arrow on the map is to the left of grid north, the compass reading will equal the GM angle (given in the declination diagram).
- If the magnetic north is to the right of the grid north, the compass reading will equal 360 minus the GM angle.

Orienting Without A Compass: Terrain Association

- When a compass is not available, map orientation requires a careful examination of the map and the ground to find linear features common to both, such as roads, railroads, fence lines, power lines, etc.
- By aligning the feature on the map with the same feature on the ground, the map is oriented.
- Orientation by this method must be checked to prevent the reversal of directions that may occur if only one linear feature is used. Aligning two or more of these features may prevent this reversal.

Determining location by map and compass

Basic method for determining locations on a map

Inspection and Estimation

- Usually the easiest
- Carefully survey road systems and topographical features in the immediate vicinity.

Orient the map to the ground

- Identify some prominent characteristic such as a road, junction, bridge, stream etc., which you can see on the ground and unmistakably identify on your map.

90° Offset method

To bypass enemy positions or obstacles and stay oriented, detour around the obstacle by moving at right angles for specified distances. Use this formula:

Right add 90°; Left subtract 90° (RALS) (see figure 15)

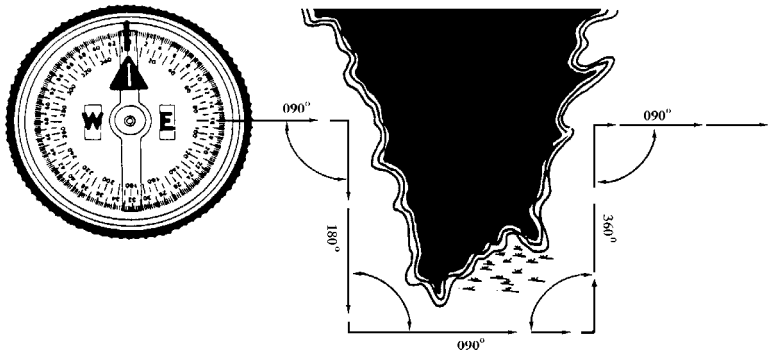


Figure 15. 90° Offset Method

REFERENCES

Map Reading and Land Navigation, FM 3-25.26, Ch 2, 6, 9, 10, 11
ITS, (May 2001), Pgs 1-18-1 through 1-18-42

Land Navigation Review

1. List and describe the three different types of north?

2. A six digit grid coordinate gets you to within how many meters of your intended target?

3. Identify the two methods for holding a compass?

4. Describe the purpose of a contour line?

5. Explain the different methods of measuring distance on a map?

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FMST 306

Improvised Explosive Device

TERMINAL LEARNING OBJECTIVE(S)

(1) Given an operating environment with an IED threat, during daylight and limited visibility, **identify indicators of improvised explosive devices** (IED) to identify an IED threat. (HSS-MCCS-2017)

(2) Given a mission, Commander's guidance and intent, rules of engagement, escalation of force criteria, and an emplaced improvised explosive device (IED), while serving as an individual in a small unit, **react to an emplaced improvised explosive device** (IED) to clear individual sector while preventing casualties. (HSS-MCCS-2016)

(3) Given a mission, Commander's guidance and intent, rules of engagement (ROE), escalation of force criteria, non-lethal deterrents, and a simulated suicide improvised explosive device (SIED), while serving as an individual in a small unit, **react to a suicide improvised explosive device** (SIED) to prevent friendly casualties and damage to property. (HSS-MCCS-2018)

ENABLING LEARNING OBJECTIVE(S)

(1) Without the aid of reference and in writing, **select the definition of an IED** within 80% accuracy, in accordance with MCIP 3-17.01. (HSS-MCCS-2017a)

(2) Without the aid of reference and in writing, **identify primary indications of an IED** within 80% accuracy, in accordance with MCIP 3-17.01. (HSS-MCCS-2017b)

(3) Without the aid of reference and in writing, **identify common employment techniques of an IED** within 80% accuracy, in accordance with MCIP 3-17.01. (HSS-MCCS-2017c)

(4) Without the aid of references and in writing, **identify how to operate in an IED environment** per the references. (HSS-MCCS-2016a)

(5) Without the aid of reference while wearing individual combat equipment, **react to an IED attack**, in accordance with JIEDDTF 05-23. (HSS-MCCS-2016b)

(6) Without the aid of reference and in writing, **define Rules of Engagement** within 80% accuracy, in accordance with MCIP 3-17.01. (HSS-MCCS-2018a)

(7) Without the aid of reference and in writing, **define Escalation of Force criteria** within 80% accuracy, in accordance with MCIP 3-17.01. (HSS-MCCS-2018b)

(8) Without the aid of reference and in writing, **identify the tactics to react to a Suicide Bomber**, in accordance with MCIP 3-17.01. (HSS-MCCS-2018c)

1. **DEFINITION OF AN IED**

a. **Improvised Explosive Devices**: are those devices placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals and designed to destroy, incapacitate, harass, or distract. They may incorporate military weapons, but are normally devised from non-military components.

b. **Component of an IED**: IED's can vary widely in shape and form. IEDs share a common set of components which consist of the casing, initiating system, and main charge.

(1) **Casings** can range in size from a cigarette pack to a large truck or airplane. The container is used to hide the IED and possibly provide fragmentation. Countless containers have been used as casings, including soda cans, animal carcasses, plastic bags, and vests or satchels for suicide bombers.

(2) **Initiating Systems** cause the main charge to function. It can be a simple hard wire (for command detonation) or a radio frequency (RF) device, such as a cell phone or a toy car remote control. The initiator almost always includes a blasting cap and batteries as a power source for the detonator. Any type of battery can be used (9-volt, AA, or car batteries). Initiating systems are triggered in three ways.

(a) **Time** - Timed IEDs are designed to function after a preset delay, allowing the enemy to make his escape or to target military forces which have created a pattern.

(b) **Command** - Command-initiated IEDs are a common method of employment and allow the enemy to choose the optimal moment of initiation. They are normally used against targets that are in transit, or where a routine pattern has been established. The most common types of command-initiated methods are with command wires or radio-controlled devices, such as cordless telephones and remote car openers.

(c) **Victim** - Victim-actuated IED is initiated by the actions of its victim(s). There are various types of initiation devices, to include pull or trip, pressure, pressure release, movement-sensitive, light-sensitive, proximity, and electronic switches.

(3) **Main Charge**

(a) **High Explosive** - Main charges are the most commonly encountered in theater. Common explosives used are military munitions, usually 122mm or greater. These items are easiest to use and provide a ready-made fragmentation effect. May be configured with multiple main charges placed in short or long distances for simultaneous detonation. Common hardware, such as ball bearings, bolts, nuts, or nails can be used to enhance the fragmentation. Propane tanks, fuel cans, and battery acid can and have been added to IEDs to propagate their blast and thermal effects.

(b) **Chemical** - A chemical IED is a main charge with a chemical payload in conjunction with an explosive payload. Chemical IEDs are fabricated to kill or incapacitate victims with a chemical, rather than explosive, effect. Some indicators for chemical IEDs are smaller blasts, odor, gas cloud, and liquid on or near the suspected IED.

c. **Booby Traps** are explosive or non-explosive materials and devices, deliberately placed to cause casualties when an apparently harmless object is disturbed or a normally safe act is performed.

d. **Mines** are explosives designed to destroy or damage ground vehicles, boats, or aircraft, or to wound, kill, or otherwise incapacitate personnel. They may be detonated by the actions of its victims, by the passage of time, or by controlled means.

2. **IED DETECTION** There are many ways to detect IED's. The best means of detection is your situational awareness. Examples of indicators, locations, and considerations of IEDs include:

a. **Primary IED Indicators** - The primary indication of an IED will be a change in the baseline (something new on the route that was not there the previous day). Vigilant observation for these subtle indicators can increase the likelihood of IED detection. Some examples of possible roadside IED indicators may include:

(1) Unusual behavior patterns or changes in community patterns, such as noticeably fewer people or vehicles in a normally busy area, open windows, or the absence of women or children.

(2) Vehicles following a convoy for a long distance and then pulling to the roadside.

(3) Personnel on overpasses.

(4) Signals from vehicles or bystanders (flashing headlights).

(5) People videotaping ordinary activities or military actions. Enemies using IEDs often document their activities for use as recruitment or training tools.

(6) Suspicious objects.

(7) Metallic objects, such as soda cans and cylinders.

(8) Markers by the side of the road, such as tires, rock piles, ribbon, or tape that may identify an IED location to the local population or serve as an aiming reference for the enemy triggering the IED (such as light poles, fronts or ends of guardrails, and road intersections).

(9) New or out of place objects in an environment, such as dirt piles, construction, dead animals, or trash.

(10) Graffiti symbols or writing on buildings.

(11) Signs that are newly erected or seem out of place. Obstacles in the roadway to channel traffic.

(12) Exposed antennas, detonating cord, wires, or ordnance.

(13) Wires laid in plain site may be part of an IED or designed to draw friendly force attention before detonation of the real IED.

b. **Location of IEDs** - IEDs may be placed anywhere enough space exists or can be created to hide or disguise the IED. Whenever possible, devices are located where they can exploit known US patterns, such as the use of a main supply route, or vulnerabilities, such as soft-skinned vehicles or chokepoints. Common areas of IED placement may include:

(1) Previous IED sites.

(2) Frequently traveled or predictable routes, such as roads leading to bases and along common patrol routes.

(3) Boundary turnaround points (pattern).

(4) Medians, by the roadside (usually within 10 feet), or buried under the surface of any type of road, often in potholes and covered with dirt or reheated asphalt.

(5) Trees, light posts, signs, overpasses, and bridge spans that are elevated.

(6) Unattended vehicles, carts, or motorcycles (attached or installed in them).

(7) Hidden inside guardrails or under any type of material or packaging.

(8) Potential incident control points (ICPs).

(9) Abandoned buildings or structures (sometimes partially demolished).

(10) Hidden behind cinder blocks, or piles of sand to direct blast into the kill zone.

(11) Animal carcasses and deceased human bodies.

(12) Fake bodies or scarecrows in coalition uniforms.

(13) At the edge of town.

c. **Vehicle Borne IED/Suicide VBIED** - VBIED is a parked vehicle in a high traffic area with the intent of causing the most damage. An SVBIED is when the driver is willing to give their own life in the process of detonating his explosives. These are very successful because the enemy is mobile and is able to choose a time and place with great flexibility. This unpredictability makes them difficult to identify.

(1) **Driver Indicators:**

(a) A lone male driver is the historical standard for VBIED operations; however, there could be any number of people in the vehicle if an unsuspecting person is driving the VBIED. Some VBIEDs have two to three people and females are sometimes used as a distraction.

(b) Ignoring orders to stop, attempting to circumvent a security checkpoint, or attempting to maneuver too close to coalition assets.

(c) Unusual appearance. The enemy may be uncharacteristically clean-shaven and have very short haircuts. Cutting the hair is part of the purifying ritual that many follow prior to an attack.

(d) Age in mid-twenties. The average Middle Eastern suicide terrorist is about 24-25 years old, but this may vary in each unique situation.

(e) Driving erratically; driving too slow or too fast.

(f) Wearing inappropriate dress for the environment.

(2) **Vehicle Indicators:**

(a) Noticeable sagging of the vehicle.

(b) An additional antenna for radio-controlled devices.

(c) Darkened or covered windows to conceal either the vehicle's contents or actions of the driver.

(d) Recent painting of vehicle to cover body alterations.

(e) Crudely covered holes made in the vehicle to hide explosives.

(f) New welding marks.

(g) No license plates.

(h) Escorted by unusual security detail for type of vehicle.

(i) New tires on an old vehicle.

(j) Anything unusual in factory-build compartments.

(k) New or shiny bolts and/or screws.

(l) Unusual scratches, possibly made by screwdrivers, wrenches, or similar tools.

(m) Signs of tampering, such as broken parts or bent sheet metal.

(n) Areas and components cleaner or dirtier than surrounding areas.

(o) Wire and tape stored in the vehicle.

(3) **Situation Indicators:**

(a) Camera crew in the area.

(b) Observing the same vehicle more than once.

(c) Absence of normal routine for that Area of Operation (AO).

(d) Odd traffic patterns.

(e) Person(s) observed conducing reconnaissance.

(f) Vehicle testing local defenses (i.e. drives at a high speed towards traffic control point and then breaks off).

3. **EMPLOYMENT TECHNIQUES** - IEDs can be used in a variety of ways. There are some Tactics Techniques Procedures that the enemy has used to hinder the mobility efforts of coalition forces, though enemy TTPs constantly change and adapt in an effort to stay ahead of coalition TTPs. The enemy also incorporates the use of small arms fire in conjunction with the IED attack to harass forces and increase the lethality of attacks.

a. **Disguised static IEDs** - Have been concealed with a variety of things (trash, boxes, tires, etc.) and placed in, on, above, or under where potential targets appear. Multiple IEDs have also been daisy chained, or linked together with detonation cord or electrical wire so that all charges detonate simultaneously, in order to achieve simultaneous explosions.

b. **Thrown or projected IEDs** (improvised grenades or mortars) have also been used against coalition forces. One TTP targets convoys as they drive under and overpass, attempting to drop IED's in the back of vehicles as the pass under. Convoys must be aware of the 360-degree threat while traveling. Changing speeds and dispersion will help mitigate the threat to some extent.

c. **Hoax IED** -These include something that resembles an actual IED, but has no charge or fully functioning initiator device. A fake IED along a given rout and seen by the lead vehicle in a convoy will cause the convoy to stop. Stopping for the hoax IED may leave the convoy in the kill zone of the real IED. Hoax IED's are also used to learn coalition procedures, monitor time, delay or harass activities in support of the mission.

d. **The Basic IED Attack** - In the basic attack, the enemy will place IEDs along routes on either side of the road awaiting foot patrols or convoys to approach in order to cause the most damage to personnel or vehicles.

e. **The "Broken-down" Vehicle Attack** - This attack uses a simulated broken down vehicle placed on the side of the road to cause convoys to change their intended route. The broken down vehicle is staged along either side of the road, blocking one or all of the trafficable lanes. This causes the convoy to be directed between the broken down vehicle and an emplaced IED.

f. **Coordinated Attack** - Numerous enemies work together to emplace and IED along a route, usually in an urban area. The enemy is usually located where they have the best escape route as to not be seen or caught. Once the IED's have been detonated, the enemy breaks contact and blends in with the population.

g. **Ramming Convoys** - The enemy has been known to ram their vehicle (possibly an SVBIED) in the rear or side of a convoy as they pass in order to slow or cause the convoy to come to a complete stop.

h. **Motorcycles** - Motorcycles are used by the enemy in areas of decreased mobility to harass convoys and possibly throw IEDs or grenades in the rear of vehicles.

4. **OPERATIONS IN AN IED ENVIRONMENT** – There are several things that can be done to counter the effects of an IED. Wearing all personnel protective gear available, to include ballistic eye protection, Kevlar helmets, body armor with plates, and hearing protection is the most basic. Other simple, but critical force protective measures include, wearing seatbelts when moving and ensuring that all personnel have as much of their body inside the vehicle as possible to reduce the possibility of being struck by shrapnel or being exposed to the initial blast.

a. **Pre-movement Rehearsals** - Operating units must be prepared to react quickly and efficiently to any attack. Study updated maps, as a significant number of IEDs are set up in the exact same location of previous attacks. Remember that IED attacks may be one part of a complex attack. The unit must be prepared to react to any threat after the IED detonates and move out of the kill zone as quickly as possible.

b. **Patrolling -** One of the most important things a unit or person can do to protect themselves is to limit predictability. Vary routes, movement techniques, and TTPs for dealing with different situations. Never forget that the enemy is always watching. Patrols should change direction and speed at seemingly random intervals, especially in areas of previous IED attacks.

5. **REACTING TO AN IED -** There are certain things every member of the unit can do to counter specific attacks. Every member of the patrol should be alert and constantly aware of the situation around them. Know the authorized Escalation of Force (EOF) and Rules of Engagement (ROE).

a. **Counter VBIED/SVBIED Techniques** - The key to surviving a VBIED/SVBIED attack is standoff and cover. Know that a SVBIED can come from any direction. Units have been attacked by vehicles turning into a patrol from oncoming traffic, moving in a convoy, or in firm base attacks. Maintain an aggressive security posture and have a plan for dealing with civilian traffic. When dealing with VBIED/SVBIED attacks, it is important to:

(1) Have a plan to deal with approaching vehicles. Decide if they will be allowed to pass or not and have a plan for the EOF.

(2) Be aware of danger areas/choke points such as turnoffs that force patrol to slow down.

(3) Watch merging traffic as VBIEDs have been used near on and off ramps to get close to coalition vehicles.

c. **Actions at Halts** - if a patrol or convoy must stop during movement avoid clustering vehicles and vary the vehicle interval between elements; establish your own local security and employ techniques to create standoff. Most importantly, do not remain at one site too long and conduct 5 to 25 meter checks as described below.

(1) **5 to 25 meter checks**. Depending on the length of time of the halt, the area to clear varies from 5 to 25 meters. At every halt, no matter how short, the crew must clear 5 meters around the vehicle while still inside the vehicle. For extended halts, teams must clear 25 meters around the patrol or convoy.

(a) 5 meter checks:

1. Identify a position to halt.

2. Visually check the area 5 meters around your vehicles.

3. Look for disturbed earth and suspicious objects, loose bricks in walls, and security ties on streetlights or anything out of the ordinary.

4. Search at ground level and continue up above head height. Then conduct a physical check for a radius of 5 meters around your position. Be systematic, take your time, and show curiosity. If the tactical situation permits, use a white light or infrared (IR) light at night.

5. If in an armored vehicle, remain mounted during your 5-meter check to take advantage of the vehicle's protection.

(b) **25 meter checks:**

1. Add to the 5-meter check when the patrol or convoy leader decides to occupy an area for any length of time.

2. Once 5-meter checks are done, continue visually scanning out to 25 meters.

3. Conduct a physical search for a radius of 25 meters around your position.

4. Look for IED indicators and anything out of the ordinary.

d. **Actions on Contact** Should you be part of a patrol or convoy that finds an IED, the five "Cs" will help to ensure that the situation can be dealt with quickly and safely. Remember, an IED that is found is still an IED attack. By finding the IED, you have just disrupted the enemy's attack. Do not forget about the enemy's other forms of attack, RPGs, small arms fire, mortars, and secondary IED. Enemy IED site = Enemy ambush site. You are in the kill zone!

(1) **IED's Found Before Detonation** - A simple set of guidelines should be use when encountering a suspected IED are the five "Cs". These are Confirm, Clear, Call, Cordon, and Control.

(a) **Confirm** - Always assume the device will explode at any moment. From a safe distance, look for IED indicators while attempting to confirm the suspected IED. Use all tools at your disposal, to include moving to a better vantage point and using optics to look for tell-tale signs of an IED. Never ask civilians to remove an IED and do not attempt to do the job of explosive ordnance disposal (EOD) or engineers.

(b) **Clear** - Evacuate the area to a safe distance (terrain will dictate) but do not set a pattern. Keep in mind some threats require more standoff than others. Assess whether your distance and cover is adequate and direct people out of the danger area. Sweep the area for any secondary devise or trigger person. Once scene is safe, question, search, and detain as needed. Do not allow anyone to enter your cordon other than those responsible for rendering the IED safe (EOD).

(c) **Call/Check** - Let your higher headquarters know what you have found. When you move to a new location, all personnel should conduct 5 and 25 meter checks for secondary IEDs. Always assume a found IED is bait and the real IED is near your "secure" location.

(d) **Cordon** - Establish blocking positions to prevent vehicle and foot traffic from approaching the IED. Establish 360 degree inner and outer cordon to secure and dominate the area. Most likely, the enemy is watching and waiting to make his move.

(e) **Control -** Control the area until EOD arrives. Clear and set up an entry control point (ECP) for first responders. Do not let others go forward to "inspect" the IED. Make contingency plans for coordinated attacks.

(2) **IED Detonation** - Immediate actions differ when an IED is actually detonated. The enemy may often combine the IED attack with a direct fire ambush to increase the lethality of the attack. If an ambush does accompany an IED attack, the priority shifts to address the direct fire and then conducting the 5 C's. It is important to keep several things in mind when dealing with IED detonation:

(a) Respond quickly and aggressively in accordance with ROE

(b) Immediately scan outward. The biggest mistake Marines can make is focusing inwards toward the site of the IED detonation and forgetting about the enemy.

(c) Move out of kill zone

(d) Search for additional IED's

(e) Treat/Evacuate casualties

(f) Report situation

(g) Expect follow on attacks

(3) **Chemical IED** - Coalition forces have had several encounters with IEDs also having chemical filler in conjunction with the explosive. Due to the complexity of manufacturing exact payloads the chemical effect is difficult to achieve. Units must be aware of the capabilities, and know what to do in the event of a chemical attack. Specifically:

(a) Move upwind, to high ground at least 240 meters away from release point.

(b) Normal combat uniform provides some protection; individual protective suits, masks and gloves will provide additional protection.

(c) Detectors will alarm but best warning comes from your sense of sight and smell.

e. **What NOT To Do with Suspected IEDs**

(1) Never approach a suspected IED. Establish standoff by using binoculars and spotting scopes from multiple angles to confirm the presence of an IED. When in doubt, back off and call EOD.

(2) Do not pick up det cord. Det cord is an explosive and the presence of it alone is enough to call EOD. Do not trace or pull on det cord.

(3) Do not directly trace command wire (CW). The enemy has placed trip wires and other IEDs under/in the vicinity of command wires. When a command wire is located, rather than walking parallel to or over the wire to locate the initiation point, work in an "S" pattern, crossing the CW until the initiation point is located.

(4) Do not focus on the "found" IED. An IED, once found, is not going to move. Conduct secondary sweeps (5 to 25) and set in cordons. Always think a couple steps ahead and have a plan for any possible encounters that may arise. Again, once positive IED indicators are found move to safe distances and call EOD.

6. **RULES OF ENGAGEMENT -** Definition of Rules of Engagement are directives issued by a competent military authority which delineate the circumstances and limitations under which the United States forces will initiate and/or continue to conduct engagements with other forces. (JPUB 1-02)

7. **ESCALATION OF FORCE (EOF)**

a. Escalation of Force (EoF) principles assist Marines and Sailors in the application of force consistent with Rules of Engagement (ROE) and mission accomplishment in the contemporary, complex operating environment. They guide Leaders in Military Decision Making Process (MDMP), training, rehearsals, and mission execution where the application of force is a critical element. EoF principles leverage available force options (lethal and nonlethal) to set the conditions for desired outcomes (commander's intent) while reducing unnecessary death and collateral damage during the application of force. Escalation of Force principles include:

(1) EoF principles are NOT limitations on self-defense, do NOT apply to Declared Hostile Forces, are NOT a substitute for, but are a part of, ROE.

(2) EoF principles further follow self-defense rules, may minimize the loss of life and unnecessary suffering, and are part of mission analysis.

(3) Escalation of Force is NOT a step by step process, but a range of options.

(4) The inherent right of unit commanders to exercise self-defense in response to a hostile act or demonstrated hostile intent still applies in off-base situations or off-vessel in foreign areas.

b. Signaling procedures for a target not immediately positively identified as a hostile threat are:

(1) **Daylight signaling procedures – use of:**

(a) Signs in local language

(b) Bull horn

(c) Colored flags or paddles

(d) Pop-up flares

(e) Warning shots

(f) Disabling shots

(g) Lethal shots

(2) **Night and limited visibility signaling procedures – use of:**

(a) Spotlights

(b) Pop-up flares

(c) Warning shots

(d) Disabling Shots

(e) Lethal shots

8. **SUICIDE BOMBERS (personal borne IED-PBIED)** - Most suicide attacks involve SVBIEDs, and include casualty rates from tens to hundreds. There has been an increasing trend for suicide bombers to attack with an explosive vest, belt, or baggage. U.S. and Coalition Forces have been attacked within the perimeter of a base; civilians have been attacked at polling stations and police recruitment drives. With better techniques used to reduce the effectiveness of VBIEDs, the potential for the enemy to adapt and use suicide bombers increases.

a. PBIED Design - If the charges used by bombers are effectively packaged and concealed, a suicide bomber can carry up to 45 pounds of explosives; however, most suicide belts are designed to hold smaller amounts, up to 12 pounds. It should be noted that fragment producing materials are often incorporated into the design of these belts/vests.

b. PBIED Indicators - Include individuals who deliberately ignore orders to stop or attempt to circumvent a security checkpoint, those wearing too much clothing for the prevailing weather conditions, one with suspicious bulges in his/her clothing, carrying packages/bags or wearing satchels/backpacks, and an individual handling wires, switches, an actuator, or a "dead man's" switch.

b. **Counter Suicide Bomber Techniques**

(1) Evacuate the area immediately. Safe distances will depend on the mass of explosive carried by the bomber and the amount and type of fragmentation used.

(2) "Close and negotiate" tactics should not be attempted, as suicide bombers are usually trained to avoid surrender at all costs.

(3) A "fail safe" cell phone or radio-controlled initiator could be used in the event that the bomber is incapacitated or hesitates. This tactic would normally involve a second suspect with a line-of-sight view of the bomber and should always be considered.

(4) If a "deadly force" response is taken, bullet impact may initiate/detonate the explosive charge(s). Firing on the suspect should only be undertaken from protective cover.

(5) If the suspect is neutralized and there is no explosion, do not administer first aid. Wait for EOD to render safe the explosive charge.

REFERENCE - TITLE	PUBLICATION ID
Explosive Hazard Operations	FM 3-34.210
Joint Improvised Explosive Device Defeat Organization Tactics, Techniques and Procedures	JIEDDTF 05-23
Handbook MAGTF Counter-Improvised Explosive Device Operations	MCIP 3-17.02
Marine Rifle Squad	MCWP 3-11.2
Prehospital Trauma Life Support (PHTLS). National Association of Emergency Medical Technicians: current edition.	

Improvised Explosive Device Review

1. Define the major components common to the different types of IED's?

2. Define the different types of IED's found on the battlefield?

3. Explain the different indicators one should be aware of to aid in the detection of IED's?

4. Explain the indicators and design of a PBIED?

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
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FMST 307

The M-50 Field Protective Mask

TERMINAL LEARNING OBJECTIVES.

1. Given a CBRN environment, a Joint Service Field Protective Mask (SL-3 complete), CBRN alarm and CBRN incident indicator, or an order to mask, **employ the Joint Service General Purpose Mask (JSGPM)** within a time limit of nine seconds of the issuance of the alarm, CBRN incident indicator, or an order. (HSS-CBRN-2001)

ENABLING LEARNING OBJECTIVES.

1. Without the aid of reference, given a description or list**, identify the components of the Joint Service General Purpose Mask (JSGPM)**, without any errors, in accordance with CBRN Protective Equipment Technical Manuals. (HSS-CBRN-2001a)

2. Without the aid of reference, given a description or list**, identify procedures to disassemble the Joint Service General Purpose Mask** in accordance with CBRN Protective Equipment Technical Manuals. (HSS-CBRN-2001b)

3. Without the aid of reference, given a description or list, **identify procedures to assemble the Joint Service General Purpose Mask** in accordance with CBRN Protective Equipment Technical Manuals. (HSS-CBRN-2001c)

4. Without the aid of reference, given a description or list, **identify procedures to fit the Joint Service General Purpose Mask**, to ensure proper seal and fitment in accordance with CBRN Protective Equipment Technical Manuals. (HSS-CBRN-2001d)

5. Without the aid of reference, given a Joint Service General Purpose Mask and exposure to irritant gas in a gas chamber or simulated combat environment, **don and clear the gas mask** within a time limit of 9 seconds.(HSS-CBRN-2001e)

6. Without the aid of reference, given a description or list**, identify procedures to clean the Joint Service General Purpose Mask**, within 80% accuracy in accordance with CBRN Protective Equipment Technical Manuals. (HSS-CBRN-2001f)

1. **COMPONENTS OF THE M50 FIELD PROTECTIVE MASK**

The M50 Joint Service General Purpose Mask (JSGPM) is designed to provide 24 hours of continuous head-eye-respiration for protection against chemical/biological (CB), radiological particulates, and toxic industrial chemicals (TIC), and improve overall mission performance of the warfighter. The M50 will fulfill all of the functional requirements for inter-service and service-unique mission.

STUDENT NOTE
By design, the mask is a "Filtered Air" mask, meaning that there is no external or "Supplied" air supplied to the mask. The Field Protective Mask is not effective in small spaces when the oxygen content of the air is too low (below 19.5% in the environment). The FPM does not act as a breathing device; this is why it is not a "GAS MASK" but referred to as a Field Protective Mask.

Characteristics of the M50 JSGPM

- Used to protect the individual's face, eyes and lungs against field concentration of CBRN agents.
- WILL NOT protect the wearer against industrial gases such as ammonia or carbon monoxide.
- Allows the wearer the capability of drinking water while worn.
- Comes in three (3) sizes: small, medium and large. The size mark is located on the top left portion of the mask.

Faceblank The faceblank assembly is the **foundation** of the FPM. The following components are molded/assembled into the faceblank: face seal; chin cup; head harness tabs; a flexible, single piece eyelens made of polyurethane; openings for the front module assembly, filter mount assemblies and a storage receptacle for the drink coupler. Buckles are attached to the head harness tabs for attaching the head harness. (See Figure 1)

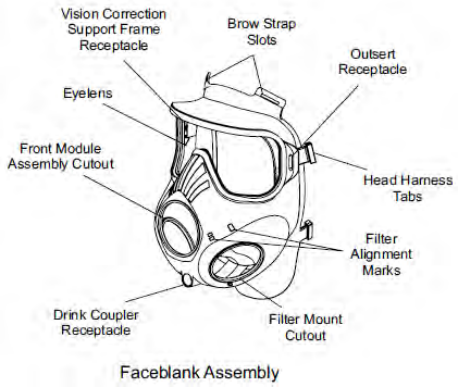


Figure 1

Nosecup. The nosecup assists in controlling the flow of air throughout the mask to minimize fogging of the eyelens during breathing. The nosecup size (S, M, L)and internal drink tube alignment arrow are located on the left interior side of the nosecup. (See Figure 2)

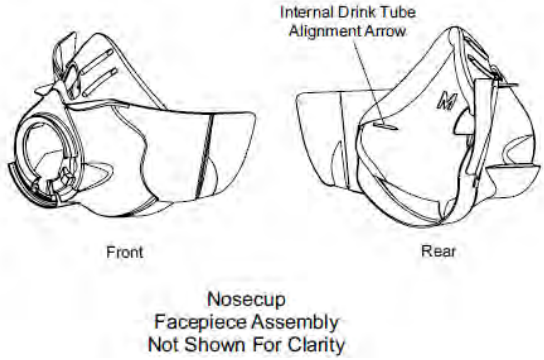


Figure 2

Head Harness. Constructed of elasticized side straps with a skullcap attached by loops to the brow strap slots. The temple and cheek straps are attached to buckles on the faceblank. (See Figure 3)

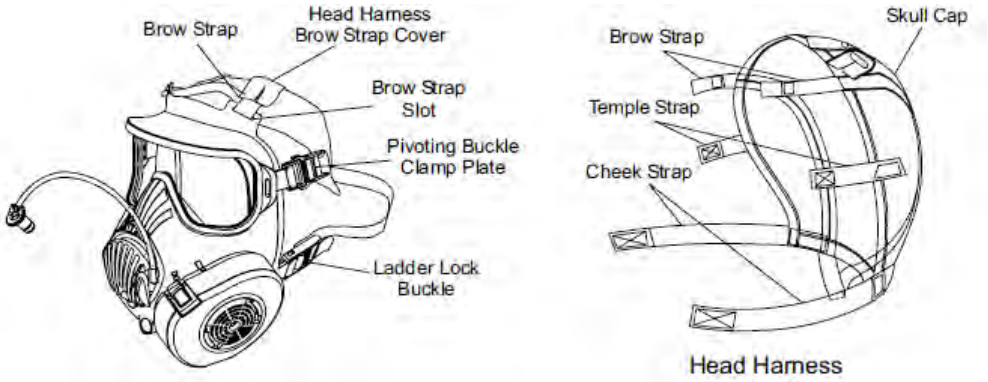


Figure 3

Front Module. The front module consists of a plastic housing (Front Module Main Body) that integrates the inlet/outlet disk valve and drink system components. (See Figure 4)

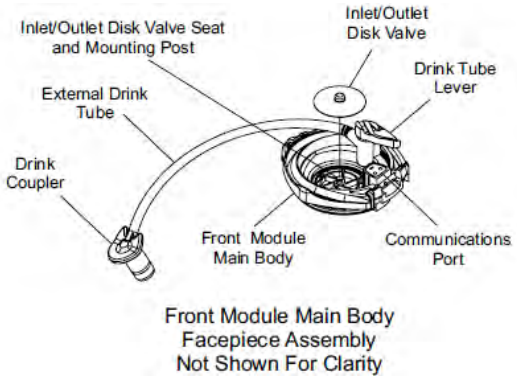


Figure 4

Outlet Valve Cover Assembly. The outlet valve cover assembly fits over the front module main body protecting the drinking system and outlet disk valve. It has a communications port cover to protect the communications port. The design of the cover provides a direct speech capability. (See Figure 5)

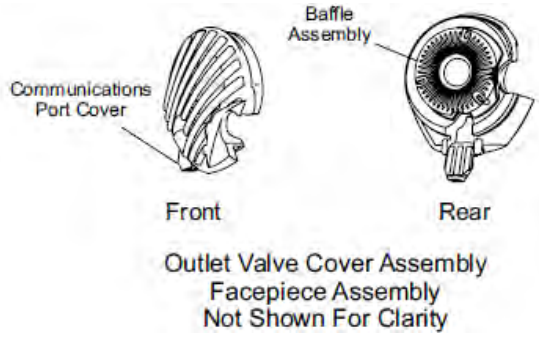


Figure 5

Inlet/Outlet Disk Valve. There are three inlet/outlet disk valves in the facepiece assembly. One is between the outlet valve cover assembly and the front module main body assembly. It serves as an outlet disk valve and releases exhaled air and prevents unfiltered air from entering the mask. The other two are located in the interior of the facepiece assembly and are attached to the rear of the left and right filter mounts. They serve as inlet disk valves and permit filtered air to enter the mask. (See Figure 4 & 6)

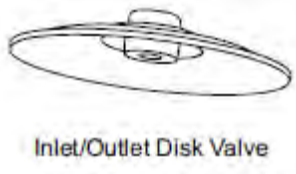


Figure 6

Self-sealing Disk valve. There are two self-sealing disk valves in the facepiece assembly. They are located on the exterior of the facepiece assembly and attach to the front of the filter mounts. The M61 filters attach to the filter mounts using a twist and lock mechanism. When the filter is attached to the filter mount, it opens the self-sealing disk valve permitting filtered air to pass through the inlet disk valve during inhalation. When the filter is removed, the self-sealing disk valve closes, preventing air from entering into the mask. The self-sealing disk valves are clear in color for identification purposes. (See Figure 4 & 7)

Self-Sealing Disk Valve

Figure 7

Drinking System. The drinking system is integrated into the mask and consists of an external drink tube fitted with a drink coupler to link to the water canteen and an internal drink tube fitted inside the mask. A lever opens the drink tube safety shutoff valve and causes the internal drink tube to swing to the wearer's mouth. (See Figure 8)

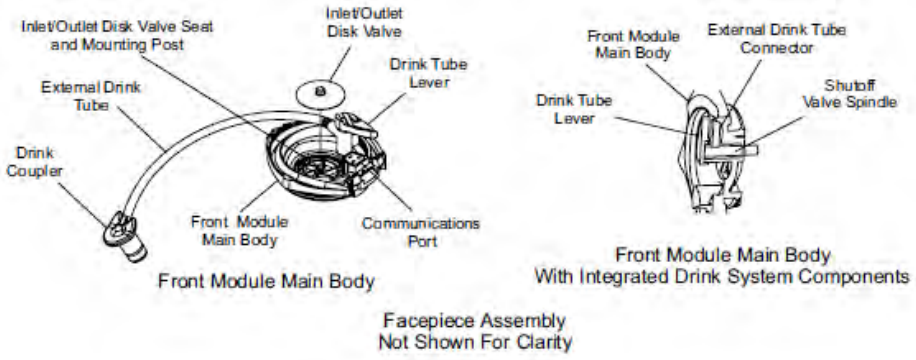


Figure 8

Internal Drink Tube. The internal drink tube is attached directly to the shutoff valve spindle on the inside of the facepiece assembly. The length of the tube can be cut to fit the warfighter. (See Figure 9)

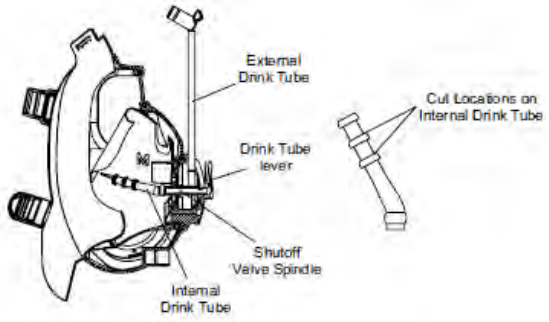


Figure 9

Filter Mounts, Left and Right. The filter mounts are designed to allow quick installation and removal of the M61 filter, and integrates an inlet/outlet disk valve (black), a self-sealing disk valve (clear) and the air deflectors. (See Figure 10)

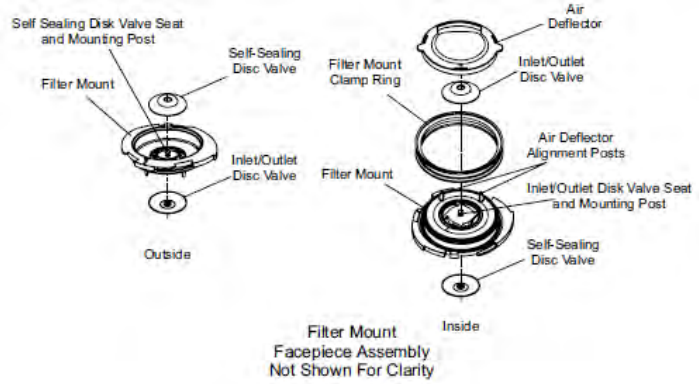


Figure 10

Air Deflectors. Air Deflectors are attached to each filter mount clamp ring inside of the facepiece assembly. The air deflectors direct filtered incoming air to assist in eyelens defogging. (See Figure 10 & 1)

Figure 11

Mask Carrier. The Mask Carrier provides for storage and carriage of the M50 FPM and its components. The carrier protective sleeve is used to prevent sand, dust, and other particles that could potentially damage the mask from entering the carrier. (See Figure)

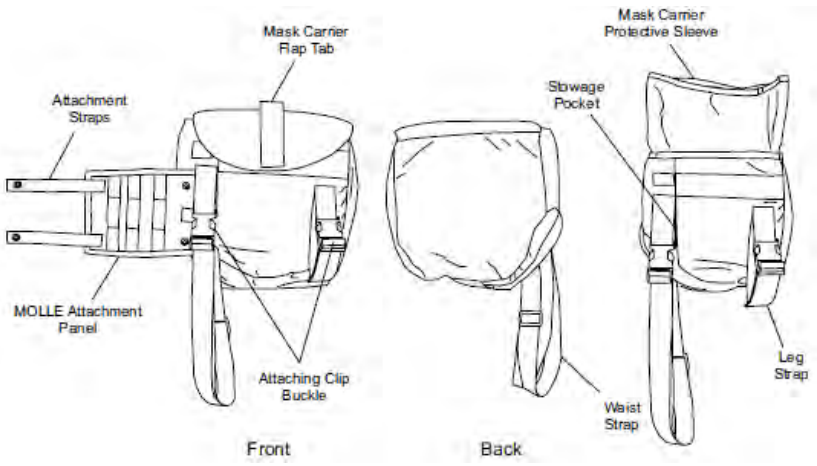


Figure 12

Individual Equipment Carrier Bag. The individual equipment carrier bag provides for the storage of select Additional Authorization List (AAL) items. (See Figure 13)

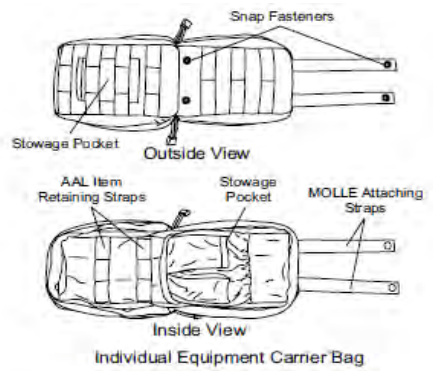


Figure 13

Clear Outsert Assembly. The Clear Outsert assembly provides the eyelens protection against scratching or other damage. It clips over the eyelens using outsert locking tabs that will not interfere with vision. The Clear Outsert is issued with an Outsert Pouch which can also be used to clean the mask. The clear outsert will be stowed attached to the mask. Use of the clear outsert or sunlight outsert provides the additional ballistic protection required for Navy flight deck and well deck operations. (See Figure 14)

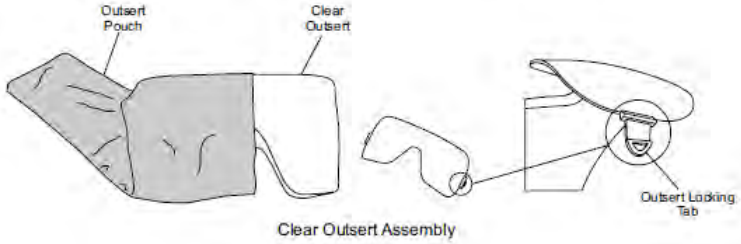


Figure 14

Waterproofing Bag. The waterproofing bag is used to keep the mask dry when required by climate and mission. (See Figure 15)

WARNING
DO NOT place food in waterproofing bag. Food may become contaminated and cause illness or death.

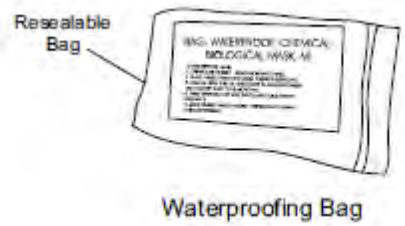


Figure 15

Water Canteen Cap. The water canteen cap replaces the M1 canteen cap and provides the capability to connect the drink coupler to the war-fighter's canteen for drinking purposes. (See Figure 16)

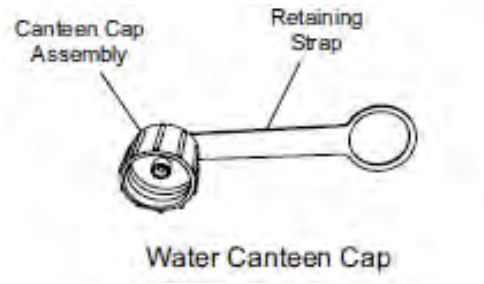


Figure 16

M61 filters. Twin M61 filters, one installed on each side of the mask, provide protection from CBRN agents. The M61 filters contain an activated carbon media and a high efficiency particulate filter. A time patch assembly is located on the back of the M61 filter. Filter alignment marks are applied to both the M61 filters and the facepiece assembly. Once exposed to suspected contamination the filters will require replacement. Sealed and packaged canisters have a five year shelf life. Filter service life indicator turns blue to indicate when unpackaged filters are no longer serviceable due to prolonged exposure to humidity. Any signs of physical damage i.e. cracked or broken then the filters should be replaced. (See Figure 1 & 17)

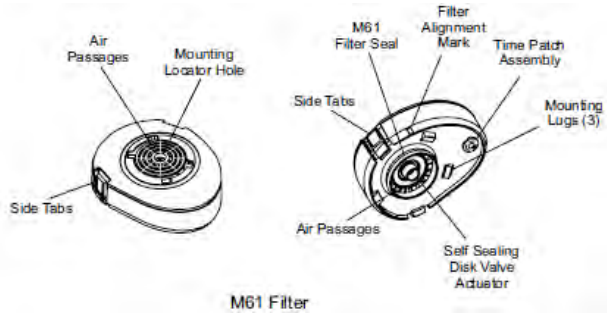


Figure 17

Faceform. The faceform is placed in the mask to minimize any possible deformation of the faceseal during storage and shipment. Position the Face Form so the beard on the Face Form matches the beard of the Facepiece Assembly. Pull all four straps to achieve a snug fit. (See Figure 18)

Figure 18

STUDENT NOTE
DO NOT discard the faceform. It is to be retained and used whenever storing the mask assembly for more than 30 days.

Mask Carrier Extension Strap. The mask carrier extension strap is a component of the M50 System and is used to facilitate the mask carrier shoulder carry configuration. (See Figure 19)

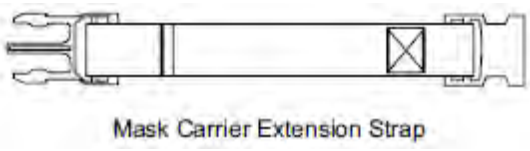


Figure 19

Vision Correction Assembly. The Vision Correction Assembly consists of a Vision Support Frame that attaches to the inside of the mask and is used to mount and adjust the Vision Correction Spectacle Support Frame containing the war-fighter's corrective lens as required. (See Figure 20)

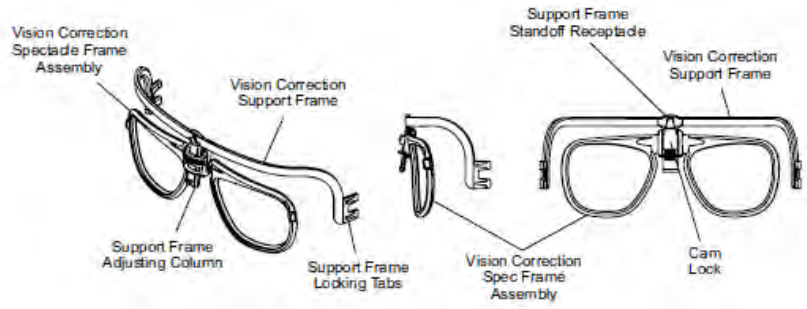


Figure 20

2. **DISASSEMBLE THE M50 MASK**

Remove clear/sunlight/laser outserts.
- Grasp the top and bottom of the outsert with both hands.
- Gently rotate the bottom of the outsert up and away from the facepiece assembly.

Remove outlet valve cover.
- Remove drink tube coupler from receptacle.
- Unwrap external drink tube.
- Turn the drink tube lever to a horizontal position.
- Grasp outlet valve cover from underneath the communications port and lift.

Remove outlet valve disk. Pinch center of the outlet disk valve between the thumb and middle finger, and pull gently away from the mounting post.

Remove M61 filters.
- Grip the filter side tabs on the M61 Filter and squeeze inward.
- Twist the filter towards the front of the mask, and lift it from the filter mount.

STUDENT NOTE

Filters do not decontaminate or neutralize contamination: they merely collect and contain it. Therefore, contaminated filters are hazardous. Replacing and disposing of these filters require care to prevent a hazard to personnel or spread of contamination. Contaminated filter disposal will be conducted in accordance with service directed procedures during peacetime and wartime situations.

Remove self-sealing disk valves. Pinch the center of the self-sealing disk valve and pull gently away from the mounting post.

Remove drink coupler.
- Remove drink tube coupler from storage location and unwrap external drink tube.
- With one hand grasp the drink tube coupler; with the other hand grasp the external drink tube and pull off the drink tube coupler.

Remove internal drink tube.
- Turn drink tube lever on front module assembly upward.
- Grasp internal drink tube and firmly pull.
- Turn drink tube lever downward to place internal drink tube coupler in stowed position.

Remove air deflectors.
- Reach into facepiece and move the nosecup to one side exposing the air deflector.
- Gently pull the air deflector off the filter mount clamp ring exposing the inlet disk valve.
- Repeat on the other side.

Remove inlet valve disks. Pinch valve gently with thumb and middle finger, and pull away from the mounting post.

Remove head harness.
- Undo the two brow strap hook and pile fasteners at the top of the head harness skullcap and pull the brow straps through the slots.
- Lift the clamp plates of the pivoting buckles and pull the temple straps through and out of the buckles.
- Remove the cheek straps.

3. **ASSEMBLE THE M50 MASK**

Install head harness.
- Slide the two brow straps through the brow strap slots; fold straps over the slots and fasten to head harness brow strap covers at the top of the skullcap.
- Lift clamp plates of buckles and thread the temple straps through the pivoting buckles; push the temple straps through the buckle opening, loop over and push the folded end down through the slot between the clamp bar and the retaining bar; leave clamp plates open.
- Thread the cheek straps through the buckles by pushing the folded end of the cheek straps through the wide opening; then push it back through the narrow opening (front slot).

Install inlet disk valves.
- Check that the disk valve and seat are clean.
- Fold back the nosecup to expose center hole of the filter mount assembly.
- Position the outlet disk valve.
- Gently press the center of the disk until fully seated on the mounting post.

Install air deflectors. Move nosecup and position the air deflector over the filter mount clamp ring ensuring air deflector is aligned over the alignment posts and press. (See Figure 21)

Figure 21

Install internal drink tube.
- Turn drink tube lever on front module assembly upward.
- Install drink tube on drink tube coupler and press.
- Adjust to fit.
- Place internal drink tube in stowed position.
- Check for proper alignment to achieve proper fit.

Install drink coupler.
- Align the external drink tube with the drink tube coupler.
- Push the drink tube over the drink tube coupler.

Install self-sealing disk valves.
- Check the valve seat and valve mounting post for cleanliness and damage**.**
- Position self-sealing disk valve on mounting post**.**
- Gently press the center of the disk until seated on post.

STUDENT NOTE

Ensure a self-sealing valve disk function check is performed after replacement of the disk valves.

~ Don the mask
~ Remove either the left or right M61 Filter
~ Place your hand over the filter air inlet passages of the filter remaining
~ Breathe in, mask should collapse against your face
~ Replace filter and check the other side

Install M61 filters.
- Pick up the filter with the side tabs facing toward the bottom.
- Align the single filter alignment tab with the double alignment marking on the facepiece assembly ensuring the filter is directly over the self-sealing disk valve and press until the filter is snug against the mask.
- While pressing the filter to the filter mount, turn it toward the back until the single alignment tab is aligned with the single alignment marking on the facepiece assembly and the tabs click.

Install outlet disk valve.
- Visually inspect the disk.
- Align over the valve mounting post.
- Gently press the center of the disk until fully seated on the mounting post.

Install outlet valve cover.
- Turn drink tube lever to clear the outlet valve cover.
- Align the outlet valve cover over the communications port.
- Gently snap into place.
- Close communications port door by pushing on the raised tab until it clicks.
- Reinstall drink components.

Install clear/sunlight/laser outserts. Align the locking tabs on the ends of the outsert with the outsert receptacles and gently rotate the outsert down pushing the locking tabs into the outsert receptacles.

WEARING THE CARRIER

There are three authorized methods to wear the Field Protective Mask carrier: the waist belt configuration, shoulder sling configuration, and Modular Lightweight Load Carrying Equipment (MOLLE) 1 or 2 Fighting Load Carrier (FLC) configuration.

Waist Belt Configuration.
- Extend both ends of waist straps and leg straps.
- Adjust straps to approximate length. Place mask carrier on left side and wrap waist strap around waist and clip the buckle. Pull end of waist strap and adjust waist strap to proper size.
- Wrap leg strap behind and around leg and clip the buckle. Pull end of leg strap and adjust leg strap to proper size.

WAIST BELT CONFIGURATION

Shoulder Sling Configuration.

- Extend both straps to maximum length.
- Attach extension strap to leg strap.
- Insert waist strap clip into the end of waist strap clip buckle. Place mask carrier overhead and left arm so mask carrier is on left side.
- Wrap leg strap around waist and clip the buckle. Pull end of leg strap and adjust to proper size.

SHOULDER SLING CONFIGURATION

Fitting And Adjusting The FPM. There are no special tools for sizing the FPM. You will have to use your judgment and on proper fitting.

(1) Fitting

- Loosen head harness so that strap ends are approximately one inch from buckles.
- Pull head harness over front of mask.
- Hold hair back from sealing area and place chin in the chin pocket. (Hair affects the seal of the mask.)
- Have Marine slip head harness over head while holding mask against face.

(2) Adjusting

- Have Service Member hold mask tightly against face.
- Center skullcap on back of Marine's head and have Marine hold in place.
- Place finger or thumb under buckle of forehead strap. Then give strap end short, sharp tugs until buckle feels snug. Adjust other forehead strap in same manner.
- Place finger or thumb under buckle of cheek strap and adjust cheek strap until it feels snug. Adjust other cheek strap in same way.
- Have Service Member release mask. Mask should not slip down. If mask slips, readjust forehead straps and cheek straps until mask remains in place.
- Place finger or thumb under buckle of temple strap and adjust temple strap until buckle feels snug against finger. Repeat adjustment on other temple strap.

(3) Checking For Fit. Check the following to ensure a proper fit.
- Edge of mask comes up on forehead but not into hairline and within one inch of ear.
- Temple straps and cheek straps do not cut into ears.
- Service Member's pupils are within the center one-third area of the eyelens. Adjust optical inserts if required.
- Mask does not press flesh so tightly that eyes are partly closed.
- Bottom of mask does not cut into throat.
- Skin in front of ear is not wrinkled.
- Nosecup does not obscure vision.
- If mask still does not meet above standards, try another size mask.

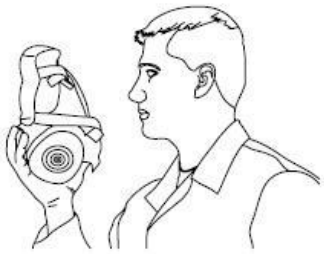
5. DONNING, DRINKING AND DOFFING THE FIELD PROTECTIVE MASK

The donning and clearing of the mask should be done within 9 seconds. In order to prepare your M50 FPM you should pre-fit the mask and store it in the carrier.

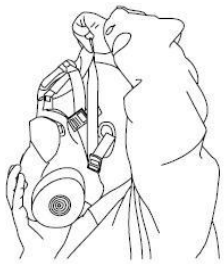
Donning Procedures

- Stop breathing and close your eyes. **Do not take another breath or open your eyes until the mask has been donned and cleared**.
- Remove your helmet. Put helmet between your legs or hold your rifle between your legs and put helmet on the muzzle.
- Take off your glasses if you are wearing them.

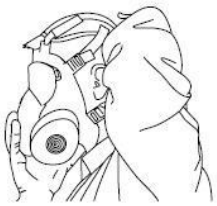
- With your left hand grasp the mask carrier flap tab and pull to open mask carrier flap.

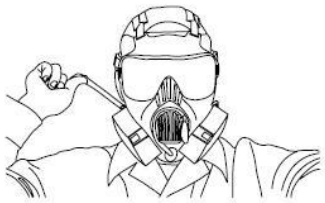


- With your right hand, grasp mask and remove it from carrier.
- Put your chin in chin pocket and press mask snugly against your face.



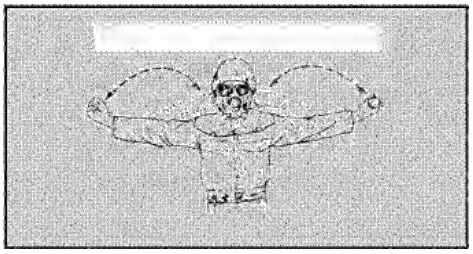
- Grasp the head harness tab and pull head harness over your head. Be sure your ears are between the temple straps and cheek straps. Pull down the head harness at the back as far as possible so that the brow straps are tight and temple straps are approximately parallel to the ground.





- Tighten the cheek straps one at a time or both at the same time, ensuring straps lay flat against your head.
- Seal the outlet valve by placing one hand over the outlet valve cover assembly. Blow out hard to ensure that any contaminated air is forced out around the edges of the mask assembly.

- Conduct a negative pressure test. With both hands cover M61 filters and breathe in. Mask should collapse against your face and remain so while you hold your breath. If it does, your mask is airtight. If the mask does not collapse, check for hair, clothing, or other matter between mask and your face and clear again.
- Resume breathing. Give the hand and arm signal while shouting **GAS! GAS! GAS!**



STUDENT NOTE

The purpose of the audio and visual alarm after donning your mask is to warn other personnel around you. Even if they cannot hear you shout GAS! GAS! GAS!, the visual hand and arm signal will pass the alarm to them. You will receive a more detailed class on audio and visual alarms later in the course.

- If wearing the MOPP ensemble, pull integrated hood up and secure fasteners.
- Put on helmet and pick up rifle.

STUDENT NOTE

When putting on your helmet, be sure not to break the seal between your mask and the side of your face, as contaminated air could leak into your mask.

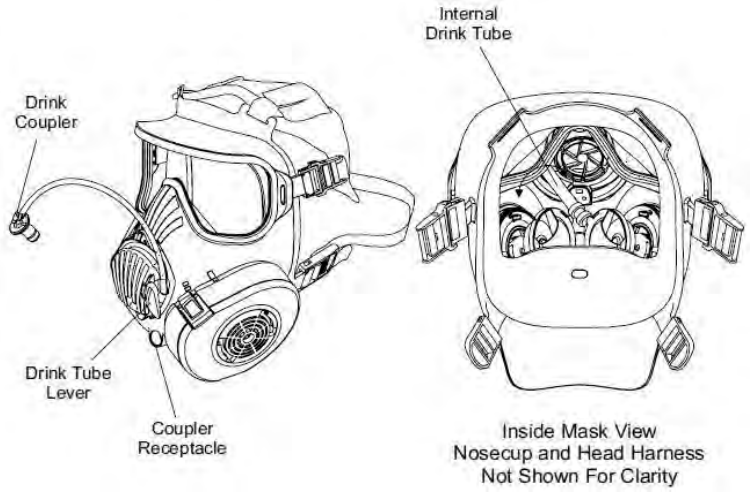
- Close carrier.
- Continue your mission.

Drinking Water While Masked. Being able to drink with masked is vital. Without this ability, individuals could quickly dehydrate. Using a buddy for assistance makes drinking while masked a lot easier to accomplish.

Before attempting to drink from your canteen while masked, consider the following:

- Do not connect the drink tube to your canteen until the top of the canteen cap has been checked for contamination and verified to be clean. If you don't do this first, chemical agents could be swallowed resulting in sickness or death.
- Ensure your plastic water canteen is filled before entering a contaminated area. Or, if in a contaminated area, fill your canteen inside a protected shelter.
- Check that the canteen has a water canteen cap.

While performing the following steps, be careful not to break your seal. If necessary, use two fingers on the front voicemitter to hold the mask firmly in place against your face.



- Following the steps below to drink water from your canteen while masked:
  - Steady mask with one hand and pull drink coupler out of coupler receptacle below the front module main body.
  - Open retaining strap on water canteen cap.
  - Push drink coupler into canteen cap so that seal snaps into the groove in the cap.
  - Turn drink tube lever on front module assembly upward, until it stops and is fully opened, to position internal drink tube in front of mouth and grasp internal drink tube between your lips.
  - Blow air to create positive pressure. You should feel some resistance.

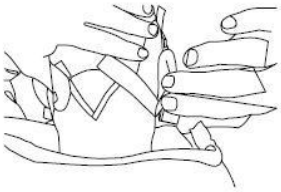
1. If no resistance is felt and air continues to flow through drinking system, stop drinking. You have a leak.

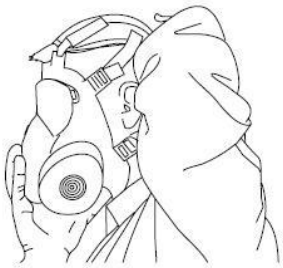
2. If a blockage is felt, the system may be clogged or the quick disconnect coupling is not properly inserted into the cap.

- If resistance is felt, raise and invert canteen and drink water.
- Once pressure has decreased, position canteen right side up and re-pressurize canteen.
- Once drinking has been completed, the drinking system may be disconnected. To do this, lower the canteen, blow into it to remove all water from the drinking system and to re-pressurize the canteen. Disconnect the quick disconnect coupling from the M1 cap and stow the canteen and external drinking tube.

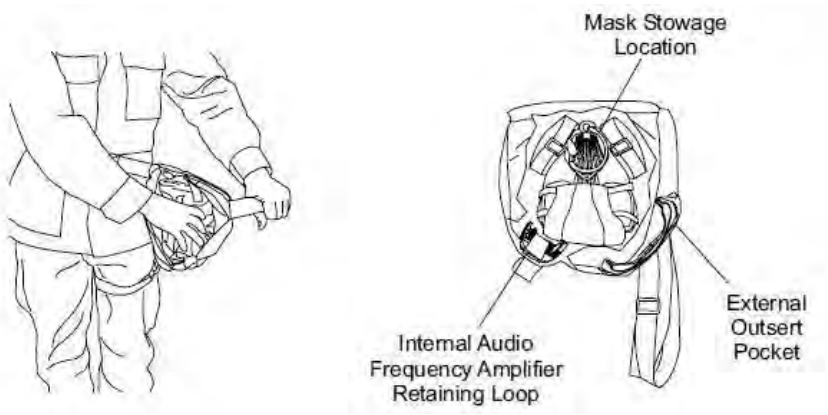
DOFFING PROCEDURES. These steps are intended to be done in an uncontaminated environment and when given the command "All Clear, Unmask".

- Remove helmet.





- If wearing MOPP ensemble, pull un-secure fasteners and pull down integrated hood.
- Loosen cheek straps completely by placing your thumbs behind the buckles and pulling forward so straps become loose.
- Grasp the front of the mask and lift it off your head.
- Stow mask.
- Make sure the facepiece is dry and clean.
- Check that the inside of the carrier is free of dirt, trash and other material.
- Grab the cheek straps and carefully pull the head harness over the front of the mask.
- Grasp the mask carrier flap tab and pull to open mask carrier flap.
- Grasp the mask by the front module assembly and place in mask carrier, eyelens first, covered by head harness skullcap, and facing away from the body.



- Replace your helmet, continue with mission.

6. **MAINTAINING THE M50 FPM**

Cleaning The M50 FPM. It is the members responsibility to maintain the mask. The cleaning of the M50 FPM should be done anytime the mask is soiled or as needed. There are two levels of cleaning. The first is light cleaning conducted after normal operations; the second is heavy cleaning conducted prior to mask turn-in, sanitizing, transfer to another warfighter, or after extensive operational use. First you must disassemble the M50 FPM as described in previous section.

STUDENT NOTE

DO NOT stow mask in carrier until it is completely dry, and DO NOT use hot or boiling water to clean the mask. Damage to the mask may result. Use warm (comfortable to the touch) water. Use only mild toilet soap to clean mask.

- Light Cleaning**.**

  - Dip an outsert pouch in warm soapy water and wring pouch almost dry. Clean outlet valve cover assembly, outlet disk valve, inlet disk valves, air deflectors, self-sealing disk valves, audio frequency amplifier adapter and head harness with the outsert pouch.

  - Rinse by dipping the outsert pouch in warm clear water, wring pouch almost dry and wipe the mask and components with the clean water. Allow to air dry.

- Heavy Cleaning.

  - The Organizational level technician or other trained person will provide a pail with warm (comfortable to the touch) water for cleaning mask components. (If the Organizational level technician or other trained person feels it is necessary, a pail with soap and water may be provided for cleaning and a pail of water will be provided for rinsing the mask components).

- Immerse the mask in the water. Agitate until all sand, dirt and foreign debris has been removed.
- Rinse in clean, warm water.
- Dry facepiece with a dry outsert pouch and allow to air dry. Hang head harness to air dry.
- Clean eyelens and outserts with dry outsert pouch.
- Clean the audio frequency amplifier adapter, if installed, with outsert pouch.

STUDENT NOTE
DO NOT use toilet soap in water when cleaning the drinking system.

- Clean the drinking system.

  - Fill the canteen with clean, potable water.
  - Reinstall the dry outlet disk valve and outlet valve cover assembly.
  - Open retaining strap on the water canteen cap.
  - Connect the drink coupler to the canteen cap and turn the drink lever on the front module assembly upward until it stops and is fully opened to open the drink tube shutoff valve.
  - Hold the mask upside down with the internal drink tube facing away from the mask and allow water to flow through the drinking system. Repeat the process twice.
  - Remove the water canteen cap (while still attached to the drink coupler) to drain any remaining water.
  - Remove the drink coupler from the water canteen cap.
  - Close the retaining strap on the water canteen cap.
  - Turn the drink lever on the front module assembly downward until it stops and is fully closed to close the drink tube shutoff valve.
  - Place water canteen cap back on canteen.
  - Re-assemble the remainder of the mask once all parts are completely dry.

Cleaning The Mask Carrier And Individual Equipment Carrier.

- Empty pockets and contents from bag.
- Shake bag upside down to remove dirt and foreign matter.
- Use a dry brush to remove as much loose dirt, sand, and foreign matter as possible from the interior of the bag. Make sure you clean the pockets and seams.
- Use a dry brush to remove excess dirt, sand, and foreign matter from the exterior of the bag.
- Soak brush in pail of cool water.
- Shake brush to remove excess water.
- Clean bag with brush and cool water.
- Hang bag to air dry.

REFERENCES

Unit Maintenance Manual for Joint Service General Purpose Mask M-50

M-50 Field Protective Mask Review

1. Describe the problem with not performing preventative maintenance on the M50?

2. List three accessory items associated with the M-50 Field Protective Mask?

3. Identify the first step in donning your gas mask once you have received word of possible contamination?

4. Once the order is given to don mask, how long do you have to don your gas mask?

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FMST 307a

Don Mission-Oriented Protective Posture (MOPP) Gear

TERMINAL LEARNING OBJECTIVE

1. Given a CBRN environment, a field protective mask (SL-3 complete), CBRN alarm and CBRN incident indicator, or an order to mask, **employ the Field Protective Mask** (FPM) within a time limit of nine seconds of the issuance of the alarm, CBRN incident indicator, or an order. (HSS-CBRN-2001).

ENABLING LEARNING OBJECTIVES

1. Without the aid of references, given a description or title, **select the definition of Mission Oriented Protective Posture**, within 80% accuracy, per NBC Decontamination, FM 3-5. (HSS-CBRN-2001e)

2. Without the aid of references, given a list, **identify the limitations of Mission Oriented Protective Posture**, within 80% accuracy, per NBC Decontamination, FM 3-5. (HSS-CBRN-2001f)

3. Without the aid of references, given a description or title, **identify the levels of Mission Oriented Protective Posture**, within 80% accuracy, per NBC Decontamination, FM 3-5. (HSS-CBRN-2001g)

4. Without the aid of references, given a description or list, identify the methods of **chemical agent detection**, within 80% accuracy, per NBC Decontamination, FM 3-5. (HSS-CBRN-2001h)

5. Without the aid of references, given a description or list, **identify the methods of personal decontamination**, within 80% accuracy, per NBC Decontamination, FM 3-5. (HSS-CBRN-2001i)

1. **MISSION-ORIENTED PROTECTIVE POSTURE (MOPP)**

Definition - MOPP is a flexible system of protection against chemical agents, which is used to facilitate mission accomplishment. Because of body heat buildup and basic human needs, the over garment cannot be worn forever. MOPP does give the commander a range of choices regarding the level of chemical protection. Choices range from no protection at all to full protection.

2. **LIMITATIONS OF MOPP**

Heat Exhaustion - individuals in protective gear working at a heavy rate may experience heat exhaustion at any time, especially during periods of high temperatures.

Work Rate - factors such as breathing resistance, an increase in body temperature, as well as psychological and physiological stress will reduce the total amount of work individuals can perform.

Five Senses - the senses and their related functions such as manual dexterity, visual acuity and voice communication will operate with less efficiency.

Personal Needs - individuals can not be in full chemical protection for indefinite periods and still attend to certain personal needs such as caring for wounds, personal hygiene, sleep and elimination of body waste.

Eating - it is impossible to eat with a gas mask on. The ability of troops to eat in an NBC environment depends on the type and extent of contamination.

3. **LEVELS OF MOPP** There are four levels of MOPP.

MOPP Level 1 - this level of protection is established when the *general warning* is given and the threat of NBC warfare exists.

- Over garment is worn open or closed
- Over boots are carried
- Mask is carried
- Gloves are carried

MOPP Level 2 - this level of protection should be established during tactical situations that require units to cross terrain where the previous use of chemical agents is *unknown*.

- Over garment is worn open or closed
- Over boots are worn
- Mask is carried
- Gloves are carried

MOPP Level 3 - this level of protection should be established when units are on the move and a chemical *attack is possible*.

- Over garment is worn and closed
- Over boots are worn
- Mask is worn; hood is open or closed, based on temperature
- Gloves are carried

MOPP Level 4 - this level of protection should be established when a unit will be *operating within an area of contamination*, or if there is an *imminent threat* of attack.

- Over garment is worn and closed
- Over boots are worn
- Mask and hood are worn and closed
- Gloves are worn

4. NBC DETECTION EQUIPMENT

The chemical agent detection devices utilized by the armed forces include the following:

M8 Chemical Agent Detector Paper

Purpose - the purpose of M8 paper is to identify the type of chemical agent present in liquid form on the battlefield.

Supplied - the M8 detection paper is supplied in a booklet and carried within the M40 field protective mask carrier.

Instructions For Use

- When an unknown liquid, suspected of being a chemical agent is encountered, immediately don the M40 field protective mask and protective suit.

- When all protective clothing has been put on obtain the M8 paper booklet from the carrier.

- Remove a half sheet from the booklet, and if possible, affix the sheet to a stick (to use as a handle).

- Blot the paper onto the unknown liquid and wait for 30 seconds for a color reaction to occur. The resulting color may then be compared to the colors on the inside of the front cover of the booklet to identify the type of liquid agent encountered.

M9 Chemical Agent Detector Paper (See figure 1)

Purpose - used to detect the presence of liquid nerve and blister chemical agents. However, M9 chemical agent detector paper does not identify either the specific agent or the type of agent encountered.

Supplied - M9 detector paper comes in a thirty-foot-long (30') and two-inch (2") wide roll strip in the form of a tape.

Figure 1. M9 Chemical Agent Detector Paper

Instructions For Use

- The tape is placed around a sleeve and a trouser leg of the overgarments. (NOTE: The tape contains an indicator dye that is a potential carcinogen. Avoid contact with the skin. Gloves should be worn during application,.)
- The tape is a dull off-white or cream color in the absence of liquid agent. The indicator chemical, when dissolved in liquid agent turns a reddish color.
- When the service member sees the tape turn a reddish color, immediately don your protective mask and alert others.
- If there is a possibility of skin contamination, immediately decontaminate the suspected area.
- False positive results can occur if liquid insecticides are on the surface being tested. Antifreeze and petroleum products will also cause false positive reactions.

M256A1 Chemical Agent Detector Kit

Purpose - the M256A1 chemical agent detector kit is used to detect and identify chemical agents present, either as a liquid or as a vapor.

Supplies - the kit consists of a booklet of M8 paper to detect agents in liquid form and twelve (12) foil-wrapped detector tickets containing eel enzymes as reagents to detect even very low concentrations of chemical vapors.

Instructions For Use - instructions for the use of this kit appear on the outside of each foil package. There is also an instruction booklet in the kit. The kit detects the following agents: nerve, blister and blood agents.

- Following the accompanying instruction, the testing can be completed in approximately 20 minutes.
- During testing it is important to keep the ticket out of direct sunlight. Sunlight speeds up the evaporation of the reagents. The ticket, when testing, must be kept stationary during all parts of the test.

5. **PERSONAL DECONTAMINATION**

Figure 2. M291 Skin Decontaminating Kit

M291 Skin Decontaminating Kit (See figure 2)

Purpose - to absorb and then neutralize liquid chemical agents present on the skin.

Supplied - the kit comes with six identical packets each containing a mixture of activated resins in the form of applicator pads.

Instructions For Use

- Remove a packet from the kit.
- Remove the applicator pad and apply an even coating of resin powder while scrubbing the entire skin area suspected to be contaminated.
- One applicator pad will decontaminate both hands and the face if necessary.
- If the face must be decontaminated, then the neck (including the throat area) and the ears must also be decontaminated using a second applicator pad.
- The black resin powder residue will provide a visual confirmation of the thoroughness of application.
- The resin will not cause skin irritations, even after prolonged contact with skin.
- Care must be taken in keeping the resin out of the eyes, mouth, and open wounds.

REFERENCE

NBC Decontamination, FM 3-5, Pgs. 2-1 through 2-5

MOPP Review

1. List the five limitations of MOPP?

2. Are gloves worn or carried in MOPP Level 3?

3. Which types of agents can be detected by the M256A1 Kit?

4. Describe the relationship of the M256A1 kit and direct sunlight?

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FMST 308

Manage Chemical Agent Casualties

TERMINAL LEARNING OBJECTIVE

1. Given a casualty and the absence of a CBRN team, necessary medical equipment andsupplies, **manage CBRN injuries to prevent further injury or death within the scope of care**. (HSS-CBRN-2007)

ENABLING LEARNING OBJECTIVE

1. Without the aid of reference and in writing, **identify the procedures for managing chemical agent casualties**, within 80% accuracy, per the Medical Management of Chemical Casualties, current edition.(HSS-CBRN-2007a)

1. **TYPES OF CHEMICAL WARFARE AGENTS**

Nerve Agents - nerve agents are a class of phosphorus-containing organic chemicals (organophosphates) that disrupt the mechanism by which nerves transfer messages to organs. The disruption is caused by blocking acetylcholinesterase, an enzyme that normally relaxes the activity of acetylcholine, a neurotransmitter.

Examples

GA - Tabun
GB - Sarin
GD - Soman
VX

Nerve Agents:
Colorless/ Light Brown
Fruity Odor

Descriptions of Nerve Agents

- Colorless to light brown liquid
- Nonpersistent
- Faint fruity odor
- May be inhaled, ingested and absorbed through the skin
- Most toxic chemical agents

Signs/Symptoms of Nerve Agents

- Can appear in seconds to hours depending on the agent and amount of exposure
- Massive secretions (rhinorrhea, lacrimation, incontinence, diaphoresis, etc.)
- Chest tightness
- Headache above the eyes with blurred vision
- Localized muscle twitching (which can progress into convulsions)
- Constricted pupils
- Respiratory arrest
- Death will result if left untreated

Nerve Agent Treatment
MARK 1 Kit:
Atropine
2PAM-Chloride
Pretreatment:
Pyridiostigmine
30mg/PO/TID for 14 Days

Treatment of Nerve Agents

- Don protective mask
- Decontaminate exposed skin
- Intramuscularly, inject MARK I Kit:
  - The MARK 1 Kit includes two autoinjectors, one of 2mg Atropine Sulfate and the other of 600 mg 2 PAM-Chloride. The steps for administering the MARK 1 Kit are as follows:

a. Grasp the Atropine autoinjector like a pen. Remove yellow cap. Press green tip against the meaty portion of the thigh and hold in place for 10 seconds (See figure 1).

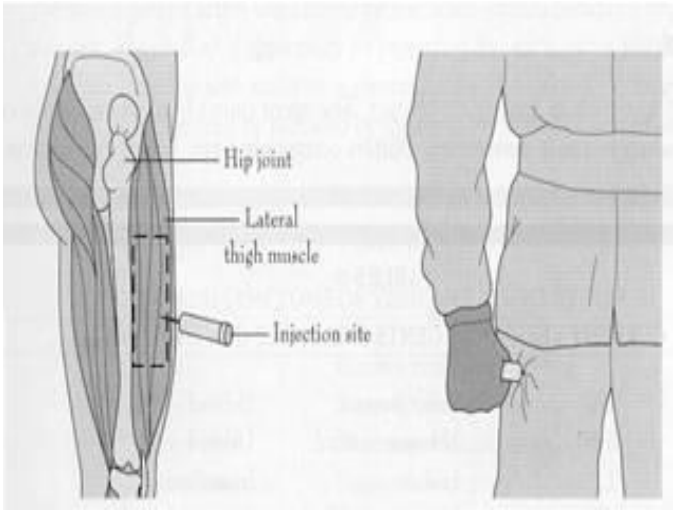

Figure 1. Injecting the MARK 1 Kit

b. Grasp the 2 PAM-Chloride autoinjector like a pen. Remove gray cap.
c. Press black tip against the meaty portion of the thigh and hold in place for 10 seconds.
d. If signs/symptoms are mild, member can administer their own kit.
e. One kit may be given every 10 minutes until improvement is seen or a total of three kits have been given.
f. If signs/symptoms are severe, (member is unable to inject themselve) give all three kits immediatley then inject 10mg Diazepam.
g. If symptoms continue after three kits have been administered, medical personnel may administer repeated Atropine (2mg) injections at three to five minute intervals and should be titrated to a reduction of secretions and to a decrease in respiratory distress.

<u>Prevention (Pretreatment) for Nerve Agents</u>

- Pyridiostigmine is a drug that inhibits nerve agents from binding to 20-40% of the enzyme acetylcholinesterase. (See figure 2)

- Dosage -30 mg every eight hours not to exceed fourteen days. Comes in a blister pack with 21 tablets, each 30mg.

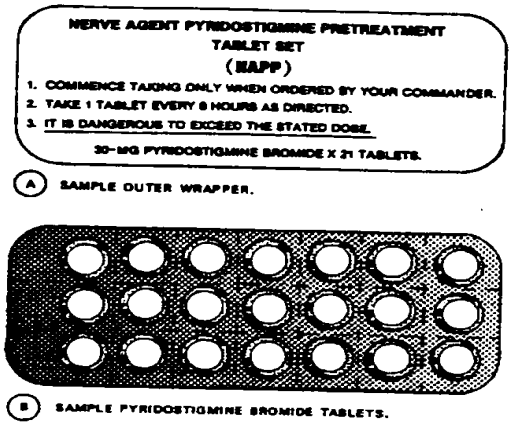

Figure 2. Pyridiostigmine Blister Pack

Vesicants (Blister Agents) - the exact mechanism by which they produces tissue injury is not known

Examples

HD - Distilled Mustard
HN - Nitrogen Mustard
Lewisite
Phosgene Oxide

Descriptions of Blister Agents

- Light yellow to brown oily liquid that becomes a vapor at high temperatures
- Persistent
- Odor:
  - Distilled Mustard (HD) – garlic or horseradish
  - Nitrogen Mustard (HN) - smells fishy
  - Lewisite (L) - smells like geraniums
  - Phosgene Oxide - smells pepperish/ pungent odor
- Heavier than water
- May be absorbed through the skin (especially moist areas)

Remember those "Fishy HNs"??? These memory tricks will help you! Be creative! Create your own!

Signs/Symptoms of Blister agents

- Appear any where from 2 - 48 hours after contamination
- Erythemic skin with blisters, and necrosis where the agent touches
- Nausea and vomiting
- Edema of the eyes, eyelids, and corneal scarring
- If ingested or systemic, intense pain in the GI tract and diarrhea

Treatment for Blister Agents

- Don protective mask
- Decontaminate exposed skin
- Flush eyes with copious amounts of water to prevent scarring of the Cornea
- Apply Vasoline to the eyes to prevent adhesions
- Apply Calamine lotion to reduce burning and itching of skin
- Consider giving Morphine for pain if needed
- Use antibiotics and IV fluid replacement as required

Blood Agents - blood agents react with metal complexes of body to prevent intracellular oxygen utilization.

Examples

- AC - Hydrogen Cyanide
- CK - Cyanogen Chloride

Descriptions of Blood Agents

- Colorless liquids dispersed in gas form
- Smells like bitter almonds or peach pits
- Must be inhaled

Signs/Symptoms of Blood Agents

- Hyperpnea (Rapid Breathing)
- Anxiety, agitation, vertigo
- Weakness
- Nausea / Vomiting
- Cherry red skin, may be streaked
- Unconsciousness and seizures within 30 seconds of exposure
- Respiratory arrest and death within two to four minutes if treatment is delayed

Treatment of Blood Agents

- Don protective mask
- Decontaminate exposed skin. Move to fresh air
- Vigorously treat symptomatically
- Administer IV **Sodium Nitrite** (10ml) followed by IV **Sodium Thiosulfate** (50ml)
- Second treatment with each of the two antidotes may be given at up to half the original dose, if needed

Choking Agents - break down the alveolar capillary membranes resulting in pulmonary edema.

Examples

- CG - Phosgene
- DP - Diphosgene
- CL – Chlorine

Descriptions of Choking Agents

- Colorless liquid to white cloud which turns into a vapor
- Smells like freshly mown hay, grass, or corn
- Must be inhaled
- Contaminated food is of little consequence. Agent has no effect on body when ingested.
- Rapidly becomes nontoxic in water

Signs/Symptoms of Choking Agents

- Headache and eye irritation
- Coughing and choking / shortness of breath
- Substernal ache with sensation of pressure
- Two to six hours after exposure the following may appear:
  - Dyspnea
  - Cyanosis
  - Pneumonia - late sign
  - Pulmonary edema, red frothy sputum may be observed
  - Hypoxia
  - Hypotension
  - Death

Treatment of Choking Agents

- Don protective mask
- Establish a patent airway
- Provide rest, warmth, and sedation
- No known antidote for choking agents
- Give oxygen, if available

Vomiting Agents

Examples

- DA - Diphenylchlorarsine
- DC - Diphenylcyanarsine
- DM – Adamsite

Descriptions of Vomiting Agents

- Color:
  - DA and DC have a white smoke color
  - DM has a canary yellow smoke color
- Odor of burning fireworks / shoepolish
- Crystalline solids, dispersed as a gas
- Must be inhaled

Signs/Symptoms of Vomiting Agents

- Appear 30 seconds to 2 minutes after exposure
- Severe headache
- Intense burning in the throat / salivation
- Chest tightness and pain
- Lacrimation / irritation
- Coughing, sneezing, nausea, and vomiting

Treatment of Vomiting Agents: Treatment is symptomatic.

- Don Protective Mask
- Get to fresh air as soon as possible
- Lift mask only to vomit
- Untreated symptoms usually subside within 30 minutes to 3 hours. - - Vigorous exercise will lessen and shorten the symptoms.

Lacrimators/Tear Agents

Examples

- CS - Ochlorobenzylmalonitrile
- CN – Chloracetophenone

'CS' gas is what you will be exposed to in the Gas Chamber!

Descriptions of Lacrimators

- Crystalline solids or liquids dispersed in the air as vapors or white smoke
- Strong pepper odor for CS and apple blossom odor for CN
- Absorbed through the eyes, nasal passages and skin pores

Signs/Sypmtoms of Lacrimators

- Pain and burning to the eyes
- Profuse tearing and photophobia
- Rhinorrhea (snotty nose), epistaxis (nose bleed)
- Chest tightness, coughing and dyspnea
- Blepharospasm (spasm around the eye)
- CS can cause severe burns starting with stinging sensation, erythema and then blister formation

Treatment of Lacrimators

- Don protective mask
- Get to fresh air as soon as possiable
- Heavy contaminants should be flushed from the eyes with copious amounts of water

Incapacitating Agents – These agents produce their effects mainly by altering or disrupting the higher regulatory activity of the peripheral nervous system and central nervous system

Examples
- BZ - Buzz Gas
- Agent 15

Descriptions of Incapacitating Agents
- Odorless and non-irritating
- Highly potent
- Rate of action – delayed by 30 minutes to 4 hours

Signs/Symptoms of Incapaciating Agents
- Dry mouth and skin, “dry as a bone”
- Hyperthermia, “hot as a hare”
- Skin red from cutaneous vasodilation, “red as a beet”
- Slowing of mental activity with slurred speech. Disorientation and hallucinations, “mad as a hatter”
- Dilated pupils, “blind as a bat”

Dry as a Bone, Hot as a Hare, Red as a Beet, Mad as a Hatter, Blind as a Bat

Treatment of Incapacitating Agents: treatment is supportive in nature
- Clear the airway as needed
- Treat for heat stroke
- Give PO fluids only if the victim can drink unassisted
- Approach with caution, the individual could become dangerous
- Remove all weapons
- Restrain as needed
- Physostigmine 45mcg / kg IM. After one hour, perform mental status exam and repeat dose as needed

2. **NATO CHEMICAL WARNING MARKER** - a triangular sign measuring 11"x 8" x 8" with yellow background, and red letters spelling " GAS". (See figure 3)

Figure 3. NATO Chemical Warning Marker

REFERENCE

Medical Management of Chemical Casualties, Current Edition

Chemical Agent Review

1. List four Nerve agents.

2. Describe how Blood agents effect the body.

3. List three Vomiting agents.

4. Describe the signs and symptoms associated with a lacrimator agent.

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FMST 309

Manage Biological Agent Casualties

TERMINAL LEARNING OBJECTIVE

1. Given a casualty and the absence of a CBRN team, necessary medical equipment and supplies, **manage CBRN injuries to prevent further injury or death within the scope of care**. (HSS-CBRN-2007)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference and in writing, **identify the procedures for treating biological agent casualties,** within 80% accuracy, per the Medical Management of Biological Casualties, current edition. (HSS-CBRN-2007b)

1. GENERAL GROUPS OF BIOLOGICAL AGENTS

Definition: The intentional use of living infectious microorganisms or toxins, derived from living organisms, to cause death or disease in humans, animals or plants. Laboratory analysis is the only definite way to confirm biological agent exposure.

Groups of Biological Agents

Bacteria - free living microorganisms that are naturally occurring or engineered. They work by overcoming the body's defense mechanism by invading cells. Most are killed by antibiotics.

Examples:
Anthrax
Plague
Brucellosis

Virus - an infectious agent, smaller than bacteria, that lacks independent metabolism and is able to replicate only within a host cell. Viruses produce diseases that do not respond to antibiotics. Supportive care is the only treatment.

Examples:
Smallpox
Venezuelan Equine Encephallitis (VEE)
Viral Hemorrhagic Fever (VHF)

Biological Toxins - A poisonous substance produced within living cells or organisms. . Toxins do not grow or replicate, but have been classified biological agents by the United States due to their ability to be biochemically engineered.

Examples:
Botulism
Ricin
Mycotoxins
Staphylococcal enterotoxin B

2. CHARACTERISTICS OF BIOLOGICAL AGENTS

Bacterial Agents

Anthrax (*Bacillus anthracis*) - an acute bacterial infection of the skin, lungs or gastrointestinal tract. Anthrax is endemic worldwide. Anthrax was weaponized in 1950.

Causes of Anthrax

- Primarily a disease of plant eating animals. Cattle, sheep and horses are the most common domesticated animal hosts.
- Cutaneous infection occurs when handling infected animal tissue, contaminated hair, wool, hides or products made from infected slaughtered animals.
- Respiratory infection results from inhaling anthrax spores.
- Intestinal infection results from ingesting infected meat.

Signs and Symptoms of Anthrax: Signs usually present within 48 hours. The incubation period for anthrax is hours to 7 days.

Cutaneous: on the skin
- Begins as a papule followed by the formation of a fluid filled vesicle
- Normally appears on hands and forearms first
- The vesicle typically dries and forms a coal-black scab. This scab is usually surrounded by mild to moderate edema (sometimes with small secondary vesicles).
- Pain is unusual, and if present, is caused by secondary infection

Inhalation: in the lungs
- Gradual and nonspecific onset of fever, malaise, fatigue, nonproductive cough and mild chest discomfort
- Initial symptoms are followed by a short period of improvement (hours to 2-3 days)
- Abrupt onset of severe respiratory distress with dyspnea, diaphoresis, stridor and cyanosis
- Septicemia, shock and death usually follow within 24-36 hours after onset of respiratory distress

Gastrointestinal: in the intestines
- Presents with severe sore throat or a local oral or tonsillar ulcer
- Nonspecific symptoms of nausea, vomiting and fever
- Followed by severe abdominal pain with hematemesis and diarrhea

Treatment for Anthrax:
- Ciprofloxacin 400mg IV every 8-12 hours or 500mg by mouth twice daily for four weeks
- Employ standard precautions for handling, treating, and moving all active cases

Prevention - Prophylactic vaccination series

Plague - caused by the bacterium ***Yersinia pestis*** which naturally infects rodents in certain parts of the world. There are three main types of plague: Bubonic, Pneumonic and Septicemic.

Causes of Plague

- The primary mode of transmission is flea bites
- A secondary source of infection is through aerosolized droplets of sputum from an infected person

Signs and Symptoms of Plague

Bubonic

- Acute onset fever, malaise, headache, nausea/vomiting
- Swollen lymph nodes in the groin or axilla region
- May have lesion at flea bite site
- Bubonic plague may progress spontaneously to the septicemic form with organisms spreading to the lungs and producing pneumonic disease

Pneumonic

Acute onset of fever, chills and malaise
Hemoptysis
Nausea/vomiting/diarrhea and abdominal pain
Dyspnea, stridor and cyanosis
Death is caused by respiratory failure and circulatory collapse
Almost always fatal if not treated within 24 hours

Septicemic Plague

- Fever, chills, malaise, nausea, vomiting and diarrhea
- Purpura (a rash from destroyed blood cells leaking into the skin)
- Acrocyanosis (discoloration of the extremities)
- Abdominal pain
- 25% of bubonic plaques progress to septicemic plague

Treatment for Plague

- Quarantine the casualty for the first 48 hours
- Maintain standard precautions for bubonic plague patients and droplet precautions for pneumonic plague patients
- Streptomycin 30mg / kg / day IM in two divided doses for 10 -14 days
- Doxycycline 200mg IV then 100mg IV BID, until clinically improved then 100mg PO BID for a total of 10-14 days
- Vigorous fluid resuscitation

Prevention - prophylactic vaccination series

Viral Agents

Smallpox - a systemic viral disease caused by the *variola virus*. Endemic smallpox was declared globally eradicated in 1980 by the World Health Organization (WHO). The only WHO approved repositories of the variola virus are in the Centers for Disease Control and Prevention (CDC) in Atlanta, GA and in the CDC's counterpart, Vector, in Koltsovo, Russia.

Causes of Smallpox

- Contact with infected respiratory discharge
- Contact with infectious bed linens or clothing of casualties
- Contact with drainage from wound

Signs and Symptoms of Smallpox

- Sudden onset of nonspecific symptoms:
  Fever
  Headache
  Backache that lasts 2-3 days
  Vomiting
  Malaise

- Two to three days after initial onset, a rash appears. It starts with face, hands and forearms, moves to the lower extremities and then to the trunk. Lesions will appear as minute macules, then papules, vesicles, pustules and finally scabs. Scabs form at 8 - 14 days and slough off at 14 - 28.
- Casualty is infectious throughout the entire term of the disease until the scab separates and falls off.
- All lesions occur simultaneously

Treatment for Smallpox

- Quarantine the casualty and maintain strict sterile procedures
- Supportive care

Prevention of Smallpox

- Prophylaxis: Vaccination of vaccinia virus. Revaccination should be carried out every 10 years for personnel who are at risk of infection.
- There are no routine immunizations of US forces for smallpox. When the threat indicates, senior leadership may direct vaccination of personnel.

Biological Toxins

Botulism - a biological toxin caused by the bacterium *Clostridium botulinum.* It is the most toxic substance to man. Due to its incredible potency and relative ease of manufacture, botulism toxin is considered a likely threat. Botulism acts as a neurotoxin.

Causes of Botulism

- Inhalation
- Ingestion

Signs and Symptoms of Botulism

- Blurred vision
- Dry mouth
- Dysphagia (difficulty swallowing)
- Diplopia (seeing double)
- Muscular weakness
- Symmetrical flaccid paralysis (Loss of tone and reflexes)
- Respiratory arrest (caused by flaccid paralysis of the diaphragm)

Treatment for Botulism

- Rest
- Oxygen, if available
- Cricothyroidotomy, if needed
- Mechanical ventilation
- IV and IM administration of trivalent botulinum antitoxin (ABE)

Ricin - a toxin made from the mash that is left over after processing Castor beans for oil. Castor bean processing is a worldwide activity; therefore, the raw materials for making ricin are readily available. The toxin may be either inhaled or ingested. Ricin acts directly on cells by inhibiting protein synthesis, which causes cellular death and tissue necrosis.

Signs and Symptoms of Ricin

Inhalation

- Acute onset of fever
- Respiratory Distress
- Hypoxia
- Cough
- Malaise (discomfort, weakness, fatigue)
- Myalgia (tenderness in the muscles)
- Pulmonary edema within 18-24 hours
- Death occurs within 36 to 72 hours

Ingestion

- Severe vomiting
- Abdominal cramping
- Diarrhea
- Shock
- Renal failure
- Circulatory collapse

Treatment for Ricin

- An antitoxin is NOT available.
- Give supportive care
- Isolation is not required

3. **FOUR PHASES OF DEFENSIVE MEASURES AGAINST BW AGENTS**

Pre-attack Phase of Biological Warfare

- Train and inform personnel of possible agents.
- Discourage rumors.
- Practice good sanitation and hygiene.
- Ensure immunizations are up to date.
- Protect supplies and equipment.

The key here is PRE, something you want to do BEFORE the attack!

Attack Phase of Biological Warfare

Signs of attack include:

- Aircraft spraying or dropping objects.
- Lobbing of low blast shells or bombs, smoke or mist of unknown origin
- Dead animals with no visible cause
- Rapid increase of patients at sick call

The key here is ATTACK, things that you would expect to see during an attack or what to do during the attack!

Defensive measures include:

- Stop breathing and don protective mask.
- Give the alarm.
- Remain under cover, and move outside only after cloud has passed or "ALL CLEAR" is sounded.
- Cover exposed skin.

Post-Attack Phase of Biological Warfare

CONTINUE to practice an increased level of good health, field sanitation and hygiene discipline. Keep wounds, cuts, and scratches clean by using soap, water and utilize available first aid. Don't consume local foods.
Eat and drink only approved food and water.
Do not bathe in lakes, ponds and streams.
Do not touch animals, especially dead ones.
Observe BW contamination markers.

The key here is POST, things to do AFTER the attack!

Decontamination Phase

Designate an area for the decontamination station.
Establish and operate the station.
Provide personnel for monitoring teams.
Post NATO Biological Warning Markers.
A triangular shaped marker measuring 11" x 8" x 8" with blue background and red letters spelling "BIO". (See figure 1.)

Figure 1. NATO Biological Warning Marker

REFERENCE

Medical Management of Biological Casualties, Current Edition

Biological Agents Review

1. List the signs and symptoms of inhalation anthrax.

2. When and where does the smallpox rash develop?

3. Identify three facts about Botulism.

4. List three actions to avoid during the "Post-Attack" phase of biological warfare.

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FIELD MEDICAL TRAINING BATTALION
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CAMP PENDLETON, CA 92055-5243

FMST 310

Manage Radiological Warfare Casualties

TERMINAL LEARNING OBJECTIVE

1. Given a casualty and the absence of a CBRN team, necessary medical equipment and supplies, **manage CBRN injuries to prevent further injury or death within the scope of care**. (HSS-CBRN-2007)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference and in writing, **identify the procedures for treating radiological warfare casualties**, within 80% accuracy, per the Medical Management of Radiological Casualties, current edition. (HSS-CBRN-2007c)

1. **FOUR TYPES OF NUCLEAR BLASTS** (See figure 1)

High Altitude Burst

Characteristics

- Detonation of a weapon at an altitude **above 100,000 ft.**
- Fireball is much larger and expands much more rapidly than a surface or subsurface burst.
- Ionizing radiation can travel for hundreds of miles before being absorbed.
- Causes severe disruption in communication and leads to an electromagnetic pulse (EMP), which can significantly degrade or destroy electronic and critical medical equipment.

Air Burst

Characteristics

- An explosion in which a weapon is detonated at an altitude **below 100,000 feet but** high enough that the fireball does not contact the surface of the earth.
- Airbursts may cause considerable damage; thermal burns to exposed skin may be produced many kilometers away from the burst.
- Eye injuries may be produced at even a much greater distance than that of thermal burns.
- Tactically, airbursts are the most likely to be used against ground forces.

Surface Burst

Characteristics

- An explosion in which a weapon is detonated on or slightly above the surface of the earth so that the fireball actually touches the land or water surface.
- The area affected by the blast, thermal radiation, and initial nuclear radiation will be less extensive than an air burst of similar yield.
- It produces the greatest amount of fallout over a much larger area than that which is affected by blast and thermal radiation.

Subsurface Burst

Characteristics

- An explosion in which the point of detonation is beneath the surface of land or water.
- Cratering of the ground will generally result:
  - If the subsurface burst does not penetrate the surface, the only other hazard will be from ground or water shock.
  - If the burst is shallow enough to penetrate the surface, blast, thermal and initial nuclear radiation effects will be present, but less than a surface burst of comparable yield.
- If the burst penetrates the surface, fallout will be heavy.

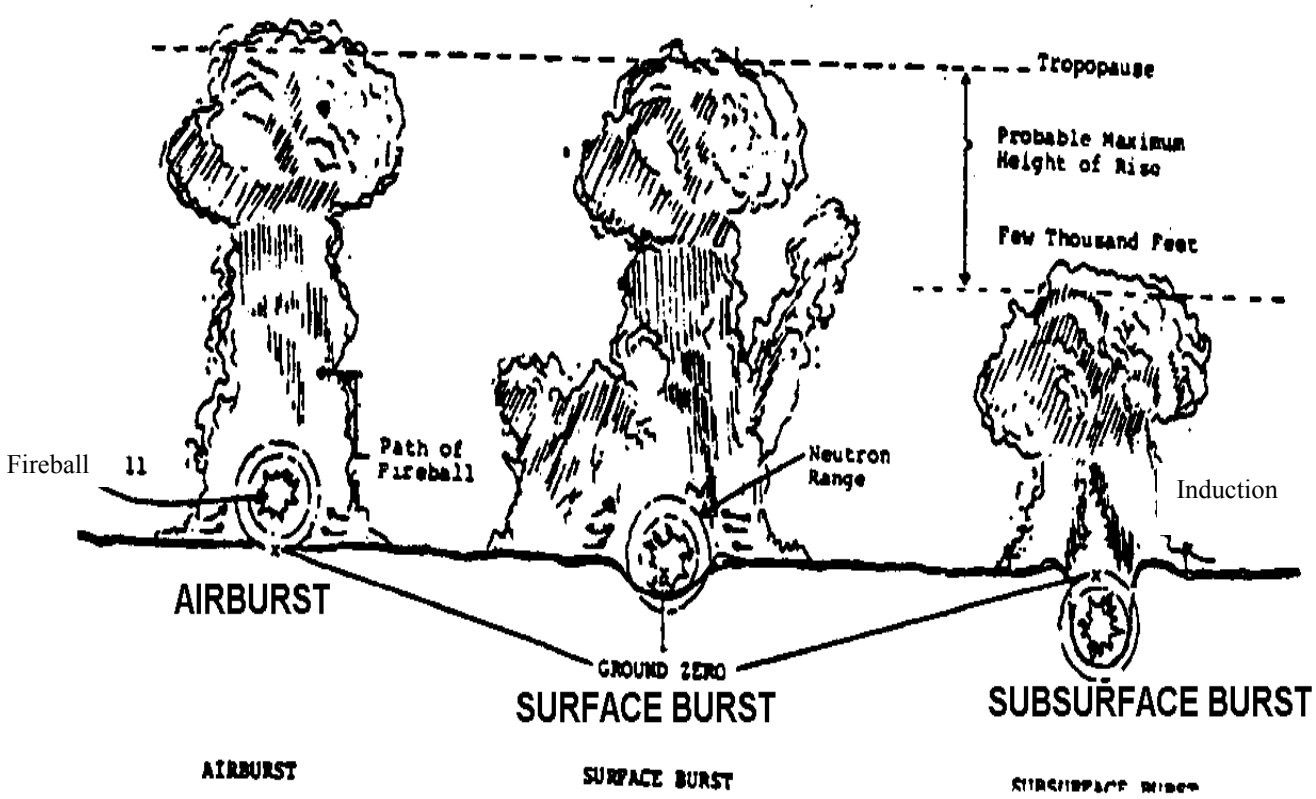

Figure 1. Types of Nuclear Blasts

2. COMMON TYPES OF NUCLEAR INJURIES

Two Types of Blast Injuries:

Although there are many effects of a standard blast (see block 4 "Blast Injuries") the following information divides the types of injuries that may result from a nuclear explosion into two types, primary and secondary.

Primary Blast Injury (Direct) - these types of injuries are caused by the direct action of the shock wave on the human body after the detonation of a nuclear device.

- Injuries occur immediately after detonation due to over pressure from the rapid expansion of air.
- If the patient is in close proximity to ground zero, the initial blast wave is usually lethal.
- Sub-lethal exposures to the initial blast wave can result in damage to bones, muscles, lungs, gastrointestinal system and ruptured eardrums.

Secondary Blast Injury (Indirect) - these injuries are caused by indirect wind forces greater than several kilometers per hour seconds after the primary detonation of a nuclear device.

- Injuries occur as a result of collapsing buildings, flying timber and other debris impacting the body or physical displacement of the body against objects or structures.
- More injuries are caused by indirect blast wind drag forces than by the shock wave.

Treatment of Blast Injuries from a Nuclear Attack:

Blunt trauma - blunt trauma with nuclear detonation will be anywhere from mild to severe. Injuries occur as a result of debris put into motion from blast and its following winds. Injuries such as fractures, spinal injury, head and torso blunt trauma, and penetrating injuries should be expected. Care for these injuries as you would in a non-contaminated environment.

Pressure Trauma - the greatest concern with pressure trauma is injury to the lungs. Damage to the alveoli causes swelling, fluid accumulation, and possibly pulmonary emboli. Pulmonary embolism occurs as a result of air escaping the damaged lungs directly into the bloodstream. Treatment of suspected pressure trauma to the lungs includes:
- 100% oxygen, positive pressure if needed.
- If pulmonary embolus is suspected, place the patient on their left side to slow down the movement of the emboli.

The five acknowledged nuclear powers possess about ***31,000 nuclear warheads***. India has not formally placed their nuclear arsenal on a delivery system. Pakistan has.

Thermal Injuries from a Nuclear Attack - thermal radiation emitted by a nuclear detonation causes two types of burns:

Flash Burns (Direct)

Flash Burns results from thermal radiation (infrared) emanating from the fireball of a nuclear explosion. Exposed skin and extremities facing the explosion will be burned

Flame Burns (Indirect)

Flame burns are caused by exposure to fires from the environment, particularly from ignition of clothing. This could be the predominant cause of burns depending on the number of and characteristics of flammable objects in an environment.

Eye Injuries: the initial thermal pulse from nuclear detonation can cause eye injuries in the form of flash blindness and retinal scarring

Flash blindness

Flash blindness results from looking in the general direction but not directly at a brilliant flash of intense light energy. It is a condition in which a flash of light swamps the eyes and depletes the pigmentation from the retinal receptors. Flash blindness is a temporary condition that usually last for several seconds but not more than two minutes when exposure occurs during daylight. The blindness will be followed by a darkened after image that lasts for several minutes. If exposure occurs at nighttime, blindness can last from 15 to 30 minutes before full nighttime adaptation occurs.

Retinal Scarring

Retinal Scarring develops from a burn to the retina from looking directly at the fireball. It is a relatively uncommon injury, but can cause blind spots and permanent blindness.

3. **DIAGNOSIS OF LEVELS OF EXPOSURE**

Radiation Absorbed Dosage (RAD) - the method for measuring radiation dosage. Accurate and prompt diagnosis of a casualty is based primarily upon the clinical picture presented by the individual.

Mild - vomiting **does not occur by the end of the fourth** hour after exposure.

Severe - vomiting **within two** hours.

Deadly - vomiting **within the first** hour accompanied by **explosive diarrhea.**

4. **SIGNS AND SYMPTOMS OF RADIATION EXPOSURE**

90% of those exposed to a significant dose of ionizing radiation will exhibit the following symptom within **two to six** hours after exposure:

- Nausea
- Vomiting
- Diarrhea
- Fatigue
- Hyperthermia (rise in body temperature)
- Erythema (reddening of the skin)
- Hypotension
- Neurological Dysfunction
- Malaise (mental confusion, convulsion, coma)
- Anorexia (loss of appetite)

5. **TREATMENT FOR RADIATION EXPOSURE**

Treatment for radiation casualties with no physical injuries is supportive in nature.

Treatment for radiation exposure is based on managing life threatening injuries, burns, blunt trauma, controlling hemorrhage, pressure trauma, and the signs and symptoms displayed, not on the amount of radiation received.

Pain management - morphine is the drug of choice. It should be given in doses of 10mg (auto-injector) every 4-6 hours.

Infection - administer antibiotics to manage any infection after radiation exposure, such as penicillin and ampicillin. You will need to use 3 times the normal dosage of the antibiotics and

Oral antifungal agents. Normal recovery time is from 8 to 15 weeks.

6. **PERSONNEL PROTECTION MEASURES**

In a tactical environment, the following are immediate protective measures to observe during a surprise nuclear attack:

- Drop flat on the ground, face down, with head toward blast if possible or to the bottom of your fighting hole.
- Close your eyes and don't look at the explosion
- Protect or cover exposed skin by putting hands and arms under or near the body and keeping your helmet on
- Keep your head down
- While in fighting hole, cover head with arms, place face against legs and place fingers in ears
- Stay down for 90 seconds after the shock wave has passed
- Don your field protective mask
- If warned of imminent attack, proceed to shelter or foxhole

7. **DECONTAMINATION PROCEDURES** - decontamination of radiological particles should be done away from the scene and further away from radioactive fallout exposure at a decontamination station. It should be continually done until the radioactivity has been reduced to a safe level.

- Early removal of radioactive "contamination" will reduce radiation burns, radiation dosage and the chances of inhaling or ingesting radioactive material.

Steps for self-decontamination include:

Spot clean first using a cotton swab or gauze for moist areas and tape for dry areas to remove radioactive "hot spots" (concentration of Radioactivity)
Carefully remove contaminated clothing and garments
Deposit contaminated clothing and garments in a garbage bag or disposable container for disposal by burial at sea or in deep pits or trenches
Carefully bathe or flush contaminated wounds with sterile water
Apply impermeable dressing over any uncontaminated cut, scratch, or wound
Shower thoroughly with soap and water. Scrub the entire body with a soft bristle brush giving special attention to hairy areas, nails, body orifices, and skin folds
If areas become tender from excessive washing, gently rub skin with a small amount of lanolin or ordinary hand or face cream
Repeat procedures again if any contamination remains

REFERENCES

Hospital Corpsman NAVEDTRA 14295
Medical Management of Radiological Casualties, Current Edition
Webster's II New Riverside Dictionary, pg 135, 806
Marine Corps MCRP 4 – 11.1B
Field Manual 8-9 - NATO Handbook on the Medical Aspects of NBC Defensive Operations AMedP-6(B)

Radiological Review

1. What type of burst is most likely to be used against ground forces? What types of injuries would it likely cause?

2. Describe “flash blindness”.

3. Describe the signs and symptoms of mild, severe, and deadly levels of radiation exposure.

4. Describe the recommended antibiotic therapy to be administered following radiation exposure.

NOTE: The following questions are offered for review purposes. This is NOT intended as a sole source of test preparation. Remember all test questions are based on an ELO and any ELO can be used to create a test question.

1. What is the definition of a patrol?
2. What are the two types of patrols?
3. What are the components of the M-50 Field Protective Mask?
4. What are the four types of nuclear blasts?
5. What information is contained in a warning order?
6. What are the components of the manpack configuration (AN/PRC-119A)?
7. What are the parts of the compass?
8. What are the four safety rules of any weapon?
9. What are the characteristics of weapon condition one for the M16/ M4 service rifle?
10. What is the purpose of a warning order?
11. What are the components of an IED?
12. What is the definition of Mission-Oriented Protective Posture (MOPP)?
13. What are the general groups of biological agents?
14. What are the limitations of MOPP?
15. What are the organizational elements of a patrol?
16. What are the missions of a combat patrol?
17. What are the two settings of the COMSEC switch of the receiver-transmitter?
18. What information is contained in an operation order?
19. What information is contained in a fragmentation order?
20. What are the appropriate actions at halts to check for IEDs?
21. What are the missions of a reconnaissance patrol?
22. What is the purpose of a fragmentation order?
23. In the phonetic alphabet, how is the letter J expressed?
24. What is the purpose of a map?
25. What is the purpose of the 5 paragraph order?
26. What do you NOT want to do with suspected IEDs?
27. What are the colors used on a map?
28. What is the purpose of contour lines on a map?
29. What is the acronym used for the five-paragraph order format?

30. In the phonetic alphabet, how is the letter W expressed?
31. What is the definition of an IED?
32. What are the four types of fire team formations?
33. What are the five types of combat squad formations?
34. What are the three types of special patrolling signals?
35. What is the treatment of blood agents?
36. What is the purpose of the M291 Skin Decontaminating kit?
37. What is Botulism and what causes it?
38. How is Ricin treated?

COMBAT MEDICINE

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FMST 401

Introduction to Tactical Combat Casualty Care

TERMINAL LEARNING OBJECTIVE

1. Given a casualty in a tactical environment, **perform Tactical Combat Casualty Care** to reduce the risk of further injury or death. (8404-MED-2010)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **define the principles of Tactical Combat Casualty Care (TCCC)**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2010a)

2. Without the aid of reference, given a description or list, **define the first phase of TCCC**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2010b)

3. Without the aid of reference, given a description or list, **define the second phase of TCCC**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2010c)

4. Without the aid of reference, given a description or list, **define the third phase of TCCC**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2010d)

OVERVIEW

Tactical Combat Casualty Care (TCCC) was developed to emphasize the need for continued improvement in combat pre-hospital care. The Committee on Tactical Combat Casualty Care (CoTCCC) was established in 2001 and is part of the Defense Health Board. CoTCCC is a standing multi-service committee charged with monitoring medical developments in regards to practice, technology, pharmacology and doctrine. New concepts in hemorrhage control, airway management, fluid resuscitation, analgesia, antibiotics and other lifesaving techniques are important steps in providing the best possible care for our Marines and Sailors in combat.

The TCCC guidelines are published every 4 years in the Prehospital Trauma Life Support manual. It has been recognized that TCCC guidelines and curriculum will need to change more often than the 4-year cycle of the PHTLS textbook publication. The National Association of Emergency Medical Technicians (NAEMT) will include the updated TCCC guidelines and curriculum on its website as they are approved as a way to help get this new information out to the combat medical personnel in the military that need it.

1. PRINCIPLES OF TACTICAL COMBAT CASUALTY CARE (TCCC)

The principles of Tactical Combat Casualty Care are fundamentally different from those of traditional civilian trauma care, where most medical providers and medics train. These differences are based on both the unique patterns and types of wounds that are suffered in combat and the tactical conditions medical personnel face in combat. Unique combat wounds and tactical conditions make it difficult to determine which intervention to perform at what time. Besides addressing a casualty's medical condition, responding medical personnel must also address the tactical problems faced while providing care in combat. A medically correct intervention at the wrong time may lead to further casualties. Put another way, "good medicine may be a bad tactical decision" which can get the rescuer and the casualty killed. To successfully navigate these issues, medical providers must have skills and training oriented to combat trauma care, as opposed to civilian trauma care.

The specifics of casualty care in the tactical setting will depend on the tactical situation, the injuries sustained by the casualty, the knowledge and skills of the first responder, and the medical equipment at hand. In contrast to a hospital Emergency Department setting where the patient IS the mission, on the battlefield, care of casualties sustained is only PART of the mission. TCCC recognizes this fact and structures its guidelines to accomplish three primary goals:

1. Treat the casualty

2. Prevent additional casualties

3. Complete the mission

In thinking about the management of combat casualties, it is helpful to divide care into three distinct phases, each with its own characteristics and limitations.

2. **FIRST PHASE OF TCCC**

Care Under Fire - care rendered at the scene while both the Corpsman and the casualty are still under effective hostile fire. The risk of additional injuries from hostile fire at any moment is extremely high. The need for medical care must be weighed against the need to move to cover and to suppress hostile fire rapidly.

If the casualty is responsive they should be directed to move to cover and/or apply a tourniquet if needed. Casualties, who are able, should remain engaged as combatants. If the casualty is unable to move and unresponsive, risking additional lives by exposure to fire to move the casualty may not be warranted.

Immediate control of extremity hemorrhage with a tourniquet is the most important life-saving intervention in Care Under Fire and is the only medical care that should be rendered before the casualty is moved to cover.

Available medical equipment is limited to that carried by the Corpsman and casualty, however the only medical equipment needed during this phase is a CoTCCC recommended tourniquet.

3. **SECOND PHASE OF TCCC**

Tactical Field Care - care rendered once the Corpsman and casualties are no longer under effective hostile fire. This also applies to situations in which an injury has occurred on a mission, but there has been no hostile fire.

Available medical equipment is still limited to that carried into the field by mission personnel but now there is more time to fully assess the casualty and reassess any treatment provided in the Care Under Fire phase. Time to evacuation may vary from minutes to hours.

Priorities of Tactical Field Care

- Disarm all casualties with an altered mental status

- Obtain airway

- Assess and treat external hemorrhaging

- Manage shock/fluid resuscitation

- Hypothermia prevention

- Pain relief/antibiotics

4. **THIRD PHASE OF TCCC**

Tactical Evacuation (TACEVAC) - casualties are transported to a higher level of care. Tactical evacuation care encompasses both medical evacuation (MEDEVAC) and casualty evacuation (CASEVAC).

CASEVAC platforms are typically armed tactical assets that bear no Red Cross markings. They provide unregulated movement from the point of injury to the first point of advanced medical care.

MEDEVAC refers to regulated casualty movement using dedicated medical evacuation platforms (ground vehicles, rotary wing aircraft, etc) that are crewed by medical personnel.

Additional personnel and medical equipment should be provided in this phase which allows for an enhanced level of medical care compared to the first two phases. Electronic monitoring systems capable of providing blood pressure, heart rate and pulse oximetry may be available during evacuation.

TACTICAL COMBAT CASUALTY CARE

Throughout Block 4, each lesson will reinforce the principles of TCCC. At the end of each lesson you will find a gray box that will highlight the critical task that you will be expected to perform during your Casualty Assessment Performance Evaluation.

REFERENCE:

Prehospital Trauma Life Support (PHTLS), current Military Edition

Intro to TCCC Review Questions

1. What are the three goals of TCCC?

    1)

    2)

    3)

2. What is the first phase of TCCC?

3. What is the only life-saving intervention done during Care Under Fire?

4. Which phase of TCCC is Tactical Field Care?

5. List four priorities of Tactical Field Care.

    1)

    2)

    3)

    4)

6. What does TACEVAC encompass?

7. Which phase of TCCC has the most readily available medical equipment?

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FMST 402

Manage Shock Casualties

TERMINAL LEARNING OBJECTIVES

1. Given a casualty in an operational environment**, treat for shock to reduce the risk of further injury or death**. (8404-MED-2001)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify standard medical terminology related to the cardiovascular system**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2001a)

2. Without the aid of reference, given a description or list, **identify the anatomy of the cardiovascular system**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2001b)

3. Without the aid of reference, given a description or list, **identify the different types of shock**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2001c)

4. Without the aid of reference, given a list of types of shock, **identify the signs and symptoms of each type of shock**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2001d)

5. Without the aid of reference, given a list, **identify the appropriate treatment of each type of shock**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2001e)

6. Without the aid of reference, given a simulated shock casualty and a Corpsman Assault Pack, **manage simulated shock casualties**, to prevent further injury or death, per Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2001f)

OVERVIEW

Shock is regarded as a state of generalized cellular hypoperfusion in which delivery of oxygen to the cells is inadequate to meet metabolic needs. There is no laboratory test to diagnose shock. The initial step for managing shock in the injured patient is to recognize its presence. By far, the most common cause of shock in the trauma casualty is hemorrhage and the safest approach in managing the trauma casualty in shock is to consider the cause of it as being hemorrhagic until proven otherwise.

1. **CARDIOVASCULAR SYSTEM TERMINOLOGY**

Systolic Blood Pressure (SBP) - the force of the blood against blood vessels produced by ventricular contraction. (Normal systolic B/P = 120-140 mmHg)

Diastolic Blood Pressure (DBP) - the pressure remaining in the blood vessels while the heart is refilling. (Normal diastolic B/P = 60-80 mmHg)

Preload - the amount of blood returning into the heart from the systemic circulatory system (venous return).

Afterload - the resistance to blood flow that the heart must overcome to pump blood out to the arterial system.

Stroke Volume - amount of blood pumped by the heart with each contraction.

Capillary Refill Test - quick test performed on the nail beds as an indicator of tissue perfusion (normal = less than 3 seconds).

Nervous System - autonomic nervous system is divided into two components:

Sympathetic nervous system *(*controls the fight-or-flight response): The goal of this system is to maintain sufficient amounts of oxygenated blood to critical areas while shunting blood away from nonessential areas. Response includes:

- Heart beats faster and stronger
- Increases ventilations
- Constricts blood vessels of nonessential organs
- Dilates blood vessels of muscles

Parasympathetic nervous system (rest and digest): Division of the nervous system that maintains normal body functions. Response includes:

- Heart beats slower
- Decreases ventilations
- Increases dilation of blood vessels to nonessential organs

Metabolism – energy produced in the body by oxygen and glucose

Aerobic metabolism describes the use of oxygen by the cells. This is the body's main combustion process. Cells in the body do not contain an alternate power source.

Anaerobic metabolism occurs without the use of oxygen. It is the back-up power system in the body and uses stored body fat as its energy source. The lack of perfusion in cells by oxygenated blood results in anaerobic metabolism and decreased function for organ survival. If anaerobic metabolism is not reversed, cells cannot continue to function and will die.

2. ANATOMY OF THE CARDIOVASCULAR SYSTEM

The cardiovascular system consists of the heart (a pump), the blood (circulating fluid), and the vascular system (the container that holds the blood).

Pump - the heart is a muscle composed of four chambers, the right side receives blood from the body and the left side pumps blood to the body (see figure 1). For the heart to work effectively, an adequate amount of blood must be present in the ventricles (preload). When the preload is decreased, the heart muscles are not stretched enough and the stroke volume is reduced. Too much blood in the heart creates a state of increased afterload, also reducing the stroke volume.

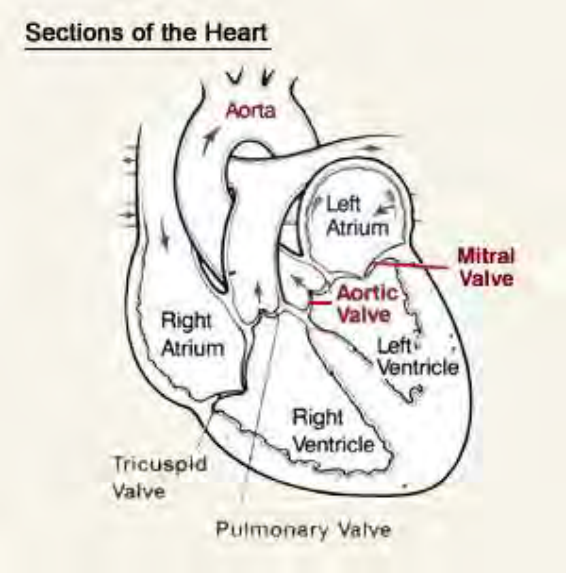

Figure 1. Flow of blood

Fluid - blood is composed of many substances. Red blood cells (RBC) contain hemoglobin and carry oxygen. White blood cells (WBC) are used by the body to fight infection. Platelets in the blood are essential for clotting. The volume of fluid within the container must equal the capacity of the vascular system in order to properly perfuse the tissues of the body.

Container - arteries, veins, and capillaries are the highways that take the blood throughout the body. The aorta is the largest artery in the body. At the smallest level, the capillaries may be no bigger than a single cell wide. The size of the entire "container" is controlled by muscles in the walls of the arteries and veins. These muscles are under the control of the brain via the sympathetic nervous system. By expanding and contracting the vessels, the size of the container is altered.

3. **TYPES OF SHOCK**

Shock is classified by its cause. Shock can occur in three ways that are associated with failure of some component of the cardiovascular system, the pump, volume, and container. The major types of shock are: **Hypovolemic**, **Distributive**, and **Cardiogenic** (see figure 2).

The Three Types of Shock						
		Hypovolemic	**Distributive**			**Cardiogenic**
			Neurogenic	**Septic**	**Psychogenic**	
Vital Sign	**Skin Temp**	Cool, Clammy	Warm, Dry	Cool, Clammy	Cool, Clammy	Cool, Clammy
	Skin Color	Pale, cyanotic	Pink	Pale, Mottled	Pale	Pale, Cyanotic
	Blood Pressure	Drops	Drops	Drops	Drops (briefly)	Drops
	LOC	Altered	Lucid	Altered	Altered (briefly)	Altered
	Cap Refill	Slowed	Normal	Slowed	Slowed (briefly)	Slowed

Figure 2. Signs Associated with Types of Shock

Hypovolemic Shock - a state of shock caused by any loss of fluid volume either by blood loss, dehydration, burns, etc. The container has retained its normal size but the fluid volume has decreased, creating an imbalance. The most common cause of hypovolemic shock on the battlefield is due to massive hemorrhage which causes hemorrhagic shock.

> ***What happened to ABC's????***
> The brain can go four to six minutes without oxygen before permanent damage or death. Death from massive hemorrhage may occur within two minutes.

The amount of blood that can be lost before death occurs will vary from individual to individual. The average adult blood volume is 5 to 6 liters. Normally, a loss of 25-40% of the person's total blood volume will create a life-threatening condition. Massive hemorrhage may be fatal within 60-120 seconds. In a tactical environment, treatment should not be delayed. **Controlling major hemorrhage should be the first priority over securing an airway.**

Signs and symptoms seen with hemorrhagic shock are usually linked with the amount of blood lost and the casualty's internal reaction to this blood loss. DO NOT rely on BP as the main indicator of shock! More attention should be paid to the casualty's mental status, quality of distal pulses, and tachycardia. Hemorrhagic shock, which is hypovolemic shock resulting from blood loss, can be categorized into four classes, depending on the severity of hemorrhage. Remember these parameters are only guidelines and should not be taken as absolute amounts of associated blood loss (see figure 3).

CLASSIFICATIONS OF HEMORRHAGIC SHOCK				
	Class I	**Class II**	**Class III**	**Class IV**
Amount of Blood Loss (% total blood volume)	<750ml (<15%)	750-1500ml (15%- 30%)	1500-2000ml (30%- 40%)	>2000ml (>40%)
Heart rate	Normal or minimally increased	>100	>120	>140
Pulse (quality)	Normal	Thready	Thready/ very weak	No Radial/ thready Carotid
Capillary Refill	Normal	Delayed (3-5 seconds)	Delayed (>5 seconds)	Delayed (>5 seconds)
Respiratory Rate	Normal	20-30	30-40	>35
SBP	Normal	Normal	Decreased (<80 mmHg)	Greatly Decreased (approx. 60 mmHg)
Skin Color	Pink	Pale	White extremities/ Ashen Gray	White extremities/ Ashen Gray/ Cyanotic
Skin Temperature	Cool	Cool, Moist	Cool Extremities	Cold Extremities
Mental Status	Normal	Anxiety Fright	Severe Anxiety Confused	Lethargic Unconscious

Figure 3. Classes of Hemorrhagic Shock

Class I Shock - this stage has few clinical manifestations. The casualty's body is able to compensate to maintain homeostasis.

Class II Shock - although the circulating blood volume is reduced, compensatory mechanisms such as the sympathetic nervous system are able to maintain blood pressure and tissue perfusion at a level sufficient to prevent cellular damage.

Class III Shock - at this point, unfavorable signs begin to appear. The body's compensatory systems can no longer maintain adequate perfusion. The classic signs of shock (tachycardia, tachypnea, and confusion) become obvious. You can see the importance of catching the casualty in the early stages of shock because by the time the casualty gets to this stage, he or she is in significant trouble.

"A tactically relevant definition of shock is: (1) unconsciousness or altered mental status (confused or drowsy) not due to coexisting TBI or drug therapy; and/or (2) abnormal (i.e., weak or absent radial pulse."
PHTLS 7th Ed. P. 623

Class IV Shock - this is a severe stage of shock! These casualties truly have only minutes to live. Survival depends on immediate control of hemorrhage (surgery for internal hemorrhage) and aggressive resuscitation.

Signs and Symptoms
See figure 2.

Treatment
As stated in the Manage Hemorrhage lesson, you must stop the bleeding. Depending on which phase of field care you are in; Care Under Fire phase use a tourniquet for life-threatening extremity hemorrhage and Tactical Field Care phase use direct pressure and/or a hemostatic dressing. Once the bleeding is stopped, obtain vascular access; give resuscitative fluids, and CASEVAC (see Combat Fluid Resuscitation lesson).

Distributive (Vasogenic) Shock - shock that occurs when the vascular container (blood vessels) dilate (enlarge) without a proportional increase in fluid volume. As a result, the hearts preload decreases, and cardiac output falls. There is still the same amount of blood in the blood vessels but they are dilated too much and not enough blood is returning to the heart. Causes can be from spinal cord trauma, simple fainting, severe infections, or allergic reactions.

Septic Shock - life threatening infections occurring primarily in a hospital setting. Toxins are released into the bloodstream and cause blood vessels to dilate. Septic shock and hypovolemic shock have many similar signs and symptoms. Septic shock is virtually never encountered within minutes of an injury. You should focus on prevention of septic shock. The Committee on Tactical Combat Casualty Care recommends administering the oral antibiotic *moxifloxacin* and the parental (injectable) antibiotic *ertapenum* at the time of injury to prevent wound infections. You will learn more about medications during the lesson on Casualty Assessment.

Signs and Symptoms
See figure 2.

Treatment
It usually takes between 5-7 days for septic shock to develop. However, you may be called on to care for a casualty who sustained an injury and did not promptly seek medical attention. If so, your primary focus should be to CASEVAC the casualty to a higher echelon of care. Additionally, the casualty will require IV antibiotic therapy with a broad spectrum antibiotic.

Neurogenic Shock - shock caused by an injury that interrupts the spinal cord's sympathetic nervous system pathway, resulting in significant dilation of peripheral arteries. Because of the loss of sympathetic control of the vascular system which controls the smooth muscle in the walls of the blood vessels, the peripheral vessels dilate below the level of injury.

Signs and Symptoms (see figure 2 and below)

- Injuries consistent with spinal injury
- Bradycardia with hypotension (low heart rate with low blood pressure should be a red flag, start suspecting neurogenic shock)
- The casualty with neurogenic shock, in the absence of traumatic brain injury, is alert, orientated, and lucid (clear in the mind) when in the supine (laying down on back) position

Treatment

- Maintain ABC's
- Spinal Immobilization (if mechanism of injury causes a high suspicion of spinal injury)
- Oxygen therapy to keep oxygen saturation >92% (if available)
- Obtain IV access and give fluids, if necessary
- Trendelenburg position (head down, feet elevated)
- Keep patient warm
- CASEVAC

Psychogenic (Vasovagal) Shock - also known as vasovagal syncope or fainting, this occurs when there is stimulation of the tenth cranial nerve (vagus nerve) which produces bradycardia and hypotension. If the bradycardia and hypotension are severe enough, cardiac output falls, resulting in insufficient blood flow to the brain and the casualty loses consciousness. Usually, normal blood pressure is quickly restored before systemic impairment of perfusion occurs. Common causes are fear, receiving unexpected bad news, or the sight of blood.

Signs and Symptoms (see figure 2 and below)

The periods of bradycardia and vasodilation are generally limited to minutes.

Treatment

Because it is a self-limited condition, a vasovagal episode is unlikely to result in true "shock" and normal blood pressure is quickly restored when the casualty is placed in a horizontal position.

Cardiogenic Shock - failure of the heart to adequately pump blood throughout the body, resulting from causes that can be categorized as either intrinsic (a result of direct damage to the heart itself, a heart attack, for instance) or extrinsic (related to a problem outside the heart, a tension pneumothorax, for example). In this scenario, the container is the correct size and is filled with the right amount of fluid, it's the pump that is not functioning properly.

Intrinsic Causes: Any injury that weakens the cardiac muscle will affect its output. The damage may result from a myocardial infarction or from a direct bruise to the heart muscle from a blunt cardiac injury that prevents the heart from pumping properly.

Signs and Symptoms (see figure 2 and below)

- Abnormal pulse (irregular rate and rhythm)
- Chest pain
- Shortness of breath
- Nausea and vomiting

Treatment
- Maintain ABC's
- Obtain IV access
- Oxygen therapy to keep oxygen saturation >92% (if available)
- CASEVAC

Extrinsic Causes: External factors that cause the heart not to work properly (i.e., tension pneumothorax and cardiac tamponade)

Signs and Symptoms

Tension Pneumothorax:
- Chest trauma
- Shortness of breath/dyspnea
- Tachycardia
- Cyanosis
- Decreased/absent lung sounds on affected side
- Jugular vein distention/tracheal deviation (late sign)

Cardiac Tamponade:
- Chest Trauma
- Shortness of breath/dyspnea
- Tachycardia
- Cyanosis
- Distant heart tones
- Narrowing pulse pressure

Why do we learn something that we can't treat?

Answer: Use these signs and symptoms of cardiac tamponade as a way for ruling out tension pneumothorax.

Treatment
- Maintain ABC's
- Oxygen therapy to keep oxygen saturation >92% (if available)
- CASEVAC
- Specific treatment for a tension pneumothorax is needle decompression, which will be discussed in a future lesson.

Volume Resuscitation

Although volume resuscitation of a trauma casualty in shock makes sense, no research has demonstrated improved survival of critically injured trauma casualties when IV fluid therapy has been administered in the field. In fact, one researcher found that IV fluids administered in the field were beneficial only when three conditions existed:

a. the casualty is bleeding at a rate of 25 to 100 mL/min
b. the IV fluid administration rate is equal to the bleeding rate
c. the scene time and transport time exceed 30 minutes

Transport of the trauma casualty should never be delayed to start an IV.

You will receive training on the type of vascular access (PO, IV, or IO) to start and the type of fluids to give in the lesson on Tactical Fluid Resuscitation.

CASUALTY ASSESSMENT AND SHOCK CASUALTIES

Care Under Fire Phase: There are many things that cause shock, the most common is uncontrolled hemorrhage. If the casualty has life-threatening extremity hemorrhage, use a tourniquet. For non-extremity hemorrhage, use direct pressure with a hemostatic dressing like Combat Gauze.

Tactical Field Care Phase: Shock is very difficult to treat in a hospital setting let alone in a field or combat environment. Don BSI. Reassess treatment started during Care Under Fire Phase to control the hemorrhage. Assess airway and intervene if necessary. Complete a head to toe assessment using DCAP-BTLS noting and treating additional injuries. Determine if vascular access is required (see Tactical Fluid Resuscitation lesson) and give fluids if necessary. If the casualty is able to drink fluids, they should be encouraged to do so. Consider pain medications and give antibiotics if warranted. Reassess all care provided. Document care given, prevent hypothermia, and CASEVAC.

REFERENCES

Pre-Hospital Trauma Life Support, Current Military Edition

Shock Review

1. List the three major types of shock.

2. Describe the signs or symptoms associated with Class III Shock.

3. List the two medications administered to prevent a casualty from developing septic shock.

4. Which is more important for a casualty in shock, IV fluid or rapid transport? Why?

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FMST 403

Manage Hemorrhage

TERMINAL LEARNING OBJECTIVE

1. Given a casualty in an operational environment, standard field medical equipment and supplies, **treat hemorrhage** to prevent further injury or death. (8404-MED-2002)

ENABLING LEARNING OBJECTIVE

1. Without the aid of references, given a description or list, **identify the types of hemorrhage**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2002a)

2. Without the aid of references, given a description or list**, identify the signs and symptoms of hemorrhage**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2002b)

3. Without the aid of references, given a description or list, **estimate the amount of blood loss**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2002c)

4. Without the aid of references, given a description or list, **identify the methods of hemorrhage control**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2002d)

5. Without the aid of references, given a description or list, **apply a tourniquet to stop the bleeding**, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2002e)

6. Without the aid of references, given a simulated casualty with life-threatening hemorrhage and a Corpsman Assault Pack, **manage simulated hemorrhage**, to prevent further injury or death, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2002f)

OVERVIEW

Historically, 20% of all injured combatants die on the battlefield. Of that 20%, approximately 65% will die of massive, multiple trauma and are probably not salvageable. Based on the data from the Vietnam conflict, over 60% of battlefield casualties died of exsanguination (bleeding out) within 3 to 5 minutes and could have been saved with timely intervention. In order to continue to decrease these statistics, you must be able to rapidly identify and manage internal and external hemorrhage. You must also recognize the type of bleeding, apply the appropriate hemorrhage control techniques, understand the varying degrees of risk associated with types of hemorrhage, and understand how to estimate blood loss.

1. TYPES OF HEMORRHAGE

Hemorrhage is defined as blood escaping from arteries, veins or capillaries.

Arterial - if an artery near the surface is damaged, **bright red blood** will gush out in spurts that are synchronized with the heartbeat.
Venous - blood from the veins is **dark red**. Venous bleeding is characterized by a steady, even flow.
Capillary - capillary blood is usually **brick red** in color. If capillaries bleed, the blood oozes out slowly.

External Hemorrhage - Loss of blood from wounds that damage the large vessels of the extremities are a common source of massive external hemorrhage in combat. The cause of external hemorrhage can be varied depending on the setting in which the injury has taken place. Some of these causes include, but are not limited to, gunshots, stabbings, shrapnel, vehicle accidents and blasts. The importance for you lies in the identification of life threatening hemorrhage versus non-life threatening hemorrhage. The difference between life threatening and non-life threatening exists in the amount of blood loss and the class of shock of the patient.

Signs and Symptoms
- Massive blood loss
- Obvious sign and symptoms of shock
- Class III or IV shock

Internal Hemorrhage - Blood loss into the chest or abdomen cannot be controlled in the field. Despite aggressive treatment and fluid resuscitation, casualties with major internal vascular injuries frequently die in the field. The patient with severe internal hemorrhage may develop hypovolemic shock before the extent of the blood loss is realized. Internal hemorrhage requires immediate surgical intervention at a higher capability of care. Bleeding, however slight, from any body orifice is serious, as it usually indicates an internal source of hemorrhage that may not be readily evident. Signs that may indicate serious internal injury (or disease) would include bleeding from the mouth, rectum or blood in the urine. Nonmenstrual bleeding from the vagina is always significant. Internal hemorrhage can be caused by the following examples of injuries: blunt trauma, concussion injuries from blasts, vehicle accidents, falling from heights, collapsing buildings and closed fractures (bones or bone fragments lacerate arteries or large veins).

The FMST may see:

- Hematemesis (vomiting of bright red blood)
- Hemoptysis (coughing up of bright red blood)
- Melena (black tarry stools)
- Hematochezia (bright red blood from the rectum)
- Hematuria (blood in the urine)
- Ecchymosis (bruising)
- Rapidly forming hematoma and edema
- Rigidity with or without rebound tenderness upon palpation in abdomen
- Signs of shock

2. **ESTIMATING BLOOD LOSS (EBL)** (see Figure 1)

Gather a quick estimation of blood loss based on the following factors:

- Look for blood surrounding the patient.
- Inspect clothing for blood saturation.
- Inspect bandage saturation for associated blood loss. See Figure 1 for amount of blood each dressing will hold when fully saturated.
- Determine level of shock

	Small Battle Dressing	Medium Battle Dressing	Large Battle Dressing	Abdominal Battle Dressing
Amount of estimated blood	300 ml	750 ml	1000 ml	2500 ml
*EBL	About 6%	About 15%	About 20%	About 50%
*Amounts are based on the average adult blood volume of about 5 liters.				

Figure 1. Estimating Blood Loss Based On Saturation of Dressings

Massive hemorrhage may be fatal within 60 – 120 seconds. Treatment should not be delayed and controlling major hemorrhage should be the first priority over securing the airway.

3. METHODS OF HEMORRHAGE CONTROL

Direct Pressure

Direct pressure, applied over a bleeding site, is the initial technique used to control external hemorrhage for non life-threatening bleeding. Most external hemorrhage is readily controlled by direct pressure at the bleeding site, even carotid and femoral bleeding! Performing direct pressure correctly requires two hands pushing against the casualty's wound, while lying on a flat and hard surface. You must lean into delivery of direct pressure and never let up on it to check the wound. If you need to perform other procedures, a pressure dressing can be made using bandages and ace wraps. If direct pressure fails to control extremity hemorrhage, the next step is to use a tourniquet. The only time a tourniquet will be the first step in controlling hemorrhage is in the Care Under Fire phase.

Bandages and Dressings

A bandage is any material used to hold a dressing in place. It can be applied to wrap or bind a body part or dressing. The bandage also provides additional pressure to the dressing or splint and protects and covers the dressing completely.

Things to keep in mind about bandages/dressings

- Ensure the dressing is tight enough.
- Provide pressure over the entire wound.
- Dressings must cover the entire wound, bandages must cover entire dressing.
- Leave the fingers and toes exposed
- Assess circulation and neurological status using **PMS:**
  Pulse (check pulses in extremities)
  Motor (movement)
  Sensation (can the patient feel you touching them?)
- If hemorrhage continues:
  DO NOT remove the first pressure dressing; apply a second one over the first

The following provides brief information regarding the types of bandages and dressings that you may encounter:

Kerlix gauze

Advantages:

- Extremely absorbent
- Weave of material makes roll semi-stretchable
- Sterile
- Good for packing cavities

Disadvantages:

- Looses bulk when wet
- Catches debris and snags very easily

Aspirin use on the battlefield?

The use of aspirin or any other blood thinner while in a combat setting can lead to increased blood loss not only during surgical procedures, but also when injured on the battlefield. Aspirin is not sold over the counter at exchange outlets while deployed, nor should it be given to Marines or Sailors without a doctor's order. Be sure to educate your Marines and other Sailors on this topic.

Ace wrap

Advantages:

- Can be applied quickly
- Gives pressure to the entire affected area
- Provides excellent support for sprains and strains

Disadvantages:

- Can decrease peripheral circulation

Cravats or Triangular Bandages (37"x37"x52")

Advantages:

- Versatile
- Come in small packages with safety pins
- Can be used as a tourniquet

Disadvantages:

- Has very little absorbency

Combination Dressing/bandage (see Figures 2 & 3)

Cinch Tight, Sterile Compression Bandage (8" x 10") (See Figure 2) These pressure dressings are four-inch wide elastic wraps with an 8"x10" absorbent cotton pad attached close to the end of one side of the elastic wrap. On the other side of the absorbent pad, in the middle on the elastic wrap side, is a steel S-hook that allows for self-application of the dressing and gives it the ability to be applied tightly. Finally, at both ends of the elastic wrap are Velcro strips that allow for ease of securing the dressing.

Figure 2. Cinch tight dressing

Instructions for use

- Open and remove bandage.
- Unroll the bandage and place absorbent pad on wound with hook on top.
- Anchor elastic wrap onto Velcro strip at bandages edge.
- Feed elastic bandage through hook and pull to secure absorbent pad in place.
- Wrap the elastic bandage tightly in the direction through which it was pulled.
- Press the Velcro strip at the very end onto the bandage to secure it.

NOTE: Cinch Tight Dressings are being phased out and replaced with the "H" Bandage.

"H" Bandage Combat Dressing (See Figure 3)
These pressure dressing bandages are 4" wide elastic wraps with 8" x 10" absorbent cotton pad attached close to the end of one side of the elastic wrap. On the other side of the absorbent pad, in the middle on the elastic wrap side is a hard plastic H-anchor that allows for wrapping the dressing around the anchor to apply pressure directly over wound. It also gives it the ability for self-application. Pressure dressings can be applied to extremity, chest, abdominal, and head wounds.

Figure 3. "H" Bandage

Instructions for use

- Open and remove pressure dressing.
- Place pressure dressing over injury with steady pressure, isolating Velcro end.
- Pull draped elastic end and secure to Velcro end.
- Feed wrap through lower leg of H anchor, pulling firmly.
- Wind wrap back around injury site and feed wrap through upper leg of H – anchor, pulling firmly.
- Continue wrapping elastic wrap around injury site, keeping the wrap tight.
- Firmly attach Velcro end of wrap and secure with plastic hooks on sides of wrap.
- For fractures of the arm, the elastic wrap can be used as a sling or swathe.

Expedient (Improvised) Dressing and Bandages

- Patients clothing.
- Patients equipment.
- Your only limitation is YOUR imagination!!!!

Hemostatic Agents

The recommended hemostatic agent dressing of choice by the CoTCCC is QuikClot Combat Gauze (see Figure 4). Celox Gauze and ChitoGauze may also be used if Combat Gauze is not available. A hemostatic agent causes the wound to develop a clot that stops the flow of blood and will remain within the wound until removed by medical personnel. It is applied to wounds with moderate to severe bleeding (venous or arterial). Hemostatic agents have strengths and liabilities and carry with them the requirement for specific training for all members of the combat team. Hemostatic agents are the first line treatment of life threatening hemorrhage in a tactical setting that is not amenable to tourniquet placement.

Figure 4. Combat Gauze

QuikClot Combat Gauze

Combat Gauze is tailored to the needs of combat and tactical medical personnel. It combines surgical gauze with an inorganic material that stops arterial and venous bleeding in seconds. It creates no heat, is inert and non-allergenic. It can be fit to any size or shape wound, including penetrating wounds. Combat Gauze comes in rolls four yards long by three inches wide. Remember, hemostatic agents are only to be used when in the Tactical Field Care Phase of TCCC.

Application Procedures: (see Figure 5)

- Expose injury by opening or cutting away clothing.
- Remove excess blood from wound while preserving any clots that may have formed, if possible.
- Locate the source of the most active bleeding.

- Remove Combat Gauze from package and pack it tightly into the wound directly over the site of the most active bleeding. (More than one roll of Combat Gauze may be required to control the hemorrhage.)
- Combat Gauze may be re-packed or adjusted in the wound to ensure proper placement.
- Apply direct pressure quickly with enough force to stop the bleeding.
- Hold direct pressure for a <u>minimum</u> of 3 minutes.
- Reassess for bleeding control.
- Once applied, Combat Gauze is not to be removed (except by proper medical authority). If bleeding continues, reinforce would with another roll of Combat Gauze and hold pressure.
- Leave Combat gauze in place and secure with a pressure dressing.
- Document, place empty package near wound, and transport patient.

<u>Figure 5. Application Procedures</u>

4. <u>TOURNIQUET APPLICATION</u>

<u>Figure 6. Casualty who was saved using a tourniquet</u>

In civilian trauma care the use of a tourniquet is reserved for when direct pressure fails; **this is not the case in Care Under Fire**. The initial treatment for an extremity hemorrhage in a tactical setting is a tourniquet. A pressure dressing can be used later in the care process of a combat casualty. The standard "web belt through the buckle" tourniquet issued by the military during Vietnam was not highly regarded by the combat medic community. The U.S. Army Institute of Surgical Research identified the Combat Application Tourniquet (CAT) as the one best suited for battlefield use and is the CoTCCC recommended tourniquet. This tourniquet can be rapidly applied with one hand to one's own or another's extremities. This tourniquet is issued throughout all U.S. combatant forces. If the CAT is not available, the provider should be able to make a "field expedient" tourniquet. The use of the tourniquet in a combat setting is not limited to solely the CAT; there may be other brands

of tourniquets. While it may have a different name, the principles of use are similar. The goal is to stop arterial bleeding in an extremity to prevent loss of life. Imagine trying to control the bleeding of the casualty in figure 4 without a tourniquet!

Characteristics of the CAT (see Figure 7)

- US Army Institute of Surgical Research and CoTCCC recommended
- Lightweight
- Easy to apply and use

Figure 7. CAT Tourniquet

SOF-T Tourniquet (see Figure 8)

- Special Operations Forces Tactical Tourniquet
- Also recommended by the CoTCCC
- True 1-1/2 inch constriction band
- Aluminum windlass rod
- Application remains the same, regardless of location

Figure 8. SOF-T Tourniquet

Field Expedient Tourniquet (see Figure 9)

- If CAT is unavailable, choose a material about two inches (2") wide.
- Material such as rope, wire and string should **NOT** be used because they can cut into flesh.
- Tie a strong windlass (stick) to a cravat or other strong material.
- Slide one or two rings on each side of the cravat.
- Tie the cravat around the affected limb, two to four inches above the wound, loosely. (This will allow the windlass to turn, creating circumferential pressure to stop the bleed.)
- Twist the windlass until the hemorrhage is

Figure 9. Improvised Tourniquets

controlled.
- Slide the ring to the windlass and secure windlass to the ring(s).

Tourniquet Application

Application site - a tourniquet should be applied approximately 2-3 inches above the hemorrhaging wound, directly on the skin. However, during Care Under Fire, this may not be possible. Place the tourniquet proximal to the wound, over the clothing due to tactical requirements. However, once out of the Care Under Fire Phase, reassess tourniquet application by exposing site and placing tourniquet 2-3 inches above the wound, directly on the skin. Do NOT place a tourniquet below the knee or elbow or over a joint due to there being two bones, i.e., Tibia/Fibula below the knee, and Radius/Ulna below the elbow, which can splint the hemorrhaging vessel and make it impossible to control the bleed.

What about those Rings???
Examples of good rings to use:
- Key chain rings
- Sport drink rings
- Boot laces tied into a ring
- Anything that is in a ring shape with the approximate diameter of 1-2 inches

Application tightness - apply tourniquet tight enough to block arterial flow. Generally, the bigger the limb, the tighter the tourniquet. So a leg will require more pressure to control bleeding than an arm will. If injured limb is still present, check distal pulse to ensure it is occluded.

Other considerations - it may be necessary to use more than one tourniquet to control severe bleeding. A second tourniquet should be applied just proximal to the first, if needed. Another thing to remember is that a tourniquet will be painful for the conscious casualty to tolerate but don't stop tightening until the hemorrhage is controlled. Pain management should be considered provided the casualty does not have signs of Class III or IV shock. You must document placement of a tourniquet by placing a "T" and the time of application on the casualty's forehead or other conspicuous spot. After application, do not cover a tourniquet under any condition, leave it exposed to ease monitoring for continued hemorrhage.

Converting a Trouniquet to a Dressing

Tourniquet use is the first line of hemorrhage control while in the Care Under Fire phase. Only when in the Tactical Field Care phase should you even consider converting a tourniquet to a pressure dressing. Do **NOT** convert a tourniquet to a pressure dressing under the following conditions:

- The casualty is in Class III or IV shock (you will learn what this is in the Shock lesson).
- There has been a complete amputation below the tourniquet.
- There is no one to monitor the casualty for rebleeding.
- Tourniquet has been in place for more than 6 hours.
- Short transport time to surgical intervention.

CASUALTY ASSESSMENT AND HEMORRHAGE CONTROL

Care Under Fire Phase: Hemorrhage control is the only intervention performed during this phase! You must be able to recognize "life-threatening" hemorrhage. For extremity hemorrhage, use a tourniquet. For non-extremity hemorrhage, use direct pressure. NO HEMOSTATIC AGENT USED DURING THIS PHASE!

Tactical Field Care Phase: During this phase, reassess your treatment performed during Care Under Fire Phase to control the hemorrhage. Don BSI. Assess the airway and intervene if necessary. Complete a head to toe assessment using DCAP-BTLS (deformities, contusions, abrasions, punctures, burns, tenderness, lacerations, and swelling) noting and treating additional injuries. Determine if vascular access is required (see Tactical Fluid Resuscitation lesson) and give fluids if necessary. If the casualty is able to drink fluids, they should be encouraged to do so. Consider pain medications and give antibiotics if warranted. Reassess all care provided. Document care given, prevent hypothermia, and TACEVAC.

References:
Prehospital Trauma Life Support, current Military Edition
Committee on Tactical Combat Casualty Care Meeting Minutes, 22-24 July 2008
MCRP 3-02G

Field Medical Training Battalion

HEMORRHAGE CONTROL
PERFORMANCE EXAMINATION CHECKLIST v3.0

STUDENT (Rank Last Name, First Name)	**PLT**

PROCEDURAL STEPS FOR PERFORMING HEMORRHAGE CONTROL	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
***State the indication for applying a tourniquet (life-threatening extremity hemorrhage)**						
Apply pressure to slow bleeding						
***Apply tourniquet 2-3 inches proximal to the hemorrhage site. (Do not apply over a joint, below the knee or below the elbow)**						
***Pass self-adhering band through the inside AND outside slit of the friction adaptor buckle.**						
Pull the self-adhering band tight and securely fasten the band back on itself.						
***Twist the Windlass Rod until the bleeding stops.**						
***Lock the rod in place with the Windlass Clip.**						
Secure the rod with the Windlass Strap. Grasp the strap, pull it tight, and adhere it to the opposite hook on the Windlass Clip.						
Document the time of placement; mark the patient's forehead with "T"						

GRADING CRITERIA	**1ST**	**2ND**	**3RD**
Total Non-Critical Items (3 or greater constitutes a failure)			
Total Critical Items (Any critical items missed constitutes a failure)			
"Stop & Think" (2 allowed for critical items, third constitutes a failure)			

1st Evaluator:	**2nd Evaluator:**	**3rd Evaluator:**
PASS / FAIL	**PASS / FAIL**	**PASS / FAIL**
Student signature:	**Student signature:**	**Student signature:**
Notes:	**Notes:**	**Notes:**

Hemorrhage Review

1. List four signs or symptoms of internal hemorrhage.

1. Identify the appropriate treatment for life threatening hemorrhage during “Care Under Fire”.

2. Where on the extremities should a tourniquet **NOT** be placed?

4. During which phase of TCCC is the use of hemostatic agents authorized?

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FMST 404

Maintain Airway

TERMINAL LEARNING OBJECTIVE

1. Given a casualty in an operational environment, **manage respiratory trauma** to reduce the risk of further injury or death. (8404-MED-2003)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list**, identify standard medical terminology related to the airway**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2003a)

2. Without the aid of reference, given a description or list, **identify the anatomy of the airway**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2003b)

3. Without the aid of reference, given a description or list, **identify the signs and symptoms of a compromised airway**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2003c)

4. Without the aid of reference, given a description or list, **identify treatments for a compromised airway**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2003d)

OVERVIEW

Airway management plays a prominent role in the management of trauma patients. The failure to maintain oxygenation and ventilation causes secondary brain injury, compounding the primary brain injury produced by the initial trauma. Cerebral oxygenation and oxygen delivery to other parts of the body provided by adequate airway management and ventilation remain the most important components of prehospital patient care. Inability of the respiratory system to provide oxygen to the cells or inability of the cells to use the oxygen supplied results in anaerobic metabolism and can quickly lead to death.

1. **AIRWAY TERMINOLOGY** (see Figure 1)

Pharynx – Muscle lined with mucous running from the back of the soft palate to the upper end of the esophagus; divided into three sections

-Nasopharynx

-Oropharynx

-Hypopharynx

Nasal Septum – Separates the left and right airways of the nose

Nares – External openings of nasal cavity

Larynx (voicebox) – Cartilaginous box located above the trachea, containing vocal cords and muscles that make them work

Epiglottis – Leaf-shaped structure that acts like a gate, directing air into the trachea and solids/liquids into the esophagus

Trachea (windpipe) – Main trunk of the system of tubes air passes to and from the lungs

2. **ANATOMY OF THE AIRWAY**

Upper Airway

- Consists of the nasal cavity and oral cavity

Lower Airway

- Consists of the trachea, its branches and the lungs. On inspiration, air travels through the upper airway and into the lower airway. The actual gas exchange occurs in the alveoli. The alveoli are where the circulatory and respiratory systems meet.

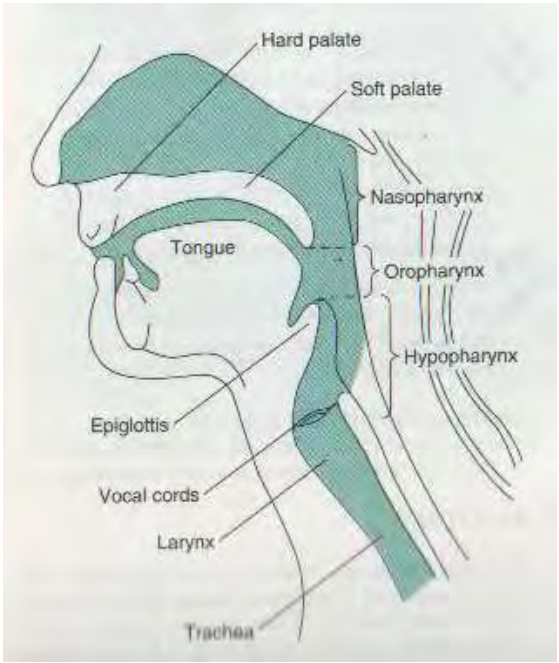

Figure 1. The Airway

3. SIGNS & SYMPTOMS OF AIRWAY COMPROMISE

Trauma can affect the respiratory system's ability to adequately provide oxygen and eliminate carbon dioxide. Hypoventilation, or inadequate ventilation in order to perform gas exchange, is one of the most common respiratory problems. If left untreated, hypoventilation results in CO2 build-up, acidosis, and eventually death. Management involves improving the patient's ventilation rate and depth by correcting existing airway problems and assisting ventilation as appropriate.

Decreased Neurological Function

Decreased minute volume can be caused by two clinical conditions related to decreased neurological function:

- Flaccidity of the tongue
- Decreased level of consciousness

If a patient is supine, the base of the tongue will fall backward and occlude the hypopharynx. To prevent the tongue from occluding or to correct this problem when it occurs, maintaining an open airway must be assured in any supine patients with a diminished LOC, regardless of whether signs of ventilatory compromise exist. A decreased LOC will also affect ventilatory drive and may reduce the rate of ventilation, the volume of ventilation, or both.

Mechanical Obstruction

Another cause of decreased minute volume is mechanical airway obstruction. The source of these obstructions may be neurologically influenced or purely mechanical in nature. Foreign objects in the airway may be objects that were in the patient's mouth at the point of injury:

- Teeth
- Gum
- Tobacco
- Bone
- Blood
- Vomit

Outside objects may also threaten airway patency:

- Glass
- Rocks
- Debris

Management of mechanical airway obstructions can be extremely challenging. Foreign bodies may become lodged and create occlusions. Crush injuries and edema may be present. Patients with facial injuries often present with blood and vomit. Treatment of these problems is aimed at immediate recognition of the obstruction and the steps taken to ensure airway patency.

Assessment of the Airway

- Look for obvious injuries; continue to talk to the casualty
    - Talking suggests an open airway
- Be aware of patient's LOC while in the supine position
- Patient may need to remain in the position found if they are maintaining their own airway in order to avoid aspiration

Conducting a Physical Examination

- Look
- Listen
- Feel, feel

Look

- Look at the casualty's face, neck , nose and lips for:
    - Cyanosis or edema
    - Any obvious injuries
    - Blood or any debris
- Open the casualty's mouth and look for foreign objects or abnormalities
    - Broken teeth
    - Tobacco or food products
    - Debris
- Look for bilateral, normal chest rise and fall during breathing
    - Be aware of unilateral chest rise/fall
    - Any paradoxical movement of the chest wall
- Look for use of accessory muscles and increased work of breathing

Listen

- Listen for the presence or absence of breath sounds
    - Listen to the quality of the respirations
    - Listen for any tachypnea or bradypnea
    - Listen for the rhythm and depth of respirations
- Listen for any sounds signaling a compromise to the upper airway
    - Tongue occluding the hypopharynx causing a snoring sound
    - Blood or vomit causing gurgling noises
    - Any foreign bodies lodged in the airway

Feel, Feel

- Placing your hand on the casualty's chest and lowering your ear to their mouth provides you with multiple senses to check the respiratory system. In combat, one or more of these senses may be diminished due to explosions, gunfire, night operations, etc.
    - Feel for warm breath against your face when casualty exhales
    - Feel for equal chest rise and fall with your hand as casualty breathes

4. TREATMENTS FOR A COMPROMISED AIRWAY

Manual Maneuvers of the Airway

The tongue is connected to the mandible and moves forward with it. Any maneuver that moves the mandible forward will pull the tongue out of the hypopharynx. This can be accomplished using 2 different methods:

- Trauma Jaw Thrust
- Trauma Chin Lift

Manual Clearing of the Airway

The first step in airway management is a quick visual inspection of the oropharyngeal cavity. Foreign material or other objects may be found in the mouth of a trauma patient. These can be swept from the mouth using a finger, but should be avoided in low-light situations or when the object is lodged deep in the airway. Positioning the patient on their side will allow gravity to assist in clearing any secretions or objects.

Nasopharyngeal Airway (NPA)

The NPA (see Figure 2) is a soft, rubberlike device that is inserted through one of the nares and then along the curvature of the posterior wall of the nasopharynx and oropharynx. This adjunct is used for both conscious and unconscious patients who are unable to maintain their own airway. When inserted, this adjunct can cause bleeding.

Figure 2. Inserting a Nasopharyngeal Airway

King Laryngeal Tracheal Tube (King LT airway)

The King LT (see Figure 3) is a single lumen, blindly inserted airway created as an alternate to tracheal intubation or mask ventilation, resulting in minimal airway trauma with little training necessary. This adjunct is used only for unconscious patients, as the presence of an intact gag reflex may cause gagging or vomiting when inserted (see Figure 4). The King LT is latex-free and can be autoclaved up to 50 cycles.

Figure 3. King LT

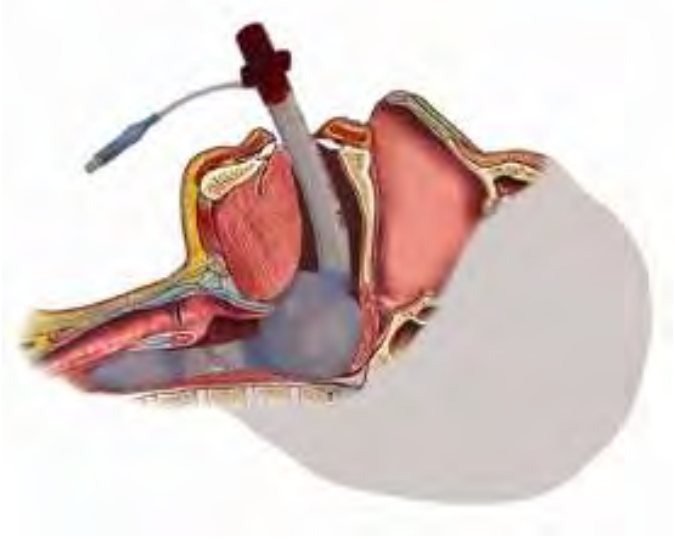

Figure 4. King LT Placement

CASUALTY ASSESSMENT AND AIRWAY MANAGEMENT

Care Under Fire Phase: Treatment of the airway is deferred during this phase of care.

Tactical Field Care Phase: During this phase, reassess your treatment performed during Care Under Fire Phase to control the hemorrhage. Don BSI. Assess the airway and intervene if necessary. Use the least invasive airway that will provide treatment. Monitor breathing and look for signs and symptoms of airway compromise. Reassess all care provided. Document care given, prevent hypothermia, and TACEVAC.

REFERENCE:

Pre-Hospital Trauma Life Support, current military edition

Maintain Airway Review

1. Identify the three sections of the pharynx.

2. Identify four types of mechanical airway obstructions.

3. Identify the two manual airway maneuvers.

4. Identify the contraindication for using a King LT airway.

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
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FMST 405

Perform Emergency Cricothyroidotomy

TERMINAL LEARNING OBJECTIVE

1. Given a casualty in an operational environment, standard field medical equipment and supplies, **perform emergency cricothyroidotomy to restore breathing**, within the scope of care, reducing risk of further injury or death. (8404-MED-2008)

ENABLING LEARNING OBJECTIVES

1. Without the aid of references, given a description or list, **identify important anatomical landmarks for an emergency cricothyroidotomy**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition and Emergency Medicine, current edition. (8404-MED-2008a)

2. Without the aid of references, given a description or list, **identify the indications for performing an emergency cricothyroidotomy**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition and Emergency Medicine, current edition. (8404-MED-2008b)

3. Without the aid of references, given a description or list, **identify the proper equipment for performing an emergency cricothyroidotomy**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition and Emergency Medicine, current edition. (8404-MED-2008c)

4. Without the aid of references, given a description or list, **identify the procedural sequence for performing an emergency cricothyroidotomy**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition and Emergency Medicine, current edition. (8404-MED-2008d)

5. Without the aid of references, given a description or list, **identify potential complications of an emergency cricothyroidotomy**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition and Emergency Medicine, current edition. (8404-MED-2008e)

6. Without the aid of references, given a casualty and a Corpsman Assault Pack, **perform an emergency cricothyroidotomy**, to prevent further injury or death, per the FMST Performance Examination Checklist. (8404-MED-2008f)

1. **ANATOMICAL LANDMARKS** (see Figure 1)

Trachea - also known as the windpipe. It is the cartilaginous and membranous tube descending from, and continuous with, the lower part of the larynx to the bronchi.

Thyroid Cartilage - also known as the "Adam's Apple." The thyroid cartilage is located in the upper part of the throat. The thyroid cartilage tends to be more prominent in men than women.

Cricoid Cartilage - located approximately ¾-inch inferior to the thyroid cartilage. The cricoid and thyroid cartilage form the framework of the larynx.

Cricothyroid Membrane - soft tissue depression between the thyroid and cricoid cartilage. This membrane connects the two cartilages and is only covered by skin.

Carotid Arteries - two principal arteries of the neck.

Jugular Veins - two principal veins of the neck.

Esophagus - muscular tube extending downward from the pharynx to the stomach. The esophagus lies posterior to the trachea.

Thyroid Gland - largest endocrine gland, the thyroid gland is situated in front of the lower part of the neck. Consists of a right and left lobe on either side of the trachea.

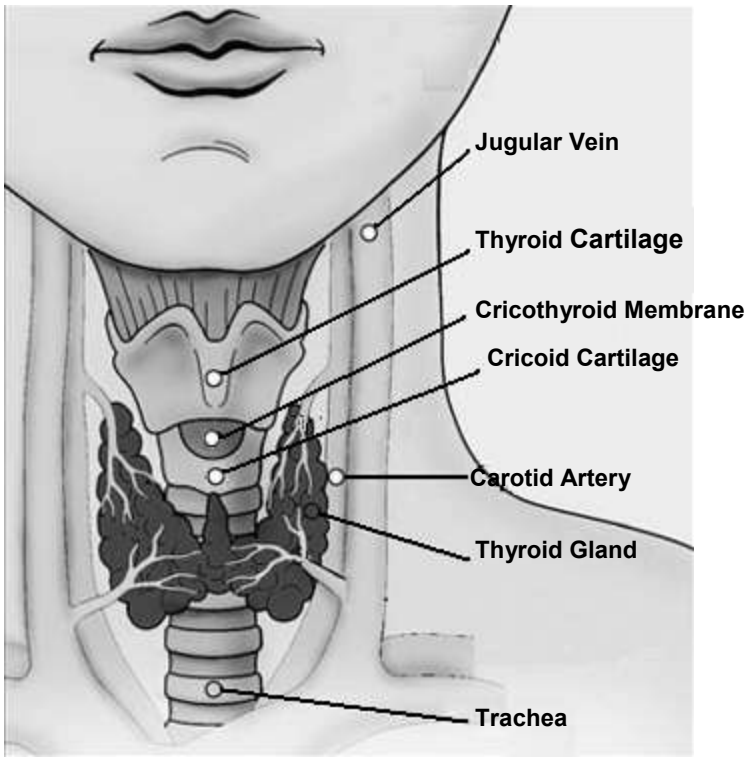


Figure 1. Anatomical Landmarks

2. **INDICATIONS**

Definition - Emergency cricothyroidotomy is a surgical procedure where an incision is made through the skin and cricothyroid membrane. This allows for the placement of a tracheal tube into the trachea when control of the airway is not possible by other methods.

There are many reasons an emergency cricothyroidotomy may be required. Listed below are a few of the most common reasons:

Obstructed airway and/or swelling of tissues will usually prevent the passage of an endotracheal tube through the airway. Therefore, a surgical airway distal to the obstruction is required. Causes of an obstructed airway include facial and oropharyngeal edema from burns or foreign objects (food or teeth).

Congenital deformities of the oropharynx or nasopharynx will inhibit or prevent nasotracheal or orotracheal intubation.

Trauma to the head and neck would preclude the use of an ambu-bag, oropharyngeal airway, nasopharyngeal airway and endotracheal tube insertion.

- Massive midface trauma
- Facial fractures (mandible fracture)
- Nasal bone fractures
- Cribiform fractures

Cervical spine fractures in a patient who needs an airway but whose intubation is unsuccessful or contraindicated.

Contraindications - Massive trauma to the larynx

3. **PROPER EQUIPMENT**

There are several types of pre-packed kits but you can also put together your own. CoTCCC has not recommended a specific emergency cric kit but has defined a set of preferred features for surgical airway kits.

- Scalpel: # 10 blade
- Antiseptic (Alcohol or Povidone-Iodine)
- 6 – 7 mm endotracheal tube with 10cc syringe for balloon cuff
- Means to secure tube (securing ribbon, tape or sutures)
- Instrument to expose and define the opening (Trach Hook or Curved Kelly hemostats)
- Gauze (Petroleum and sterile)
- Bag-valve-mask (BVM) and oxygen source, if available

4. **PROCEDURAL STEPS**

Step 1 - Assess patient

Assess airway, LLF, attempt other airways. Make the decision to perform emergency cricothyroidotomy.

Step 2 - Gather equipment

Ensure all equipment is available and assemble prior to starting the procedure.

Step 3 - Prepare and position patient

The patient should be placed in a supine position, with the neck placed in the neutral position. Stand to one side of the patient at the neck. If you are right handed, stand to the right side of the patient; left handed, to the left.

Step 4 - Locate the cricothyroid membrane

Palpate the thyroid and cricoid cartilage for orientation. The cricothyroid membrane is in the hollow between the two cartilages. If time permits, quickly cleanse the site with alcohol or betadine swabs.

Step 5 - Make incision

- Stabilize the thyroid cartilage using the thumb and middle finger of your non-dominant hand to hold the skin taut.

- Using the scalpel, make a **vertical** incision through the skin approximately 1 inch long over the cricothyroid membrane. (See Figure 2)

- Visualize the cricothyroid membrane.

- Enter cricothyroid membrane by making a **horizontal** incision through the cricothyroid membrane. (See Figure 3)

- DO NOT make the incision more than **½ inch** deep or you may perforate the esophagus.

Figure 2. Vertical Incision

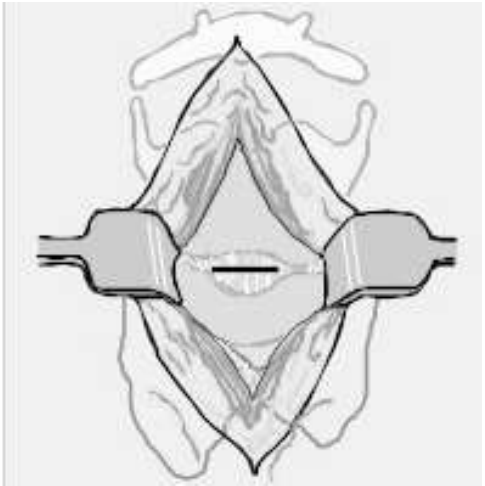


Figure 3. Horizontal Incision

Step 6 - **Open Incision**

- Use Trach Hook or curved Kelly hemostats to open incision.

Step 7 - **Insert Tube**

- Lubricate and insert the endotracheal tube into the opening.

- Ensure the tube is inserted no more than 3 to 4 inches so the tube does not slip down the right main-stem bronchus with any movement.

- Inflate balloon with 10cc's of air.

Step 8 - **Check for proper placement**

- Connect a bag-valve-mask device or manually ventilate patient with two breaths.

- Check for breath sounds. If no ventilations are heard, pull the tube out and reinsert it.

- Recheck for breath sounds to ensure tube is positioned correctly.

- If breath sounds are **absent on the left** side only, the tube has been inserted down the right main-stem bronchus and should be pulled back a few centimeters. This typically occurs with the use of the endotracheal tube.

- Recheck for breath sounds to ensure tube is positioned correctly.

- Connect to Oxygen Supply (if available)

Step 9 - **Secure Dressing**

- Secure the tube with ribbon, sutures and/or tape.

- Apply petroleum gauze followed by sterile gauze. (See Figure 4)

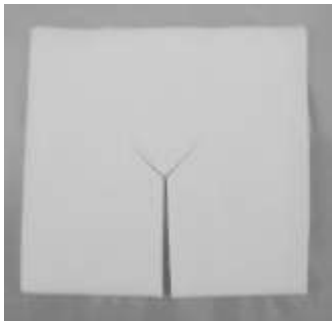


Figure 4. Y-cut Gauze

Step 10 - **Monitor Patient**

- Continuously reassess and monitor patient.

- 1 breath every 5 seconds if patient is not breathing on their own.

5. **ASSOCIATED COMPLICATIONS**

Hemorrhage - **The most common complication.**

Causes

- Minor bleeding may be caused by lacerating superficial capillaries in the skin.

- Significant bleeding may be caused by the laceration of major vessels (carotid arteries and the jugular veins) within the neck.

Treatment

- Minor bleeding is treated with direct pressure and the application of a simple pressure dressing.

- Significant bleeding - treated same as minor. However, if unable to control the bleeding, the vessel may need to be ligated (tied off).

Esophageal perforation - the creation of a hole between the esophagus and trachea.

Causes

- Creating an incision too deep through the cricothyroid membrane.

- Forcing the ET tube through the cricothyroid membrane and into the esophagus.

Treatment

- Requires surgical repair at higher echelon of care.

Subcutaneous emphysema - the presence of free air or gas within the subcutaneous tissues. Upon palpation, a crackling sensation may be felt as the air is pushed through the tissue.

Causes

- Creating too wide of an incision will allow air entrapment under the skin.

- Air leaking out of the insertion site may get trapped under the skin.

Treatment

- No treatment is necessary; will resolve spontaneously within a few days.

- The placement of petroleum gauze dressing around the incision/insertion site will help reduce the incidence of subcutaneous emphysema.

Why Don't We Learn How to Intubate? (PHTLS Manual)

1. No studies have examined the ability of well-trained but relatively inexperienced military medics to accomplish endotracheal intubation.

2. Many Corpsmen and Medics have never performed an intubation on a live casualty or even a cadaver.

3. Standard endotracheal intubation techniques entail the use of a tactically compromising white light in the laryngoscope.

4. Endotracheal intubation can be extremely difficult in a casualty with maxillofacial injuries.

CASUALTY ASSESSMENT AND EMERGENCY CRICOTHYROIDOTOMY

Care Under Fire Phase: In the absence of life-threatening hemorrhage, there is no care given for a casualty who needs a surgical cricothyroidotomy in this phase.

Tactical Field Care Phase: Cricothyroidotomy is a skill you may use during the Tactical Field Care phase. The need to perform an emergency cricothyroidotomy is made after you have attempted to control the airway with other, less invasive methods (i.e. NPA). Remember, once the patient has received a cricothyroidotomy, they are now totally dependent upon you and now become much more difficult to manage in a tactical environment.

REFERENCES

Prehospital Trauma Life Support, current Military Edition
Emergency Medicine, current edition

Field Medical Training Battalion

EMERGENCY CRICOTHYROIDOTOMY PERFORMANCE EXAMINATION CHECKLIST v3.0

STUDENT (Rank, Last Name, First Name)	**PLT**

PROCEDURAL STEPS FOR PERFORMING AN EMERGENCY CRICOTHYROIDOTOMY	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
*** State the indications for an emergency cricothyroidotomy (obstructed airway, congenital deformities, trauma to head/neck, cervical spine fracture)**						
*** State the contraindications for an emergency Cricothyroidotomy (massive trauma the larynx or cricoid cartilage)**						
*** Assess patient and make decision to perform emergency cricothyroidotomy. (ABC's, LLF, Failed attempts at all other airway management)**						
Assemble and check equipment (Scalpel #10 blade, ET tube, 10 cc syringe, tape, Curved Kelly hemostats/Trach Hook, gauze)						
Prepare patient (Place patient in supine or semi-recumbent position and place neck in neutral position)						
*** Locate landmarks (palpate thyroid and cricoid cartilages, locate cricothyroid membrane)**						
Cleanse the incision site with alcohol or betadine						
Stabilize the thyroid cartilage using your non-dominant hand						
Make 1 inch, vertical incision over the cricothyroid membrane						
Visualize cricothyroid membrane						
Make ½ inch, horizontal incision to cut through the cricothyroid membrane						
Open incision with blunt dissection						
*** Insert endotracheal tube into the incision, directing the tube distally down the trachea (no more than 3 - 4 inches)**						
Inflate balloon with 10cc's of air						
*** Ventilate patient with two breaths & check for proper placement (Auscultate epigastric area - If patient has epigastric sounds, remove and retry, observe for bilateral rise/fall of chest, misting or fogging in E.T. tube and auscultate for breath sounds bilaterally)**						
Lung sounds on right side only (deflate cuff, pull back ¼- ½ inch, re-inflate cuff, recheck placement						
Secure tube						
Apply dressing (petroleum gauze on insertion site, dry sterile dressing over petroleum gauze)						
Reassess & monitor patient (if not breathing on own, 1 breath every 5 seconds, suction as necessary)						
State complications of cricothyroidotomy (hemorrhage, esophageal perforation subcutaneous emphysema)						

Field Medical Training Battalion

EMERGENCY CRICOTHYROIDOTOMY
PERFORMANCE EXAMINATION CHECKLIST v3.0

GRADING CRITERIA	1ST	2ND	3RD
Total Non-Critical Items (5 or greater constitutes a failure)			
Total Critical Items (Any critical items missed constitutes a failure)			
"Stop & Think" (2 allowed for critical items, third constitutes a failure)			

1st Evaluator:	2nd Evaluator:	3rd Evaluator:
PASS / FAIL	PASS / FAIL	PASS / FAIL
Student signature:	Student signature:	Student signature:
Notes:	Notes:	Notes:

Cricothyroidotomy Review

1. List the four indications for an emergency cricothyroidotomy.

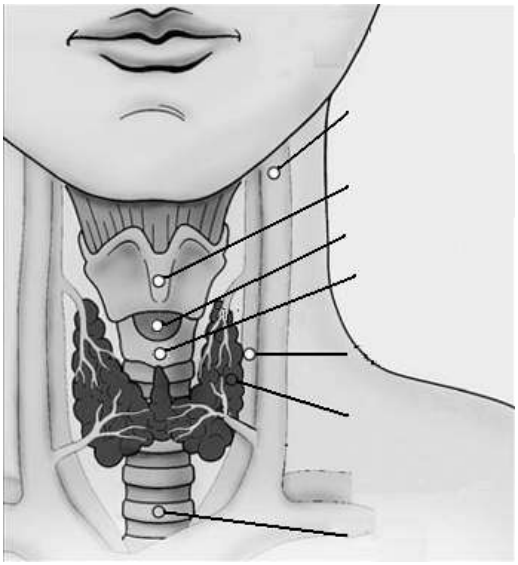
2. List the ten steps in performing an emergency cricothyroidotomy.

1)	6)
2)	7)
3)	8)
4)	9)
5)	10)

3. Identify the three common complications from performing an emergency cricothyroidotomy.

4. What equipment is necessary to perform an emergency cricothyroidotomy?

5. Identify the anatomical landmarks below



UNITED STATES MARINE CORPS

FIELD MEDICAL TRAINING BATTALION
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CAMP PENDLETON, CA 92055-5243

FMST 406

Manage Respiratory Trauma

TERMINAL LEARNING OBJECTIVES

1. Given a casualty in an operational environment, **manage respiratory trauma** to reduce the risk of further injury or death. (8404-MED-2003)

2. Given a casualty with a tension pneumothorax in an operational environment, equipment and supplies, **perform a needle thoracentesis** reducing the risk of further injury or death. (8404-MED-2009)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify standard medical terminology related to the respiratory system**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2003e)

2. Without the aid of reference, given a description or list, **identify the anatomy of the respiratory system**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2003f)

3. Without the aid of reference, given a description or list, **identify the signs and symptoms of respiratory trauma**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2003g)

4. Without the aid of reference, given a description or list, **identify treatments for chest injuries**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2003h)

5. Without the aid of reference, given a simulated casualty with a chest injury and Corpsman Assault Pack, **manage the simulated casualty**, to prevent further injury or death, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2003i)

6. Without the aid of reference, given a description or list, **identify important anatomical landmarks for needle thoracentesis**, within 80% accuracy, per the Prehospital Trauma Life Support, current Military Edition. (8404-MED-2009a)

7. Without the aid of reference, given a description or list, **identify the indications for needle thoracentesis**, within 80% accuracy, per the Pre-Hospital Trauma Life Support Manual, current Military Edition. (8404-MED-2009b)

8. Without the aid of references, given a description or list, **identify the proper equipment for performing needle thoracentesis**, within 80% accuracy, per the Pre-Hospital Trauma Life Support Manual, current Military Edition. (8404-MED-2009c)

9. Without the aid of references, given a description or list, **identify the procedural sequence for performing needle thoracentesis**, within 80% accuracy, per the Pre-Hospital Trauma Life Support Manual, current Military Edition. (8404-MED-2009d)

10. Without the aid of reference, given a description or list, **identify the potential complications when performing needle thoracentesis**, within 80% accuracy, per the Pre-Hospital Trauma Life Support Manual, current Military Edition. (8404-MED-2009e)

11. Without the aid of references, given a simulated casualty and a Corpsman Assault Pack, **perform a needle thoracentesis**, to prevent further injury or death, per the FMST Performance Examination Checklist. (8404-MED-2009f)

1. **RESPIRATORY SYSTEM TERMINOLOGY**

Dyspnea - Difficult or labored breathing.

Wheeze - A form of rhonchus, characterized by a whistling respiratory sound. It is caused by the movement of air through a narrowed airway.

Stridor - A harsh shrill respiratory sound.

Hyperventilation - An increase in the rate and depth of normal respirations. Responsible for `increasing oxygen levels and decreasing carbon dioxide levels.

Hypoventilation - Loss of ventilatory drive, usually from decrease neurological function most often after a TBI. This can also be cause by an upper or lower airway obstruction, and decreased expansion of the lungs.

Tachypnea – An abnormally rapid rate of respiration.

Bradypnea - An abnormally slow rate of respiration, usually less than 8 breaths per minute.

Hypoxia - An insufficient concentration of oxygen in the tissue in spite of an adequate blood supply.

Apnea - Total cessation of breathing, also known as respiratory arrest.

Subcutaneous emphysema - The presence of free air or gas in the subcutaneous tissues. The face, neck, or chest may appear swollen with painful skin and produce a crackling sound ("Rice Krispies").

2. **ANATOMY OF THE RESPIRATORY SYSTEM**

Thorax (Chest Cavity) (see Figure 1)

The skeletal portion of the thorax is a bony cage formed by the sternum, costal cartilages, ribs and the bodies of the thoracic vertebrae.

Ribs

- Joined in the posterior with the thoracic spine and anterior with the sternum via the costal cartilage.
- A nerve, an artery and a vein are located along the underside of each rib.
- Intercostal muscles connect each rib with the one above.

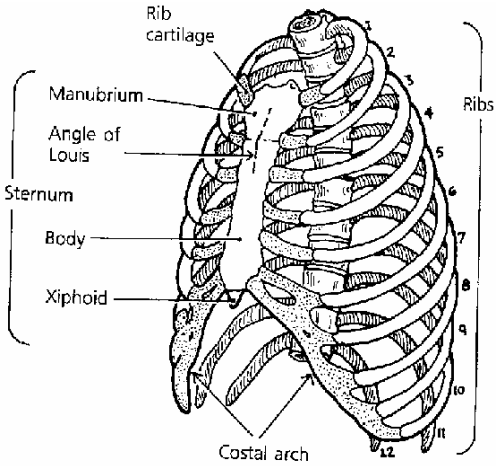


Figure 1. Thorax

Diaphragm - The primary muscle of respiration.

Pleura (see Figure 2)

The pleura are thin membranes separated by a small amount of fluid, which creates surface tension and causes them to cling together, counteracting the lung's natural tendency to collapse.

Parietal pleura - a thin membrane that lines the inner side of the thoracic cavity.

Visceral pleura - a thin membrane that covers the outer surface of each lung.

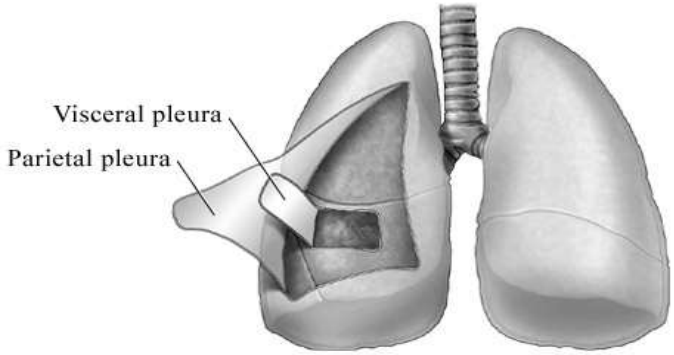


Figure 2. Pleura

Lungs (see Figure 3)

- The lungs occupy the right and left halves of the thoracic cavity.
- The left lung is divided into two lobes.
- The right lung is larger than the left lung and is divided into three lobes.

Alveoli - the smallest components of the lungs. They are small saclike structures through which the exchange of carbon dioxide and oxygen take place.

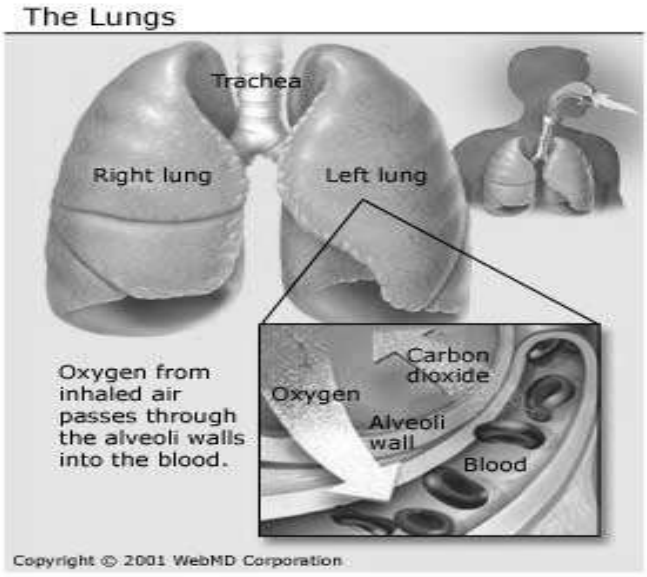


Figure 3. Lungs

Mediastinum

The area in the middle of the thoracic cavity in which all the other organs and structures of the chest cavity lie. It encases the:

- Heart
- Great vessels (aorta, superior/inferior vena cava)
- Trachea (windpipe)
- Mainstem bronchi (there are two bronchi- a right and left)
- Esophagus (lies directly behind the trachea)

3. SIGNS & SYMPTOMS OF RESPIRATORY TRAUMA

Chest injuries are the second leading cause of trauma deaths each year, although the vast majority of all thoracic injuries (90% of blunt trauma and 70 to 85% of penetrating trauma) can be managed without surgery. Traumatic chest injuries can be caused by a variety of mechanisms; however, these injuries are usually classified as either blunt or penetrating.

Penetrating Injuries - caused by forces distributed over a small area (i.e., gunshot wounds or stabbings). Most often, the organs injured are those that lie along the path of the penetrating object.

Blunt Trauma - caused by forces distributed over a larger area, and many injuries occur from deceleration, bursting, or shearing forces. Conditions such as pneumothorax, pericardial tamponade, flail chest, pulmonary contusion and aortic rupture should be suspected when the mechanism of injury involves rapid deceleration, including motor vehicle collisions, falls, sport injuries and crush injuries.

Assessment of Respiratory Trauma - besides the overall mechanism of injury, casualties are asked of any symptoms they may be experiencing if they are conscious and able to communicate. Victims of chest trauma will likely be experiencing chest pain, which may be sharp, stabbing, or constricting. Frequently, the pain is worse with respiratory efforts or movement. The casualty may experience shortness of breath and may feel apprehensive or lightheaded if shock is developing.

The next step in assessment is a physical examination. The components to the physical examination include: observation, auscultation, and palpation.

Observation - casualty is observed for pallor of the skin and sweating, which may indicate shock. The presence of cyanosis (bluish discoloration of skin, especially around the mouth and lips) may be evident in advanced hypoxia.

- Observe frequency of respirations (rate, rhythm, and depth), and the appearance of having trouble breathing (gasping, contractions of the accessory muscles in the neck, or nasal flaring.)

- Look for signs of trachea deviation and distended jugular veins.

- The chest is examined for contusions, abrasions, lacerations, and whether the chest wall expands symmetrically with breathing. Identify whether any portion of the chest wall moves paradoxically with respiration (instead of moving out during inspiration, does it collapse inward and vice versa during exhalation)?

Auscultation - the entire chest is evaluated to identify decreased breath sounds on one side compared to the other which may indicate pneumothorax or hemothorax on the examined side. Pulmonary contusions may result in abnormal breath sounds (crackles).

Palpation - by gently pressing the chest wall with hands and fingers, assessment for the presence of tenderness, crepitus (either bony or subcutaneous emphysems), and bony instability of the chest wall is performed.

Management of Specific Injuries

Rib fracture - occurs when pressure is applied with enough force to exceed the strength of the rib. Remember that any fractured rib can cause associated injuries to nearby structures.

Causes - blunt trauma, crushing injuries to the chest.

Signs and Symptoms

- Pain at the site with inhalation/exhalation
- Shortness of breath
- Deformity
- Crepitus
- Bruising to area

Treatment

- Anticipate potential complications such as tension pnuemothorax, pericarditis, or cardiac tamponade.
- Simple rib fractures usually require no treatment other than analgesics.
- Multiple rib fractures may require immobilization of the arm on affected side to protect the ribs.
- Encourage coughing and deep breathing despite associated pain. This is to prevent the collapse of the lung tissue and preventing the exchange of CO2 and O2 (atelectasis).
- Avoid any taping or bandaging that encircles the chest.
- Monitor and TACEVAC as necessary.

Flail chest - a condition of the chest wall due to two or more adjacent ribs being fractured in at least two or more places. The flail segment moves paradoxically in with inspiration and out during expiration (see Figure 4)

Causes - blunt trauma to the chest wall, especially an impact into the sternum or the lateral side of the thoracic wall.

Signs and Symptoms

- Localized chest pain, aggravated by breathing or coughing
- Rapid shallow respirations
- Tenderness and/or bony crepitus with palpation
- Subcutaneous emphysema

Treatment

- Immobilize flail segments upon inhalation using strips of tape.
- If you suspect respiratory failure, give positive pressure ventilation using a bag valve mask.
- Administer analgesics
- Administer oxygen if available.
- TACEVAC to the next capability of care.

As a result of paradoxical chest wall movement during inspiration, the flail segment of the rib cage moves inward (instead of outward), which results in reduced air intake.

Figure 4. Flail Chest

Pneumothorax - a simple pneumothorax is caused by the presence of air in the pleural space. The air separates the two pleural surfaces, causing the lung on the involved side to collapse as the separation expands. As air continues to build up and pressure in the space increases, the size of the lung on the affected side continues to decrease. Eventually, the lung may partially or totally collapse.

Causes

- Penetrating trauma from either chest wall injury or abdominal injuries that cross the diaphragm.
- Blunt trauma
- Spontaneous (with no apparent cause)

Signs and Symptoms

- Pleuritic chest pain
- Tachypnea/dyspnea
- Decreased or absent breath sounds on the injured side
- Decreased chest wall motion

Treatment

- Place patient in sitting up or Semi-Fowlers position
- Use BVM if hypoxia is present
- Administer oxygen if available
- If caused by a wound, apply an occlusive dressing to the site
- Monitor for signs and symptoms of a tension pneumothorax
- TACEVAC ASAP

Tension Pneumothorax (see Figure 5) - A type of pneumothorax in which air can enter the pleural space but cannot escape via the route of entry. This is the **second** leading cause of preventable death on the battlefield. This leads to an increase of pressure in the pleural space and eventual collapse of the lung. This pressure forces the mediastinum to the opposite side, which results in two serious consequences: (1) breathing becomes increasingly difficult and (2) cardiac blood flow is severely decreased.

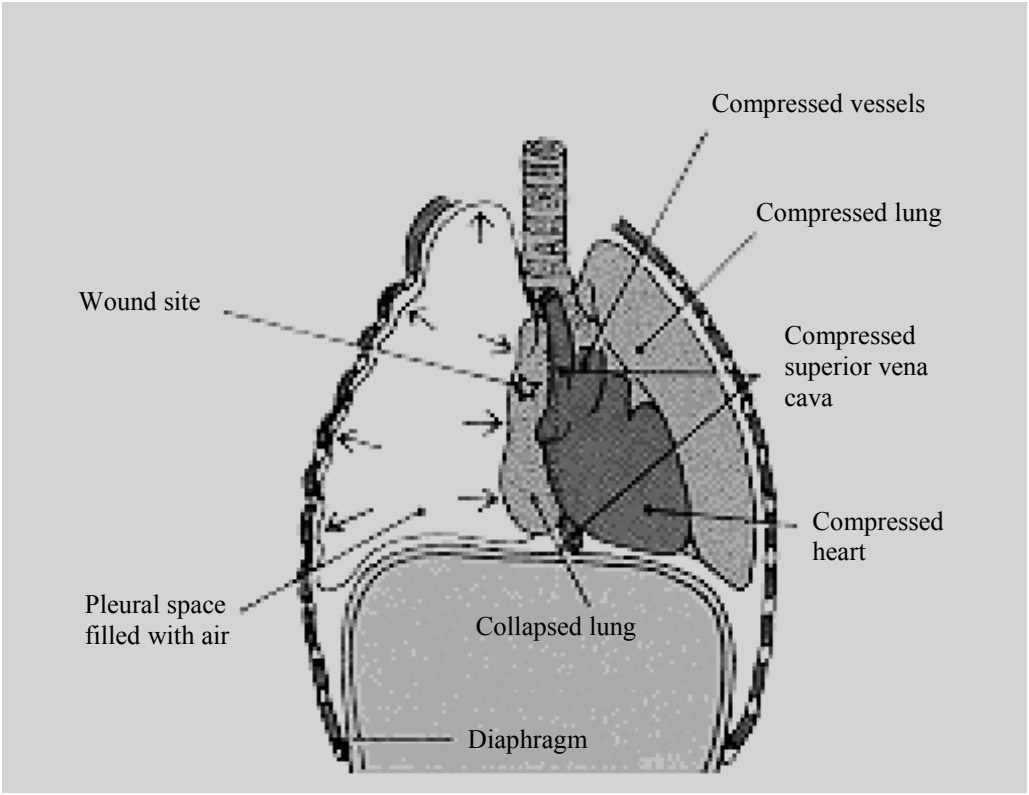


Figure 5. Tension Pneumothorax

Cause - chest injuries.

Signs and Symptoms

Early signs

- Unilateral (one sided) decreased or absent breath sounds
- Dyspnea
- Tachypnea

In some cases, the only signs of a developing tension pneumothorax are compromised oxygenation, tachycardia, tachypnea, and unilateral decreased or absent breath sounds.

Progressive signs
- Increased dyspnea
- Increased tachypnea
- Increased difficulty ventilating

Late signs
- Jugular vein distention (JVD)
- Tracheal deviation
- Signs of acute hypoxia
- Narrowing pulse pressures
- Signs of uncompensated shock

Treatment

- Treat all chest injuries
- Perform needle thoracentesis
- Administer oxygen therapy if available
- Pain management
- Monitor and TACEVAC

Open Pneumothorax (Sucking Chest Wound) - a collection of air or gas in the pleural space causing the lung to collapse. An open wound allows air to enter when the intrathoracic pressure is negative and blocks the air's release when the intrathoracic pressure is positive; creating a "sucking chest wound," that has the potential to cause a tension pneumothorax.

Causes - most often the result of gunshot wounds, but they can also occur from impaled objects, stabbings, and occasional blunt trauma.

Signs and Symptoms
- Pain at the injury site
- Chest wall trauma
- Shortness of breath
- Tachypnea
- Subcutaneous emphysema
- Decreased chest wall motion
- May hear a moist sucking or bubbling sound as air moves in and out of the chest wall defect.

Treatment
- The immediate treatment is to ***seal the wound*** with an occlusive dressing. This intervention helps to restore air flow into the lung during inspiration, but could lead to the development of a tension pneumothorax. If an exit wound is present tape it on all four sides.
- Assess both anterior and posterior torso for penetrating trauma.
- Monitor for signs and symptoms of tension pneumothorax. If signs of increasing respiratory distress develop, the dressing over the wound should be removed to allow for decompression of any accumulating tension. If this is ineffective, needle decompression and positive pressure ventilation (if available) should be considered if not already employed.

- Administer oxygen if available
- Place patient on affected side
- Pain management
- Monitor and TACEVAC

Hemothorax - the accumulation of blood in the pleural space caused by a laceration of the great vessels within the chest that can significantly compromise respiratory efforts by compressing the lung and preventing adequate ventilation.

Causes - Penetrating or blunt trauma

Signs and Symptoms
- Shortness of breath
- Chest pain
- Tachypnea
- Signs of shock (pallor, confusion, tachycardia, hypotension)
- Decreased breath sounds on affected side
- Hemoptysis (coughing up blood)
- Decreased chest wall motion

Treatment
- Place patient in the Fowler's position
- Treat any chest injuries
- Treat for shock
- Administer O2, if available
- Pain management
- Monitor and TACEVAC

Hemopneumothorax - often with penetrating trauma, a pneumothorax is associated with a hemothorax, and an accumulation of air, blood, and fluid within the pleural cavity.

Causes - penetrating trauma to the chest wall, the great vessels, or the lung.

Signs and Symptoms
- Tachypnea
- Decreased breath sounds
- Signs of shock

Treatment
- Place patient in Fowler's position
- Perform needle thoracentesis to relieve pressure. If blood is withdrawn, immediately remove needle and catheter.
- Administer oxygen, if available
- Treat for shock
- Monitor and TACEVAC

NEEDLE THORACENTESIS

Needle thoracentesis is a procedure where a needle and catheter are inserted through the chest wall into the pleural space. The catheter provides a pathway for the release of accumulated pressure within the pleural space. This procedure helps reduce pressure on the heart, lungs and major vessels within the chest cavity that have compromised the patient's breathing and circulation.

4. **ANATOMICAL LANDMARKS** (See Figure 6)

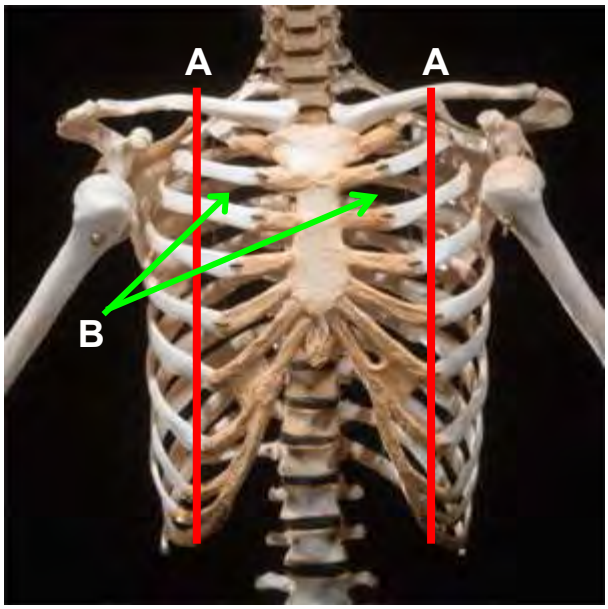
Mid-Clavicular Line (MCL)

- Imaginary line that dissects the middle of the clavicle on the right or left side

2nd Intercostal Space

- Space between the 2nd and 3rd rib.
- From the MCL, palpate down. The first space immediately after the clavicle is the 1st intercostal space. Continuing down, the first space below the next rib is the 2nd intercostal space.

> An acceptable alternative location is the 4th or 5th intercostal space at the anterior auxiliary line. This method will not be taught during FMST; however you will learn this technique at follow-on training.



A – Mid-Clavicular Lines B– 2nd Intercostal Space

Figure 6. Needle Thoracentesis Anatomical Landmarks

5. **INDICATIONS**

Tension Pneumothorax

- Any casualty with thoracic injury is at risk for developing a tension pneumothorax.
- Casualties at particular risk are those who have a penetrating wound to the chest and those with signs of rib fracture.
- There are no significant contraindications for needle thoracentesis with penetrating chest trauma.

6. **PROPER EQUIPMENT**

- 14-gauge, 3.25-inch needle/catheter
- Antiseptic solution (if available)
- Gloves

7. **PROCEDURAL STEPS**

Assess Casualty and Make Decision - based on mechanism of injury (MOI) and a noted increase in difficulty breathing.

- Inspect - look for bilateral rise and fall of the chest during respirations.
- Auscultate - listen to the lung fields at the mid-clavicular and mid-axillary lines bilaterally if tactical situation allows (it may be hard to hear in a combat setting).
- Palpate - feel for flail segments or crepitus.

Assemble and Check Equipment - Gather 14-gauge, 3.25-inch needle/catheter, alcohol swab and gloves.

Prepare Patient

- Position the patient in upright position (if possible)
- Explain the procedure to the patient, if conscious
- Expose the anterior chest

Identify Landmarks **ON THE AFFECTED SIDE**

- Midclavicular line
- 2nd Intercostal space

Perform the Procedure

- Cleanse the area
- Insert catheter - Firmly insert the needle into the skin over the top of the third rib into the second intercostal space at a 90 degree angle.
- Puncture the parietal pleura - Ensure the chest cavity has been penetrated, as evidenced by feeling a "pop" as the needle enters the chest cavity. The pressure may be so great that a rush of air may be encountered.
- Remove needle - secure catheter to chest wall.

Reassess the Patient

- Inspect, Auscultate, and Palpate (IAP) Chest
- Visually inspect the neck
- Monitor the patient's response to the needle thoracentesis (respiratory rate, lung sounds, and skin color)
- Be ready to insert a 2nd catheter if the patient does not improve.

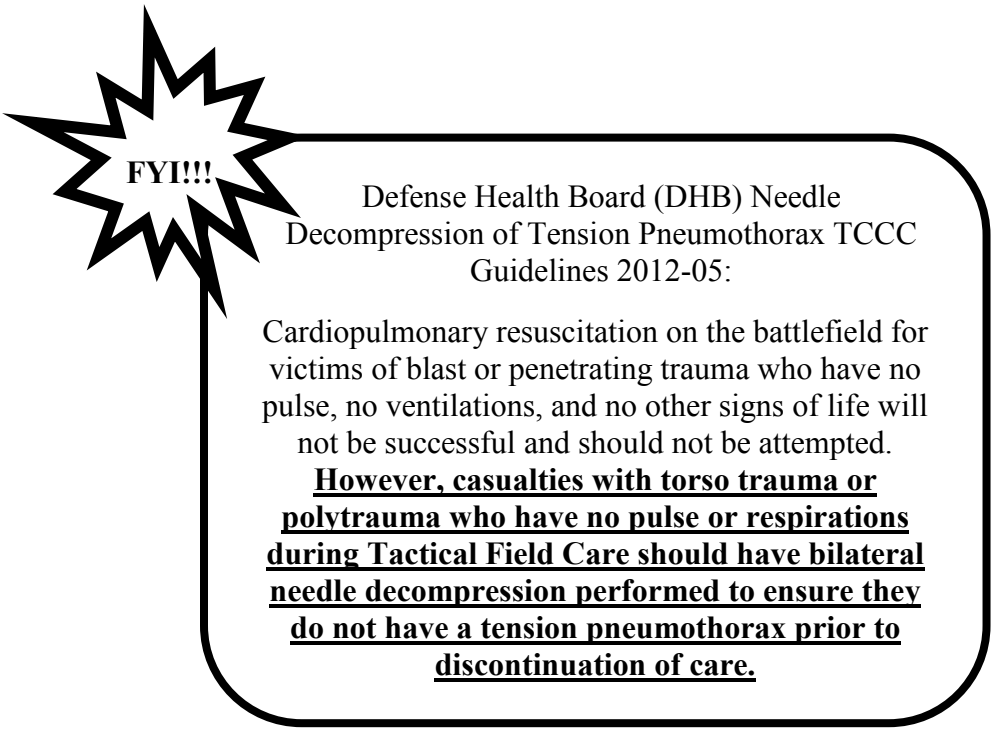
8. COMPLICATIONS

Hemothorax - blood within the pleural space. May be caused when the needle punctures any vessels within the chest wall.

Cardiac Tamponade - pressure on the heart that occurs when blood or fluid builds up in the space between the heart muscle and the pericardium. Ensuring that the insertion site for the needle is at or lateral to the nipple line will help avoid this complication.

Subcutaneous emphysema - released air becomes trapped within the subcutaneous tissue. Feels like "Rice Krispies" underneath the skin.

Misdiagnosis - performing a needle thoracentesis on a casualty with non-penetrating torso trauma could result in a pneumothorax if not already present.



CASUALTY ASSESSMENT AND RESPIRATORY TRAUMA

Care Under Fire Phase: In the absence of life-threatening hemorrhage from the respiratory system, the material in this section is unlikely to be addressed in the Care Under Fire phase.

Tactical Field Care Phase: During this phase, you will be required to assess the quality of breathing, which will require you to expose the casualty's chest. Consider needle thoracentesis if warranted. Needle thoracentesis is a skill that is used during the Tactical Field Care phase in the treatment of respiratory trauma. If a casualty has a torso injury and difficulty breathing, you should perform a needle thoracentesis. Remember, a tension pneumothorax can develop at any time after an injury, not just immediately after, so continuous assessment of the casualty is necessary. Don PPE. Note and treat all respiratory injuries. Complete a head to toe assessment using DCAP-BTLS noting and treating additional injuries. Determine if vascular access is required (see Tactical Fluid Resuscitation lesson) and give fluids if necessary. If the casualty is able to drink fluids, they should be encouraged to do so. Consider pain medications and give antibiotics if warranted. Reassess all care provided. Document care given, prevent hypothermia, and TACEVAC.

REFERENCE

Prehospital Trauma Life Support, current Military Edition

Field Medical Training Battalion

NEEDLE THORACENTESIS
PERFORMANCE EXAMINATION CHECKLIST v3.0

STUDENT (Rank Last Name, First Name)	**PLT**

PROCEDURAL STEPS FOR PERFORMING A NEEDLE THORACENTESIS	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
*** State the indication for a needle thoracentesis (tension pneumothorax)**						
State the possible complications of a needle thoracentesis (hemothorax, cardiac tamponade, subcutaneous emphysema)						
*** Assess casualty and make decision to decompress (ABC's, LLF, S/SX of pneumothorax)**						
Assemble and check equipment (14-gauge, 3.25-inch needle/catheter, alcohol)						
Prepare patient (position, explain, expose)						
*** Identify landmarks (midclavicular line, 2nd intercostal space, equal/lateral to nipple line)**						
Cleanse the area						
*** Insert catheter at 90-degree angle and puncture the parietal pleura**						
*** Remove needle (allow lung to decompress)**						
Secure catheter to chest						
Reassess & monitor patient for improvement (decrease in respiratory difficulty)						

GRADING CRITERIA	**1ST**	**2ND**	**3RD**
Total Non-Critical Items (3 or greater constitutes a failure)			
Total Critical Items (Any critical items missed constitutes a failure)			
"Stop & Think" (2 allowed for critical items, third constitutes a failure)			

1st Evaluator:	**2nd Evaluator:**	**3rd Evaluator:**
PASS / FAIL	**PASS / FAIL**	**PASS / FAIL**
Student signature:	**Student signature:**	**Student signature:**
Notes:	**Notes:**	**Notes:**

Respiratory Trauma Review

1. Identify five structures found in the mediastinum.

2. Identify the appropriate treatment for a simple rib fracture.

3. Identify the two serious consequences of a tension pneumothorax.

4. Identify the treatment for a sucking chest wound.

5. Identify the major landmarks used in performing a needle thoracentesis.

6. What are the indications for a needle thoracentesis? Contraindications?

7. List the equipment needed to perform a needle thoracentesis.

8. Explain the acronym IAP and what you are specifically looking for before making the decision to perform a needle thoracentesis.

9. Explain how and where to insert the needle/catheter.

10. Identify the possible complications of performing a needle thoracentesis.

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FMST 407

Manage Abdominal Injuries

TERMINAL LEARNING OBJECTIVE

1. Given a casualty in an operational environment, **treat abdominal injuries** reducing the risk of further injury or death. (8404-MED-2006)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or title**, identify anatomy of the major abdominal organs**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2006a)

2. Without the aid of reference, given a description or title**, identify the significance of the types of organs in abdominal injuries**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2006b)

3. Without the aid of reference, **identify the two major mechanisms of abdominal trauma**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2006c)

4. Without Without the aid of reference, given a description or list, **identify the signs and symptons of abdominal injuries**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2006d)

5. Without the aid of reference, given a description or list**, identify the proper treatment of abdominal injuries**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2006e)

6. Without the aid of reference, given a simulated casualty with abdominal injuries and a Corpsman Assault Pack, **manage simulated abdominal injuries**, to prevent further injury or death, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2006f)

OVERVIEW

Unrecognized abdominal injury is one of the major causes of death in the trauma casualty. Early deaths from severe abdominal trauma typically result from massive blood loss caused by either penetrating or blunt injuries. The abdomen contains the major organs of digestion and excretion. The abdominal cavity is located below the diaphragm; its boundaries include the anterior abdominal wall, the pelvic bones, the vertebral column, and the muscles of the abdomen and flanks. Many organs lie in both the abdomen and the pelvis. The simplest and most common method of describing the portions of the abdomen is by quadrants. In this system, the abdomen is divided into four equal parts by two imaginary lines that intersect at right angles at the umbilicus. The abdomen can further be divided to more specifically identify a region of the abdomen (see Figure 1).

1. MAJOR ABDOMINAL ORGANS AND THEIR LOCATIONS

Right Upper Quadrant (RUQ)

Colon - the part of the large intestine that extends from the cecum to the rectum.
Right Kidney - one of a pair of organs situated in the body cavity near the spinal column that excrete waste products. The kidneys are bean-shaped organs that consist chiefly of nephrons by which urine is secreted, collected, and discharged through the ureter to the bladder.
Pancreas - a large lobulated gland that secretes digestive enzymes and the hormones insulin and glucagon. Only a small portion of the pancreas is located in the RUQ.
Liver - a large, very vascular, glandular organ that secretes bile and causes important changes in many of the substances contained in the blood.
Gallbladder - a membranous muscular sac in which bile from the liver is stored.

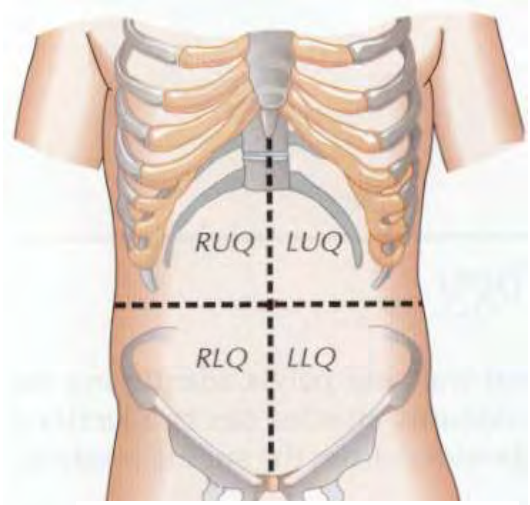

Figure 1. Areas of the Abdomen

Left Upper Quadrant (LUQ)

Colon - see above.
Left Kidney - see above.
Pancreas - see above for function. Most of the pancreas is located in the LUQ.
Spleen - a highly vascular, ductless organ that is located in the left abdominal region near the stomach or intestine and is concerned with final destruction of red blood cells, filtration and storage of blood, and production of lymphocytes. Severe bleeding is consistent with injury to this organ.
Stomach - muscular, distensible, saclike portion of the alimentary tube between the esophagus and the colon.

Right Lower Quadrant (RLQ)

Ascending Colon - see above. Ascending means to move upwards.
Small Intestine - the part of the intestine that lies between the stomach and colon; it consists of duodenum, jejunum, and ileum. It secretes digestive enzymes, and is the chief site for the absorption of digested nutrients.
Major artery and vein for right leg - iliac artery and vein.
Appendix - a small sac extending from the large intestine.

Left Lower Quadrant (LLQ)

Descending Colon - see above. Descending means to move downwards.
Small Intestine - see above.
Major artery and vein for left leg - iliac artery and vein.

2. SIGNIFICANCE OF ABDOMINAL ORGANS

The abdominal organs can be classified as either "hollow" or "solid" organs, depending on their function.

Solid Organs - solid masses of tissue (liver, spleen, pancreas and kidneys)
Significance - highly vascular organs where injury may cause severe bleeding.

Hollow Organs - gastrointestinal/urinary tract through which materials pass. The stomach, intestines, and bladder are hollow organs.
Significance - injury to these organs may cause septicemia and toxicity.

3. MECHANISMS FOR ABDOMINAL INJURY

Assessing the patient for abdominal injuries begins with knowledge of the MOI. Numerous mechanisms lead to the compression and shearing forces that may damaged abdominal organs. A casualty may experience considerable deceleration forces when involved in motor vehicle crashes, struck or run over by a vehicle, or after falling from a significant height. Any protective gear worn by the casualty should be noted. Abdominal injuries can be caused by blunt or penetrating trauma.

Blunt Trauma - Blunt trauma often poses a greater threat to life because potential injuries are more challenging to diagnose than those caused by penetrating trauma. The injuries to abdominal organs result from either compression or shearing forces. In compression incidents, the organs of the abdomen are crushed between solid objects. Shearing forces create rupture of the solid organs or rupture of blood vessels in the cavity because of the tearing forces exerted against their supporting ligaments. The liver and spleen can shear and bleed easily and blood loss can occur at a rapid rate. Increased intra-abdominal pressure produced by compression can rupture the diaphragm, causing the abdominal organs to move upward into the pleural cavity.

Penetrating Trauma - A foreign object enters the abdomen and opens the peritoneal cavity to the outside. Penetrating trauma, such as a gunshot or stab wound, is more readily visible than blunt trauma. Multiple organ damage can occur in penetrating trauma, although it is less likely with a stab wound than with a gunshot wound. A mental visualization of the

potential trajectory of a missile, such as a bullet or the path of a knife blade, can help identify possible injured internal organs.

4. **SIGNS AND SYMPTOMS**

History of the injury can be obtained from the patient or from bystanders. If the injury is penetrating, questions should focus on the type of weapon, number of times shot or stabbed, and amount of blood at the scene.

Unless there are associated injuries, casualties with abdominal trauma generally present with a patent airway. When abnormalities are found in the assessment of the abdomen, it should be exposed and examined in greater detail. This involves inspection and palpation of the abdomen looking and feeling for soft tissue injuries and distention.

The most reliable indicator of intra-abdominal bleeding is the presence of shock from an unexplained source.

Soft tissue injuries include contusions, abrasions, stab or gunshot wounds, obvious bleeding, and unusual findings such as evisceration or impaled objects. Palpation of the abdomen is undertaken to identify areas of tenderness. Ideally, palpation is begun in an area where the casualty does not complain of pain. Then, each of the abdominal quadrants is palpated. While palpating a tender area, the provider may note that the casualty "tenses up" the abdominal muscles in that area. This reaction, called voluntary guarding, serves to protect the patient from pain.

Involuntary guarding represents rigidity or spasm of the abdominal wall muscles when the casualty is distracted. Deep or aggressive palpation of an obviously injured abdomen should be avoided because palpation may dislodge blood clots and/or promote existing hemorrhage and may increase spillage of contents of the GI tract if perforations are present. Great care during palpation should also be exercised if there is an impaled object. Casualties with altered mental status, such as those with a traumatic brain injury (TBI) may have unreliable examination.

Auscultation of bowel sounds is generally not a helpful field assessment tool. Time should not be wasted trying to determine their presence or absence because this diagnostic sign will not alter the field management of the casualty.

The assessment of abdominal injuries can be difficult, especially with the limited diagnostic capabilities of the field setting. An index of suspicion for abdominal injuries should develop from a variety of sources of information, including mechanism of injury (MOI), findings from the exam, and input from the casualty or bystanders. Some signs that raise the index of suspicion are:

- MOI consistent with rapid deceleration or significant compression forces
- Soft tissue injuries to the abdomen, flank, or back

- Shock without an obvious cause
- Level of shock greater than explained by other injuries
- Significant abdominal tenderness on palpation or with coughing
- Involuntary guarding
- Diminished or absent bowel sounds

FYI: Only about 15% of casualties with stab wounds to the abdomen will require surgical intervention, but 85% of casualties with gunshot wounds will need surgery for definitive management of their injuries.

5. TREATMENT OF INJURIES

The key aspects of field management of abdominal trauma are to recognize the presence of potential injury and initiate transport to a higher echelon of care.

Blunt Trauma

Treatment for blunt trauma to the abdomen includes maintaining the ABCs of the patient, collecting vital signs, gathering information for a history, treating for shock, and placing the patient in the supine position with the knees slightly flexed. Remember that with a patient with blunt trauma you need to keep them calm so that you can perform your duties and not to strongly palpate the abdomen because you do not know the extent of the internal injuries. The final step in treating blunt abdominal trauma is to TACEVAC the patient, as the definitive treatment that patient needs is beyond your scope of care.

Figure 2. Impaled knife in chest

Impaled objects (see Figure 2) Because removal of an impaled object may cause additional trauma and because the object's distal end may be actively controlling the bleeding, removal of it in the field environment is contraindicated. The impaled object should neither move nor be removed. If bleeding occurs around it, direct pressure should be applied around the object to the wound with a bulky dressing that stabilizes the object and prevents movement.

Evisceration (see Figure 3) A section of intestine or other abdominal organ is displaced through an open wound and protrudes externally outside the abdominal cavity. Efforts should focus on protecting the protruding segment of intestine or other organ from damage. If the intestine or some of the other abdominal organs become dry, cell death will occur. Therefore the eviscerated abdominal contents should be covered with a sterile dressing that has been moistened with saline. These dressings should be periodically remoistened with

saline to prevent them from drying out. Wet dressings may be covered with a large, dry dressing to keep the casualty warm.

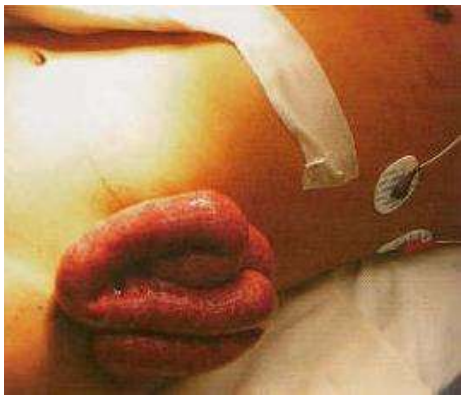

Figure 3. Evisceration of bowel

FYI! Under normal circumstances, treatment of eviscerated bowel requires only a moist sterile dressing. Abdominal contents normally do not need to be reinserted into the abdominal cavity.

CASUALTY ASSESSMENT AND ABDOMINAL INJURIES

Care Under Fire Phase: In the absence of life-threatening hemorrhage from the abdomen, the material in this section is unlikely to be addressed in Care Under Fire.

Tactical Field Care Phase: During this phase, you will be required to inspect the abdomen using DCAP-BTLS for any signs of injury. Don BSI. Note and treat all abdominal injuries. Complete a head to toe assessment using DCAP-BTLS noting and treating additional injuries. Determine if vascular access is required (see Tactical Fluid Resuscitation lesson) and give fluids if necessary. If the casualty is able to drink fluids, they should be encouraged to do so. Consider pain medications and give antibiotics if warranted. Reassess all care provided. Document care given, prevent hypothermia, and TACEVAC.

REFERENCE

Prehospital Trauma Life Support, current Military Edition

Abdominal Review

1. Which quadrant contains the appendix?

2. Identify the solid organs and explain their significance.

3. Describe the appropriate treatment for an impaled object.

4. Describe the appropriate treatment for an abdominal evisceration.

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FMST 408

Manage Musculoskeletal Injuries

TERMINAL LEARNING OBJECTIVE

1 . Given a casualty in an operational environment, standard field medical equipment and supplies, **treat musculoskeletal injuries** to reduce the risk of further injury or death. (8404-MED-2004)

ENABLING LEARNING OBJECTIVES

1 . Without the aid of reference, given a description or list, **identify the anatomy of the musculoskeletal system**, within 80% accuracy per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2004a)

2 . Without the aid of reference, given a description or list, **identify the management of soft tissue injuries**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2004b)

3 . Without the aid of reference, given a description or list, **identify the management of fractures**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2004c)

4 . Without the aid of reference, given a description or list, **identify the principles of splinting**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2004d)

5 . Without the aid of reference, given a simulated casualty with musculoskeletal injuries and a Corpsman Assault Pack, **manage the simulated casualty**, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2004e)

1. **ANATOMY OF THE MUSCULOSKELETAL SYSTEM**

Understanding the gross anatomy and physiology of the human body is the foundation on which assessment and management are based. Without a good grasp of the structures of the bones and muscles, one will not be able to relate kinematics and superficial injuries to injuries that are internal.

Skeletal System – the mature human body has approximately 206 bones separated into categories by shape.

Long bones – femur, humerus, ulna, radius, tibia and fibula

Short bones – metacarpals, metatarsals and phalanges

Flat bones – sternum, ribs and scapulas

Sutural bones – variable and irregularly shaped bones in the sutures between the bones of the skull

Sesamoid bones - located within tendons; patella is the largest

What happended to the "irregular bones"

- This is a more generalized category that contains bones that do not fall into the long, short or flat classification.

Muscular System – the human body has more than 700 individual muscles, which are categorized by function. (See Figure 1)

Skeletal (voluntary) – muscle fiber is striated, or striped, and is under the control of the individual's will. Skeletal muscle tissues are usually attached to bones. When muscle fibers are stimulated by an action of a nerve fiber, the fibers contract and relax. This interaction between muscle and nervous fibers produces movement.

Smooth (involuntary) – muscle fibers are smooth, or non-striated, and are not under the control of the individual's will. Smooth muscle tissue is found in the walls of hollow organs, such as the stomach, intestines, blood vessels, and urinary bladder. Smooth muscle tissues are responsible for the movement of food through the digestive system, constricting blood vessels, and emptying the bladder.

Cardiac – muscle cells are striated and are joined end to end, resulting in a complex network of interlocking cells. Cardiac muscles are involuntary muscles and are located only in the heart. These tissues are responsible for pumping blood through the heart chambers and into certain blood vessels.

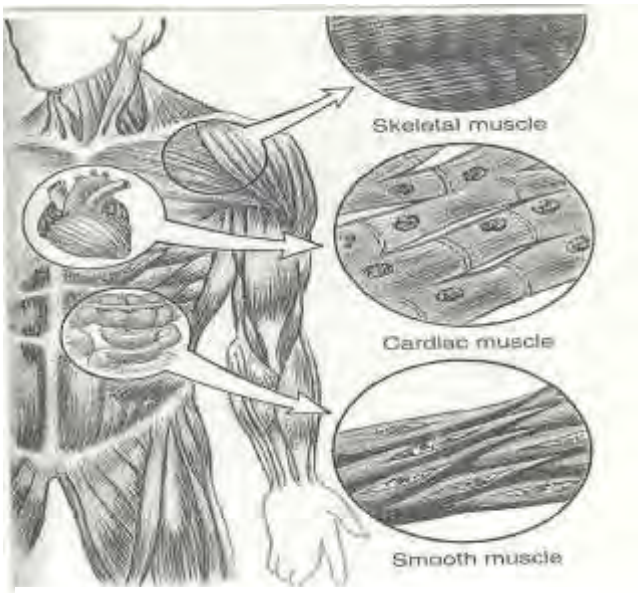

Figure 1. Three Types of Muscles

Osseous Connective Tissue – this type of tissue, known as "bone tissue" is dense fibrous connective tissue that forms tendons, ligaments, cartilage, and bones. These tissues form the supporting framework of the body. (See Figure 2)

Tendon – a band of tough, inelastic, fibrous tissue that connects a muscle to a bone

Ligament – a band of tough, fibrous tissue connecting bone to joint

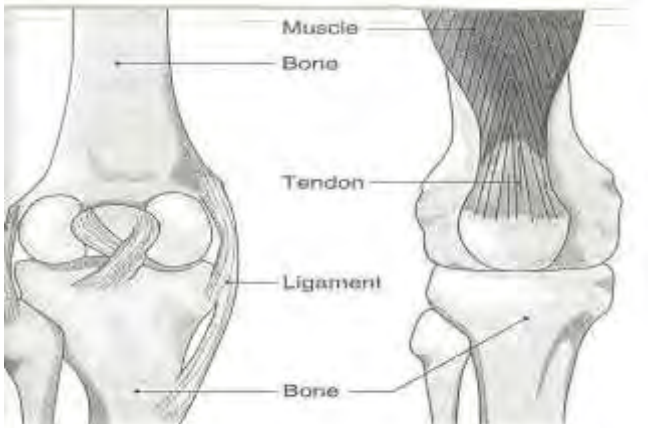

Figure 2. Osseous Connective Tissue

2. MANAGEMENT OF SOFT TISSUE INJURIES

Causes of Wounds (Kinematics of Trauma) – Although it is not always necessary to know what agent or object has caused the wound, it is helpful. Of special concern in wartime setting is the velocity of wound-causing missiles (bullets or shrapnel). A low-velocity missile damages only the tissues with which it comes into contact. On the other hand, a high-velocity missile can do enormous damage by forcing the tissues and body parts away from the track of the missile with a velocity only slightly less than that of the missile itself. These tissues, especially bone, may become damage-causing missiles themselves, thus accentuating the destructive effects of the missile.

Having classified the wound into one or more of the general categories listed, the FMST will have a good idea of the nature and extent of the injury, along with any special complications that may exist. This information will aid in the treatment of the casualty.

Open Soft Tissue Injuries – an injury in which the skin is interrupted, or broken, exposing the tissues underneath.

Abrasions – Occur when skin is rubbed or scrapped off. (See Figure 3)

Treatment:

- Hemorrhage is usually so minimal that primary treatment may only require cleansing of the wound.
- Small bandages may be applied, but tactical situations will usually preclude applying field dressings that are needed for more serious injuries.
- A large amount of dirt may be ground into the wound, therefore secondary treatment measures should focus on preventing or stopping infections.

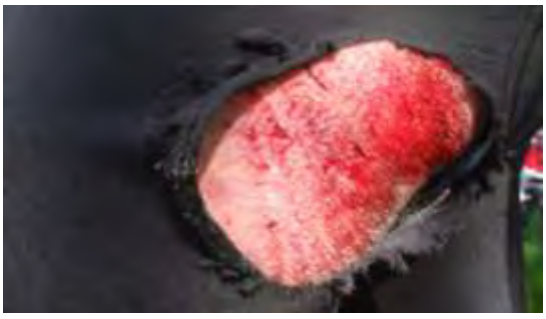

Figure 3. Abrasion

Lacerations – Torn skin with ragged irregular edges and masses of torn tissue underneath. (See Figure 4)

Figure 4. Laceration

Treatment:

- Generally the same as for abrasions
- Control hemmorhage
- If major tendons and muscles are completely severed, immobilize limb to prevent further damage.
- Treat for shock

Avulsion - An injury in which flaps of skin are torn loose or completely pulled off. (See Figure 5)

Treatment

Figure 5. Avulsion

- Control bleeding
- Apply field dressing to avulsed area.
- Prevent further contamination
- Ensure avulsed flap is lying flat and that it is aligned in its normal position.
- Make every effort to preserve the avulsed part (wrap the part in a saline or water soaked field dressing, pack wrapped part in ice, whenever possible. Be careful to avoid direct contact between the tissue and ice.)
- Transport the avulsed part with the patient, but keep it well protected from further damage and out of view of the patient.
- Immobilize extremity or body part as indicated by the severity of the avulsion.

Traumatic Amputations - Non-surgical removal of a limb or other appendage of the body. Because blood vessels are elastic they tend to spasm and retract into surrounding

tissue. With complete amputations there is less bleeding then with partial or degloving cases. (See Figure 6)

Treatment

- If life-threatening bleeding is present, apply a tourniquet immediately
- If there is non life-threatening bleeding, a pressure dressing may be used. More than one may be necessary to gain control of bleeding.
- Make every effort to preserve the amputation.

Figure 6. Traumatic Amputation

- Wrap amputated part in sterile dressing, place in ice and send with patient
- TACEVAC

Closed Soft Tissue Injuries – An injury where there is no open pathway from the outside to the injured site. Examples include strains, sprains and dislocations.

Strain - Injury to a muscle or tendon resulting from over stretching or over exertion. The chief symptoms of a strain are pain, lameness or stiffness moderate swelling at the place of injury, discoloration due to the escape of blood from injured blood vessels into the tissues, possible loss of power, and a distinct gap felt at the site.

Treatment

- Supportive strapping or bandaging
- Immobilize by splinting so that affected muscle is in relaxed position, if injury is severe.
- R.I.C.E. (Rest, Ice, Compression, Elevation)

Sprain - A joint injury resulting in partial tearing or stretching of supporting ligaments. Symptoms of a sprain include pain or pressure at the joint, pain upon movement, swelling and tenderness, possible loss of movement, and discoloration. Treat all sprains as fractures until ruled out by X-rays. (See Figure 7)

Figure 7. Ankle Sprain

Treatment

- Treat like a fracture
- Supportive strapping or bandaging
- R.I.C.E. (Rest, Ice, Compression, Elevation)
- Pain management
- TACEVAC

Dislocation - When a bone is forcibly displaced from its joint. In some cases, the bone slips back quickly into its normal position, but at other times it becomes locked in the new position and remains dislocated until it is put back into place. A dislocation is likely to bruise or tear the muscles, ligaments, blood vessels, tendons, and nerves near a joint. Rapid swelling and discoloration, loss of ability to use the joint, severe pain and muscle spasms, possible numbness and loss of pulse below the joint, and shock are characteristic symptoms of dislocations. (See Figure 8)

FIGURE 1. Photo (A) of the left ankle of a 33-year-old male recreational softball player shows tibiotalar dislocation of the ankle. The foot is displaced medially, and the skin is tented over the prominence of the lateral malleolus. Anteroposterior radiograph of the same ankle (B) shows that the talus is completely disassociated from the ankle mortise (arrow), and a small avulsion of the fibula is evident (arrowhead).

Figure 8. Dislocation

Treatment

- Attempt to reduce only if no pulse is present in the extremity
- Splint as found to immobilize injured part
- Pain management
- Treat for shock
- TACEVAC

Complications

- Hemorrhage caused by seperated bone ends tearing muscle tissue and laceration of blood vessels.

- Nerve damage due to the cutting or pinching of nerves by seperated bone ends or muscle injury.

3. **MANAGEMENT OF FRACTURES**

TYPES OF FRACTURES

Figure 9. Open Fracture

Open Fracture – A broken bone that breaks the overlying skin. The bone may protude through the skin. (See Figure 9) Penetrating objects such as bullets may go through the flesh and break the bone.

Closed Fracture - A broken bone with no skin penetration. The tissue beneath the skin may be damaged. (See Figure 10)

SIGNS AND SYMPTOMS OF FRACTURES

Inability to move the extremity
Discoloration
Deformity
Edema
Pain with or without movement
Protruding bone
Crepitus (crunching, grating sound/feeling)
Any injury that may indicate fracture (i.e. gun shot wound)

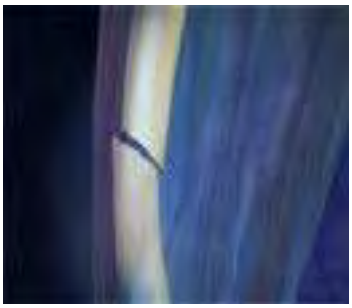

Figure 10. Closed Fracture

GENERAL TREATMENT FOR FRACTURES – The following guidelines can be applied to any type of fracture, regardless of location.

Control hemorrhage
Treat for shock
Check distal pulses before and after splinting
Immobilize the fracture using splints
Recheck PMS
Relieve pain (whenever possible)
Reductions of fractures are not done in the field, unless distal pulses are not present
Document treatment
Monitor and TACEVAC

4. **PRINCIPLES OF SPLINTING**

TYPES OF SPLINTS – Splints are used to immobilize a portion of the body, prevent further damage and alleviate pain.

Rigid Splints – cannot be changed in shape. The injured body part must be positioned to fit the splint. Examples include board splints made of wood, plastic, or metal.

Formable Splints - Formable splints can be molded into various shapes and combinations to accommodate the shape of the injured extremity. Examples include

vacuum splints, pillows, blankets, cardboard splints, SAM splints and wire ladder splints. (See Figure 11)

Figure 11. SAM Splint

Improvised Splints – Improvised splints are made from any available material that can be used to stabilize a fracture. Examples include sticks, branches and poles.

Anatomical Splints - Use of the casualty's body as a splint. Examples include securing the legs together, securing the arm to the body, and taping the fingers together. (See Figure 14)

Figure 12. Anatomical Splint

Manufactured Splints – Designed for specific injuries and specific applications. Examples include the traction splint and pneumatic air splints. (See Figures 13 and 14)

Figure 13. Traction Splint

Figure 14. Pneumatic Air Splint

Bandages in Splinting - Bandages can be used to wrap or bind a body part. Bandages hold splints in place, apply additional pressure, and protect the casualty from further harm.

Sling - a bandage suspended from the neck to support an upper extremity. When using a sling, position the hand higher then the elbow and never cover the fingers.

Swathe - Any band or piece of cloth used to further immobilize a fracture.

GENERAL GUIDELINES FOR SPLINTING

Control hemorrhage and treat for shock.
Expose fracture site.
Establish distal pulse prior to splinting.
If bone is exposed, ensure to cover the ends with sterile dressing prior to splinting.
Splint fracture in position found.
Attempt to straighten a deformed limb only if it is a closed injury with no distal pulses.
Do not try to reposition or put back an exposed bone.
Move the fractured part as little as possible while applying the splint.
Immobilize the splint above and below the fracture.
Reassess distal pulses after splint is secured.
When in doubt, treat all injuries as a possible fracture.
TACEVAC as needed.

TECHNIQUES FOR SPLINTING FRACTURES

There are various ways and techniques to immobilize fractures. The FMST must be able to apply the basic splints for the most common fractures:

Fractured Jaw

- Apply a bandage to immobilize jaw (Modified Barton). (See Figure 15).
- The bandage should pull the lower jaw forward
- Support should be on the head, not behind neck.
- Do not lay casualties with lower jaw fractures on their back. Doing so may cause airway obstruction.

Figure 15. Immobilizated Jaw

Fractured Clavicle

- Immobilize using figure eight bandage. (See Figure 16)
- Bend casualty's arm on injured side, forearm across chest.
- Palm should be turned in, thumb pointed up.
- Hand should be raised 4 inches above elbow.
- Support using a cravat to cradle the arm & tie around the body for immobilization (Sling and Swath). (See Figure 17)

Figure 16. Immobilizated Clavicle

Figure 17. Sling and Swathe

Fractured Humerus

- Check for distal pulse
- If fracture is located on the upper arm near shoulder, place padding in the armpit, bandage arm securely to body (See Figure 18).
- If fracture is located in the middle of upper arm, use splint on outside of arm.
- Splint the injury to the body using a full arm wrap (Kerlex or cravat wrap). Support with sling (See Figure 19).
- If fracture is near elbow, splint in position found. Support with sling.
- Re-check distal pulse.

Figure 18. Upper Arm Splint 1

Figure 19. Upper Arm Splint 2

Fractured Forearm

- Check for distal pulse
- If only one bone in the forearm is broken, the other may be used as a splint.
- Apply two splints (rigid or formable), one on top and one on the bottom.
- Ensure that the splints cover from wrist to elbow (rigid or formable splint). (See Figure 20)
- Use bandages to hold splints in place.
- Re-check distal pulse
- Place casualty's forearm across the chest, palm turned in and thumb pointing up
- Support with sling

Figure 20. Forearm Splint

Fracture Wrist/Hand

- Check radial pulse
- Splint in position of function leaving fingers exposed (formable splint). (See Figure 21)
- Re-check radial pulse
- Support with sling

Figure 21. Wrist/Hand Splint

Fractured Ribs

- Assess ABCs for possible complications

- Ordinarily, simple rib fractures are NOT bound, strapped or taped if the victim is reasonably comfortable. They may only require analgesics.

- Multiple fractures may require immobilization by strapping the arm of the injured side to the chest to limit motion.

- Arm should be against the chest, palm flat, thumb up and forearm raised to a 45 degree angle. (See Figure 22)

- Secure arm to chest using swath bandage.

- For multiple fractures, you may attempt to immobilize flail segments using tape. (See Figure 23)

- NEVER encircle the chest with any type of constricting bandage. This will only make breathing more difficult!

Figure 22. Rib Splint

Figure 23. Flail Segments

Fractured Pelvis

- Check distal pulse

- Place patient in position of comfort (legs straight or knees bent)

- Place pillow or padding between the legs to immobilize hip

- Wrap sheet (or poncho) snuggly around pelvis for support

- Tie knees and ankles together for greater stability (Figure 24)

- Re-check distal pulse

Figure 24. Pelvis Splint

Fractured Femur

- Check distal pulse

- Using four (4) cravats to secure injured leg to the uninjured leg (anatomical splint) (See Figure 25)

- Secure thighs together

- Secure another cravat directly above and below the knees

- Using a figure 8 wrap, secure ankles & feet together

- Re-check distal pulse

**NOTE: Consider traction splinting for midshaft fractures.

Figure 25. Femur Splint

Fractured Patella

-Check distal pulse

- Splint in position of comfort

- Place splint underneath the entire leg. Ensure you have padding at least under the knee and ankle.

- Secure splint in four places (See Figure 26):

  Just below knee

  Just above knee

  Around the ankle

  Around the thigh

- Re-check distal pulse

Figure 26. Patellar Splint

Fractured Tibia/Fibula

- Check distal pulses
- If only one bone is broken, the other can act as a splint
- Utilize the stirrup method with the SAMS splint (See Figure 27)
- Apply splint on both sides of tibia and fibula
- Use kerlex bandage to secure splint
- Immobilize from knee to ankle
- Re-check distal pulse

Figure 27. Stirrup Splint

Fractured Ankle/Foot

- Check pedal pulse
- Splint injury (See Figure 28)
- Wearing boots: use figure 8 with a cravat to secure ankles together.
- Without boots: Wrap ankle with a bandage (kerlex), then use a figure 8 wrap with a cravat to secure ankles and feet together.
- Re-check pedal pulse

Figure 28. Ankle/Foot Splint

Spinal Injury - The first priority is to ensure the casualty is in a safe location. Next, the FMST may begin spinal immobilization procedures.

Indications for spinal immobilization:

High speed vehicle crash (>30mph)

Falls from great heights (2-3x body height)

Direct, blunt neck trauma

Blast injury

Spinal Immobilization:

To be effective, the casualty must be immobilized from the head to the pelvis.

Do not block the casualties airway

Use a C-Collar to immobilize the neck

If available secure casualty to a long spine board

If full immobilization is not possible- prevent excessive, unnecessary movement of the casualty.

NOTE*:* Remember to treat all life-threatening injuries first prior to treating fractures. Not all casualties will require evacuation.

CASUALTY ASSESSMENT AND MUSCULOSKELETAL INJURIES

Care Under Fire Phase: If the casualty has a life-threatening hemorrhage, apply a tourniquet. No other musculoskeletal injuries will be treated during this phase of care.

Tactical Field Care Phase: During this phase, you will be required to inspect the casualty for any signs of injury. Don BSI. Complete a head to toe assessment using DCAP-BTLS. Note all musculoskeletal injuries and treat if time permits. Note and treat additional injuries. Determine if vascular access is required (see Tactical Fluid Resuscitation lesson) and give fluids if necessary. If the casualty is able to drink fluids, they should be encouraged to do so. Consider pain medications and give antibiotics if warranted. Reassess all care provided. Document care given, prevent hypothermia, and TACEVAC.

REFERENCE

Prehospital Trauma Life Support, current Military Edition

Musculoskeletal Injuries Review

1. List four examples of long bones.

    1)
    2)
    3)
    4)

2. What is the treatment for an avulsion injury?

3. Explain the definition of a sprain.

4. List four signs/symptons of a fracture.

    1)
    2)
    3)
    4)

5. Describe a formable splint and and example.

6. What are the steps for splinting a fractured tibia or fibula?

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FMST 409

Manage Head, Neck, and Face Injuries

TERMINAL LEARNING OBJECTIVE

1. Given a casualty in an operational environment, equipment and supplies**, treat head, neck, and facial injuries** to reduce risk of further injury or death. (8404-MED-2005)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify the anatomy of the head**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2005a)

2. Without the aid of reference, given a description or list, **identify the types of head injuries**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2005b)

3. Without the aid of reference, given a description, **select the appropriate treatment for a head injury**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition (8404-MED-2005c)

4. Without the aid of reference, given a description or list, **identify the anatomy of the neck**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2005d)

5. Without the aid of reference, given a description or list, **identify the types of neck injuries**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2005e)

6. Without the aid of reference, given a description or list, **select the appropriate treatment for a neck injury**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2005f)

7. Without the aid of reference, given a description or list, **identify the anatomy of the face**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2005g)

8. Without the aid of reference, given a description or list, **identify the types of facial injuries**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2005h)

9. Without the aid of reference, given a description or list, **select the appropriate treatment for a facial injury**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2005i)

10. Without the aid of reference, given a simulated casualty with head, face, and/or neck injuries and standard field medical equipment and supplies, **manage the simulated casualty**, to prevent further injury or death, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2005j)

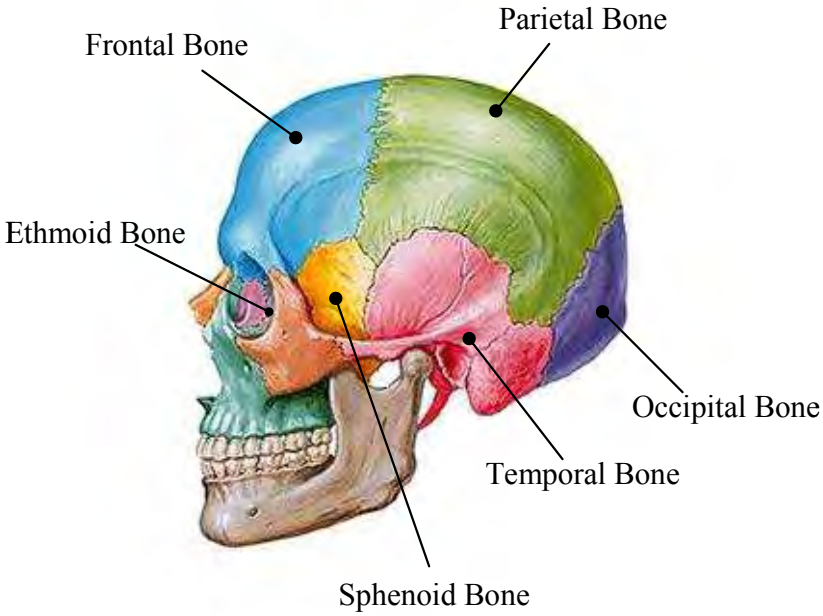

Figure 1. Anatomy of the Head

1. **ANATOMY OF THE HEAD**

Head (see Figure 1)

Cranial Vault - the part of the skull that contains the brain. Divided into six sections:

Occipital - the posterior lobe of each cerebral hemisphere that bears the visual cortex and has the form of a 3-sided pyramid
Temporal - a large lobe of each cerebral hemisphere that is situated in front of the occipital lobe and contains a sensory area associated with the organ of hearing
Parietal - forming the upper posterior wall of the head
Frontal - the anterior division of each cerebral hemisphere
Sphenoid - a winged compound bone of the base of the cranium
Ethmoid - a light spongy cubical bone forming much of the walls of the nasal cavity and part of those of the orbits

Brain - divided into three major areas:

Cerebrum - The largest of the three subdivisions of the brain, superiorly situated and sometimes called the "gray matter." It controls willful movement and sensory information such as hearing, speech, visual perception, emotions and personality.

The brain is protected and cushioned by aprroximately 75 ml of an internal fluid called Cerebral Spinal Fluid (CSF). The CSF also combats infection and cleanses the brain and spinal cord.

Cerebellum - situated posterior to the brain stem and is sometimes called the "little brain" or "white matter." It coordinates the various activities of the brain, particularly movement, coordination and balance.

Brain Stem - broken down into four parts which connect the spinal cord to the brain and cranial nerves:

Medulla - the most inferior part of the stem which contains the center that regulates respiratory rate, blood pressure, heart rate, breathing, swallowing and vomiting.
Pons - sleep center and respiratory center.
Midbrain - regulates muscle tone.
Reticular Activating System - scattered throughout the brain stem and is important in arousing and maintaining consciousness.

2. TYPES OF HEAD INJURIES

Soft Tissue Injuries

Definition - injury to the overlying skin of the scalp, which may be in combination with injury to the skull, brain and/or face. (See figure 2)

Causes
- Penetrating trauma (rifle, impaled objects, missile wounds)
- Blunt trauma (MVA, blast)

Signs and Symptoms
- Profuse bleeding no matter how minor the injury
- Lacerations
- Avulsions
- Pain
- Anxiety
- Edema
- Ecchymosis
- Signs/symptoms of hypovolemic shock

Figure 2. Injury to scalp

Skull Injuries

Open Skull Injuries

Definition - injury where cerebral substance is visable through a scalp laceration. Open head injuries usually combine lacerations of the scalp, fragmentation of the skull from fractures, and lacerations of the membranes that cover the brain. The brain may be relatively untouched, or it may be extensively bruised or lacerated.

Causes

- Penetrating trauma
- Blunt trauma

Signs and Symptoms

- Profuse bleeding no matter how minor the injury
- Crepitus
- Edema
- Depressions
- Deformities
- Visualize skull or bony fragments

Closed Skull Injuries

Definition - in closed head injuries there may or may not be lacerations of the scalp, but the skull is intact, and there is no opening to the brain. Injury to the brain itself may be far more extensive in a closed head injury because more of the injuring force is transmitted deeper into the brain due to pressure build-up (see figure 3).

Causes

- Coup-Contrecoup - also known as a deceleration injury. It occurs when the brain strikes the frontal lobe of the skull, then is thrown back against the occipital lobe of the skull (or in the reverse order), causing the brain to bounce off both sides of the cranial vault, resulting in soft tissue damage.
- Blunt Trauma - rising intracranial pressure (ICP) produces complications because the brain is enclosed and pressure cannot be relieved.

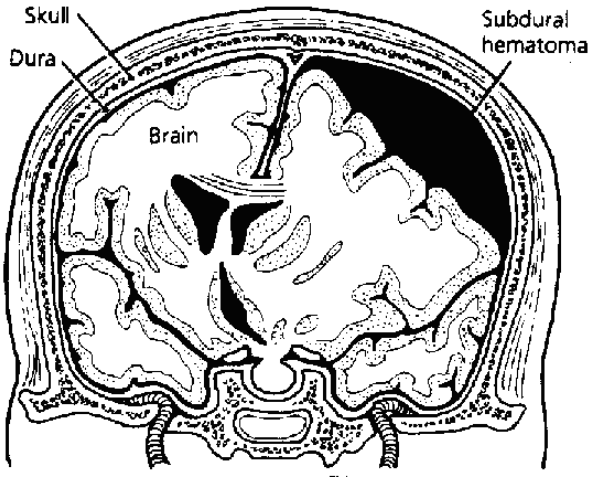

Figure 3. Closed Head Injury

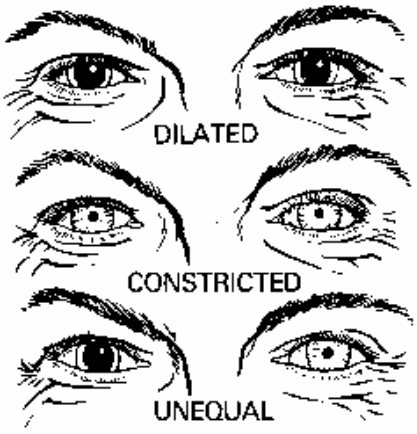

Figure 4. Pupils

Signs and Symptoms

- Crepitus around injury site
- Headache
- Neurological symptoms:
  - Altered LOC
  - Restlessness
  - Unequal pupils (see figure 4)

- Bruising, such as:

  Raccoon Eyes (see figure 5) - discoloration of the soft tissue under the eyes indicates basilar skull fracture.

  Battle's Sign (see figure 6) - discoloration of the soft tissue behind the ear indicates temporal bone fracture. This is a late sign and may not be readily seen.

- Drainage - drainage of cerebral spinal fluid from the ears, nose, or eyes. Blood or fluid (CSF) in the ears or nose may indicate a skull fracture.
- Bradycardia
- Increased systolic blood pressure
- Nausea/vomiting
- Decreased Respirations/Cheyne Stokes breathing pattern
- Deformity of the skull (see figure 7).

Figure 5. Raccoon Eyes

Figure 6. Battle's Sign

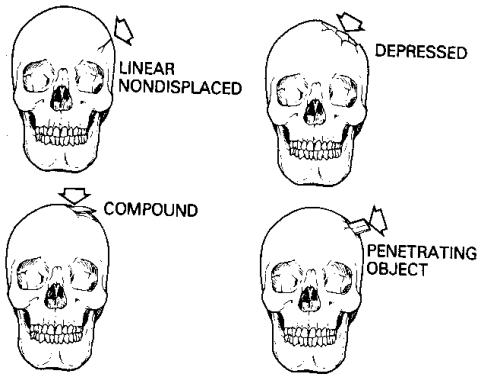

Figure 7. Skull Injuries

Brain Injuries

Definition - results from contusion, hemorrhage and/or edema. Damage to the brain and associated intracranial hemorrhage may occur with or without scalp lacertions or skull fractures. If the cranial vault is intact, the resultant swelling or bleeding produces more brain injury by increasing the intracranial pressure.

Causes

- Blunt trauma
- Penetrating trauma
- Coup-Contrecoup injuries

Signs and Symptoms – in addition to the signs and symptoms for closed skull injuries, the following signs and symptoms may also indicate a brain injury:

- Unusual behavior patterns. You must be careful not to misinterpret these symptoms for a psychiatric casualty. (This is the number one indicator of an injury.)
- Altered level of consciousness
- Paralysis
- Convulsions/seizures
- Hyperthermia

Determining Level of Consciousness - The Glasgow Coma Scale (GCS) (see figure 8 below) is a quick and easy method for determining level of consciousness. It is a simple method for determining cerebral function and is predictive of casualty outcome. The GCS score is divided into three sections – eye opening, best verbal response, and best motor response. A score of less than 8 indicates a major injury, 9 to 12 indicates a moderate injury, and 13 to 15 indicate a minor injury. A score of 8 or below is an indication the casualty should be intubated. In the case of operating in a tactical setting, a GCS of less than 8 means to provide some means of an artificial airway (i.e. oral airway, nasal airway, or emergency cricothyroidotomy).

Eye Opening	
Spontaneous eye opening	4
Eye opening on command	3
Eye opening to painful stimulus	2
No Eye opening	1
Best Verbal Response	
Answers appropriately (oriented)	5
Gives confused answers	4
Inappropriate responses	3
Makes unintelligible noises	2
Makes no verbal response	1
Best Motor Response	
Follows command	6
Localizes painful stimuli	5
Withdrawal to pain	4
Responds with abnormal flexion to painful stimuli (decorticate)	3
Responds with abnormal extension to pain (decerebrate)	2
Gives no motor response	1
	Total _____

Figure 8. Glasgow Coma Scale (GCS)

3. TREATMENT OF HEAD INJURIES

- Provide and maintain patent airway
- Apply c-spine precautions
- Hemorrhage control. Cover open wounds securely enough to aid in the clotting process without pressing skull fragments or impaled objects inward by using donut o-ring.
- Fluid resusciatate to maintain a palpable radial pulse (Do not want to raise intracranial pressure)
- Do not remove foreign bodies or impaled objects
- Check for drainage of CSF from the wound, nose, or ears. Do not pack or suction nose and/or ears if CSF leakage is suspected. Do not let patient clear their nose by blowing. If the casualty has drainage from their nose, check to see if it is CSF by:
  - Use the Halo, or Target Test to check for CSF. Dip a 4 x 4 in the drainage then lay it flat and wait a few minutes. If there is CSF in the blood, the blood will collect in the center, while the CSF remains to the outside creating a halo around the blood.
- Give nothing by mouth (NPO)
- TACEVAC in the High Fowler's position
- Do **NOT** give pain medications

NO PAIN MEDICATIONS!
NO PAIN MEDICATIONS!
NO PAIN MEDICATIONS!

NOTE: There is a high mortality rate associated with head trauma. All head trauma patients are assumed to have a cervical spine injury until proven otherwise.

4. **ANATOMY OF THE NECK**

Structures

Esophagus - passage from the mouth to the stomach
Trachea (windpipe) - air passage from the larynx to the lungs made of connective tissue and reinforced with 15-20 C-shaped cartilaginous rings
Thyroid gland - stimulates the metabolism of all cells
Larynx (voicebox) - the first part of the trachea which contains the vocal cords
Pharynx - area that extends from the soft palate to the esophagus/trachea
Epiglottis - leaf shaped structure that acts like a gate, directing air to the trachea and solids and liquids into the esophagus

Vasculature

Arteries - left/right common carotid (carry blood to brain)
Veins - left/right internal and external jugular (carry blood away from brain to heart)

Cervical Spine

Vertebrae - seven cervical vertabrae
Spinal Cord - protected by the cervical vertebrae

5. **TYPES OF NECK INJURIES**

Trauma of any kind to the neck is signifigant because of the risk of associated injuries to the respiratory tract, the alimentary tract (especially the esophagus), the major vascular structures, major nerves and the cervical spine.

Structures

Definition - injury to associated anatomy of the neck most commonly the trachea and esophagus.

Causes
- Blunt trauma
- Penetrating trauma

Signs and Symtpoms
- Subcutaneous emphysema
- Hematemesis
- Hemoptysis
- Dysphagia (difficulty swallowing)
- Dyspnea
- Hoarseness
- Deformity

Vasculature

Definition - injury to the carotid arteries and/or the jugular veins. These are the most commonly injured structures of the neck.

Causes
- Blunt trauma
- Penetrating trauma

Signs and Symptoms
- Hemorrhage
- Hemoptysis
- Hematemesis

Cervical Spine

Definition - fractures of the cervical vertebrae which are very susceptible to injury because of the relation and position of the skull. These fractures may result in irreversible spinal cord injury.

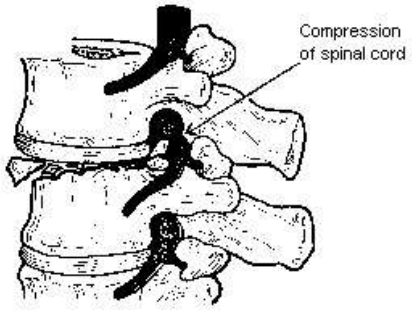

Figure 9. Compression Injury

Causes
- Compression injury (see figure 9).
- Flexion, hyperextension and hyperrotation
- Lateral bending

Signs and Symptoms
- Deformity
- Head fixed in an abnormal position
- Muscle spasms
- Parasthesia in the arms
- Pain
- Paralysis or other neural deficits

The only definitive diagnosis for C-spine injury is x-ray. Patient should remain in C-collar until x-rays are read!

6. **TREATMENT FOR NECK INJURIES**

- Consider C-spine
- Control hemorrhage with a pressure dressing. Apply pressure only to the affected vessels.
- Consider cricothyroidotomy if airway is compromised.
- Administer fluids (*see Combat Fluid Resucitation lesson*)
- **NO PAIN MEDICATIONS!**
- TACEVAC

FYI!
Cricothyroidotomy may be necessary if neck trauma causes blood to be present on the vocal cords, thus causing laryngo-spasms.

7. **ANATOMY OF THE FACE** (see figure 10)

The facial bones form the stucture of the face in the anterior skull but do not contribute to the cranial vault.

The major facial bones are:

- Nasal
- Zygomatic - a bone of the face below the eye that in mammals forms part of the zygomatic arch and part of the orbit
- Right/left Maxilla - bones that lie on each side of the upper jaw
- Mandible (jawbone) - the lower jaw.

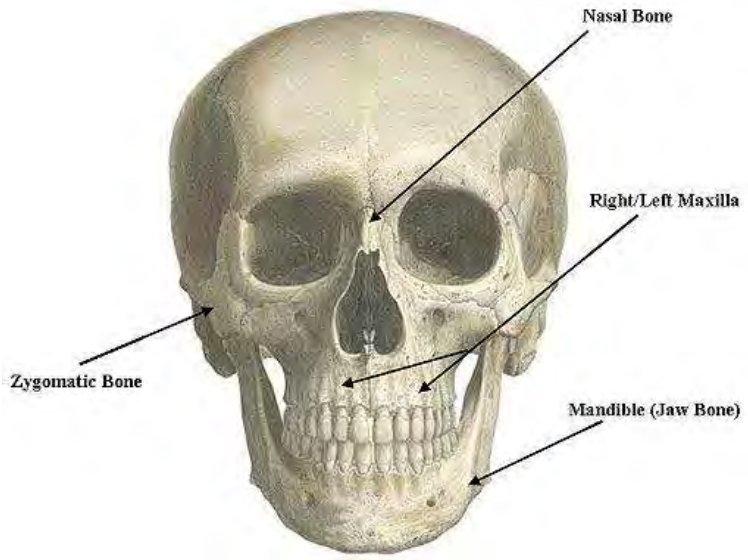

Figure 10. Major Facial Bones

8. **TYPES OF FACIAL INJURIES**

Generally serious because of the danger of hemorrhage due to the vast blood supply of the area and obstruction of the respiratory passages.

Soft Tissue Injuries

Definition - damage to the soft tissues of the face without bone injuries

Causes

- Blunt trauma
- Penetrating trauma

Signs and Symptoms

- Massive hemmorhage even with minor wounds
- Edema
- Laceration
- Ecchymosis
- Avulsion

Bone Injuries (Maxillofacial and Mandibular)

Definition - fracture of the major bones of the face (maxillofacial and mandibular). These fractures require great force and may be open or closed.

Causes
- Blunt trauma
- Penetrating trauma

Signs and Symptoms
- Lacerated gums may indicate an underlying fracture
- Casualty cannot open mouth without pain
- Misaligned teeth
- Difficulty swallowing
- Pain at fracture site
- Edema
- Facial asymmetry
- Epistaxis (Nose bleed)
- Ecchymosis
- Lacerations
- Visual disturbances
- Limited ocular movements
- Crepitus

Eye Injuries

Definition - injuries to the eyes that may be associated with other forms of head injury.

Causes
- Blunt trauma
- Penetrating trauma
- Burns
- Foreign objects-debris

Signs and Symptoms
- Loss of vision
- Pain
- Anxiety
- Hemorrhage
- Subconjunctival hemmorrhage
- Orbital bony deformity
- Intraorbital deformity

Fractured Nose - prior to control of bleeding, you must determine that there is no cerebral spinal fluid escaping. If fluid is escaping, treat as a skull fracture. Signs and symptoms will include blood or CSF from the nose and bruising.

9. **TREATMENT OF FACIAL INJURIES**

Soft tissue injuries

- Consider C-spine
- Assess and secure airway
- Hemorrhage control
- Fluid resuscitation protocol for associated shock

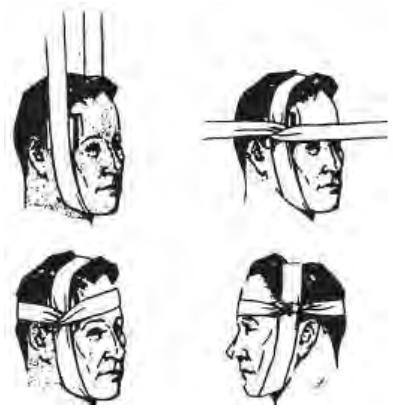

Figure 12. Modified Barton Bandage

Bone injuries

- Maintain open airway. Consider use of Nasopharyngeal Airway (NPA) (see figure 11)
- Control hemorrhage
- **NO PAIN MEDICATIONS!**
- Cold pack
- Modified Barton bandage for mandibular fracture (see figure 12)
- TACEVAC

Figure 11. Nasophryngeal Airway (NPA)

Eye injuries

- In combat, only patch the affected eye. Member can function effectively with one eye. Member becomes a litter patient if both eyes are covered.
- If the injury to the eye is clearly a minor one, the best advice is to REFRAIN FROM INTERFERENCE. A minor eye injury improperly cared for can easily become a major eye injury.

Treatment of penetrating eye injuries

- Check casualties vision
- Cover eye immediately with a rigid eye shield – NOT a pressure patch
- Have casualty take 400 mg moxifloxacin in his/her Combat Pill Pack
- Give IV/IM antibiotics if unable to take PO meds

Treatment for chemical burns of the eye

- Hold the face under running water with eyes open (see figure 13)
- Flush eyes 5-10 minutes for acid burns
- Flush eyes 20 minutes for alkali
- TACEVAC

Figure 13. Irrigating The Eye

Treatment for thermal burns of the eye

- Cover eye with loose dry dressing

Treatment for light injuries

- Cover eye with loose dressing (see figure 14).

Treatment for impaled object

- Make thick dressing and cut hole in center the size of eye opening
- Pass dressing over impaled object (see figure 15)
- Position crushed cup over dressing and bandage in place
- Elevate head to decrease intraocular pressure

Figure 14. Simple Cravat Bandage For The

Treatment for lacerations involving the eye

- If only eyelid is lacerated, direct pressure or a pressure dressing will stop bleeding.
- If the eyeball itself is lacerated, do not use pressure, but cover with a loose dressing.

Treatment for protruding globe

- DO NOT attempt to place eye back in socket
- Apply bulky dressing around eye, moist gauze over the globe and cover with a cup secured in place.

Figure 15. Dressing Over Impaled Object

Treatment of nose injuries

- Hemorrhage Control
- Pinching nostrils. (Do not tilt patient head back due to postnasal drainage)
- Apply ice to bridge of nose
- Splint by padding
- Monitor and TACEVAC

CASUALTY ASSESSMENT AND THE HEAD, NECK, AND FACE

Care Under Fire Phase: In the absense of life-threatening hemorrhage from the Head, Neck, or Face, the material in this section is unlikely to be performed in Care Under Fire phase.

Tactical Field Care Phase: During Tactical Field Care you will be required to inspect the head, neck, and face for any signs of injury. This includes looking for bone deformity and soft tissue injuries, signs of closed head trauma, and also consider the possibility of Traumatic Brain Injury (TBI). Don BSI. You must visually inspect the eyes, ears, nose, and throat. Assess the airway and intervene if necessary. Complete a head to toe assessment using DCAP-BTLS noting and treating additional injuries. Determine if vascular access is required (see Tactical Fluid Resuscitation lesson) and give fluids if necessary. If a head injury is suspected, it is NOT recommended to give casualty fluids by mouth. Consider pain medications and give antibiotics, if warranted. Reassess all care provided. Document care given, prevent hypothermia, and TACEVAC.

REFERENCE

Prehospital Trauma Life Support, current Military Edition

Head, Neck, and Face Review

1. Identify the function of the Cerebellum.

2. List the six key points for treatment of a neck wound.

3. List the appropriate treatment for a single eye injury in a combat situation.

4. What is the hallmark sign of a concussion.

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
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FMST 410

Tactical Fluid Resuscitation

TERMINAL LEARNING OBJECTIVE

1. Given a casualty, equipment and supplies, **start fluid resuscitation** reducing the risk of further injury or death. (8404-MED-2007)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **define medical terminology associated with fluid resuscitation**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2007a)

2. Without the aid of reference, given a description or list, **identify the routes for giving fluid**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2007b)

3. Without the aid of reference, given a description or list, **identify the different types of IV solutions**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2007c)

4. Without the aid of reference, given a description or list, **identify how to properly administer IV fluids**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2007d)

5. Without the aid of reference, given a description or list, **identify the potential complications of initiating IV therapy**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2007e)

6. Without the aid of reference, given a description or list, **identify how to properly administer intraosseous (IO) fluids**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2007f)

7. Without the aid of reference, given a description or list, **identify potential complications of initiating an intraosseous device**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-MED-2007g)

8. Without the aid of reference, given a patient and a Corpsman Assault Pack, **initiate peripheral IV access**, with successful infusion, per the Performance Examination Checklist. (8404-MED-2007h)

9. Without the aid of reference, given a training aid and a Corpsman Assault Pack, **initiate intraosseous access in order to infuse fluid**, to prevent further injury or death, per the Performance Examination Checklist. (8404-MED-2007i)

INTRODUCTION

In civilian settings, it is common practice to establish intravenous (IV) access in all individuals who have suffered significant trauma in the prehospital setting. In tactical military settings, this practice has a number of disadvantages such as imposing costs in both time and equipment. The practice of starting IV access on all casualties preemptively had been outdated by the availability of intraosseous (IO) techniques.

In this lesson, we will discuss the principles of fluid resuscitation in a tactical situation and the decision making process of when to give fluids by mouth, through an IV or through the intraosseous route. Finally, we will discuss what types of fluids and how much fluid to give to a casualty on the battlefield.

1. TERMINOLOGY

Homeostasis - a state of physiological equilibrium produced by a balance of functions and chemical composition within the body. Homeostasis is usually maintained as long as the fluid volume and chemical composition of the fluid compartments stay within narrow limits or within a state of equilibrium.

Electrolyte - an element or compound that, when melted or dissolved in water or another solvent, disassociates into ions and is able to carry an electric current. Fluids containing these electrolytes and water are called crystalloids.

Crystalloids - aqueous solutions of mineral salts or other water-soluble molecules. This solution does not have oxygen carrying or blood clotting capabilities.

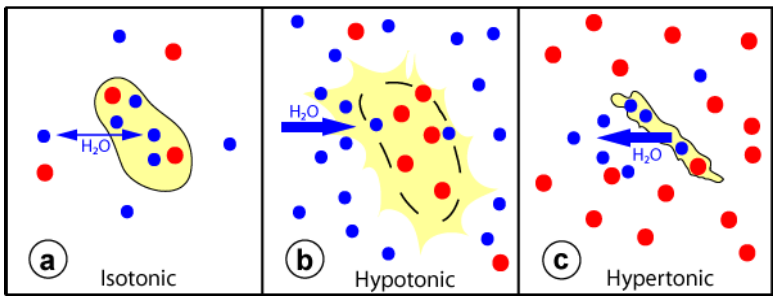
Colloids - contain larger insoluble molecules, such as gelatin; blood itself is a colloid. These solutions are all hypertonic in nature.

FYI…Both muscle tissue and neurons are considered electric tissues of the body. Muscle contraction is dependent upon the presence of calcium (Ca^{2+}), sodium (Na^{+}), and potassium (K^{+}). Without sufficient levels of these key electrolytes, muscle weakness or severe muscle contractions may occur.

Isotonic - a solution that triggers the least amount of water movement from the vascular system in to or out of the cells or surrounding tissue

Hypotonic - a solution that causes water to leave the vascular system and enter the cells or surrounding tissue compartments

Hypertonic - a solution that draws water from the surrounding cells and tissue compartments back into the vascular system.



2. **ROUTES FOR FLUID RESUSCITATION**

Figure 1. Casualty with Abdominal Wound Drinking Water

Oral Hydration - Trauma surgeons attached to forward-deployed Medical Treatment Facilities (MTFs) have noted that many casualties are kept on nothing by mouth (NPO) status for prolonged periods in anticipation for eventual surgery. Patients in a combat environment often operate in a state of mild dehydration. Once injured, they can easily develop greater levels of dehydration. The combination of dehydration and hemorrhage greatly increases the risk of mortality. There is very little evidence of emesis during surgery of patients that received oral hydration following injury. Therefore, oral fluids are recommended for all casualties with a normal level of consciousness and the ability to swallow, including those with penetrating torso trauma (see figure 1).

Indications

Injured casualty with normal level of consciousness and ability to swallow

Contraindications

Decreased level of consciousness

Intravenous Access - If the casualty does not have a normal level of consciousness, the care provider may start fluid resuscitation by the IV or IO method.

Indications

- Uncontrolled hemorrhage
- Diarrhea or vomiting
- Burns
- Unable to tolerate fluids by mouth
- To give IV medications

Contraindications

- Absence of signs and symptoms of the above indications

Intraosseous Access - Battlefield casualties may have a traumatic amputation precluding IV access in an extremity. An IO device offers an alternate route for the administration of fluids in these types of casualties. This device is not meant to replace IV infusion; it is to be used when IV access cannot be obtained.

Indications

- Unable to obtain IV access

Contraindications

- Absence of signs and symptoms of the above indications

3. **TYPES OF INTRAVENOUS SOLUTIONS**

There are several fluid resuscitation strategies used for the management of trauma patients. The primary methods we will discuss are:

- Large volumes of crystalloid
- Colloid solutions
- Whole blood or blood products

Crystalloids - Solutions that are isotonic are effective for volume replacement for a short period of time. These solutions do not have any oxygen carrying capacity and contain no proteins. Within 30 to 60 minutes after administration, only about 1/4 to 1/3 remains in the cardiovascular system. The remainder becomes edema in the soft tissues and organs.

FYI…A casualty infused with 1000 ml of LR will only have 200 ml remaining in the vascular system after 1 hour.

The rule of thumb is that most patients with hemorrhagic shock generally receive adequate crystalloid resuscitation when about 300 ml has been infused for every 100 ml of lost blood volume. The two most common crystalloids used in the treatment of shock are Lactated Ringer's (LR) and Normal Saline (NS).

LR - the crystalloid solution of choice for the management of shock because its composition is most similar to blood plasma. It contains specific amounts sodium, potassium, calcium, chloride and lactate ions.

NS - an acceptable alternative solution with 0.9% sodium chloride (NaCl)

Colloids - Synthetic colloid solutions draw fluid from the interstitial and intercellular spaces into the intravascular space, thereby producing volume expansion larger than the volume of fluid that was infused. This effect is sustained for 8 hours. These solutions do not transport oxygen. **Hextend is the fluid of choice for volume replacement due to trauma in a tactical situation.**

Hextend - Synthetic colloid solution used as a volume expander. Benefits are that it is a smaller, lighter package that is easily carried and it improves perfusion without overloading the patient with a crystalloid solution.

For casualties in shock (defined by a weak or absent peripheral pulses or altered mental status in the absence of brain injury) bolus 500 ml Hextend. If no improvement is noted in 30 minutes, administer another 500 ml. Do not use more than 1,000 ml.

For casualties suffering from both shock and Traumatic Brain Injury (TBI), give fluids only until the radial pulse is restored (titrate).

Whole Blood - Because of its ability to transport oxygen, blood is the fluid of choice for severe hemorrhagic shock. Unfortunately this is impractical for first responder care due to issues of blood typing and refrigerator. Blood and blood products are typically available at the forward resuscitative care capability (i.e. Medial Battalion). In combat, type O-negative (universal donor) is supplied and can be given without prior cross-typing.

Not in Shock *(Normal peripheral pulse and mentation)*	*In Shock* *(Altered mental status and weak or absent peripheral pulse)*	*Traumatic Brain Injury (TBI) and weak or absent pulse*
- IV Fluids are not needed. **- If the casualty is conscious, he can drink fluids.**	**- Administer a 500mL IV bolus of Hextend.** **- If after 30 minutes the casualty is still in shock, administer another 500mL IV bolus of Hextend.** *** Do not administer more than 1000mL of Hextend.** **- If shock continues, decide whether to continue resuscitation depending on the logistical and tactical situation.**	**- Altered mental status cannot be used as clinical guideline for shock.** **- Resuscitate to restore the radial pulse.**

4. **EQUIPMENT REQUIRED TO INITIATE A PERIPHERAL IV**

While there is no standardized set of equipment, there are certain items needed to start an IV. It will be your responsibility to have these items together and "ready to go" if needed in a hasty situation.

Equipment

Needle/catheter - 18 gauge catheter preferred in the field setting due to ease of insertion

IV Solution - based on the needs of the casualty

Administration set - many different types used; be familiar with your specific equipment

Constriction band - distends the veins to make access easier

Alcohol - or betadine prep pads to cleanse the site

Tape - to secure the catheter in place; tegaderm can be used

Initiating a Peripheral IV

You have all started IV's in the past. Below is a review of what steps to take when inserting an IV. You will all have a chance to start an IV in the practical application at the end of the lesson.

1) Determine the need for fluid replacement
2) Assemble and check equipment
3) Prepare the patient
4) Select and cleanse site
5) Insert IV
6) Remove constriction band

7) Connect the fluid administration set
8) Administer fluid
9) Secure the IV

5. POTENTIAL COMPLICATIONS OF IV THERAPY

No medical treatment is without risk. As a care provider, your first priority is to do no harm. With that said, there are times when your best treatment will result in outcomes that were not desired. Listed below are the most common complications of IV therapy and their treatment.

Infiltration (see figure 2) - escape of fluid from the vein into the tissue when the needle/catheter dislodges from the vein.

Figure 2. Infiltration

Symptoms

- Edema
- Localized pain or discomfort
- Coolness to touch at the site of cannulation
- Blanching of the site
- IV flow slows or stops

Treatment

- Discontinue IV
- Select an alternate site
- Apply a warm compress to the affected area
- Elevate the limb

Prevention

- Secure the catheter properly
- Limit movement of the limb

Phlebitis (see figure 3) - inflammation of a vein due to bacterial, chemical, or mechanical irritation.

Symptoms

- Pain along the course of the vein
- Redness appears as a streak above vein and above the IV site
- Warm to touch
- Vein feels hard or cordlike

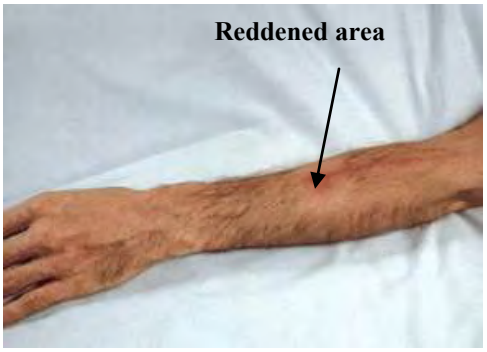


Figure 3. Phlebitis

Treatment

- Discontinue IV
- Warm compress to the affected area
- Antibiotics

Prevention

- Ensure aseptic technique when starting IV
- Place date/time when catheter was inserted on the tape
- Rotate infusion sites based on local policies (usually every 72 hours)

Circulatory Overload (systemic) - an effect of increased fluid volume which can lead to heart failure and pulmonary edema as a result of infusing too much IV fluid or too rapidly.

Symptoms

- Headache
- Venous distention
- Dyspnea
- Increased blood pressure
- Cyanosis
- Anxiety
- Pulmonary edema

Treatment

- Slow down the flow rate
- Place patient in High Fowlers position

Prevention

- Monitor and control flow rate

Air Embolism - air circulating in the blood when introduced through IV tubing.

Symptoms

- Cyanosis
- Hypotension
- Weak and rapid pulse
- Shortness of breath
- Tachypnea

Treatment

- Place patient on left side in Trendelenburg position, so that air in the right ventricle floats away from the pulmonary air flow tract.
- Administer oxygen
- Notify Medical Officer
- Monitor vital signs

Prevention

- Flush IV line thoroughly to remove air prior to insertion
- Monitor tubing during therapy
- Avoid introducing air through any syringe or extension tubing

Systemic Infection (see figure 4) - due to poor aseptic technique or contamination of equipment.

Figure 4. Infection caused by IV

Symptoms

- Sudden rise in temperature and pulse
- Chills and shaking
- Blood pressure changes

Treatment

- Look for other sources of infection
- DC IV and restart in other limb
- Notify MO and anticipate antibiotic treatment

Prevention

- Ensure aseptic technique when starting IV
- Place date/time when catheter was inserted on the tape
- Rotate infusion sites based on local policies (usually every 72 hours)

6. INTRAOSSEOUS FLUID ADMINISTRATION

Overview

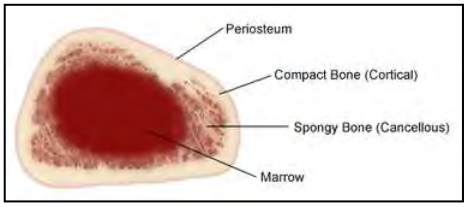


Figure 5. Cross Section of Bone

IO infusion devices provide a quick (can be placed in 60 seconds), reliable fluid access when peripheral IVs cannot be started. IO infusion is the medical process of getting fluids, emergency drugs, and even blood into a patient's circulatory system by delivering them into the marrow space inside a bone (see figure 5). The IO space is a specialized area of the vascular system where blood flow is rapid and continues even during shock. Drugs and fluids infused via the IO route reach the central circulation as quickly as those administered through standard IV access.

Anatomy

The sternum consists of the manubrium, the body and the xiphoid process (see figure 6). At the top of the manubrium is the jugular notch, which is used as a reference point for intraosseous placement. The sternum makes an ideal IO site for several reasons:

- It is very easy to locate and readily accessible
- It is protected from trauma by the flak vest
- It is thinner and easier to penetrate than other bones.
- Most importantly, fluids infused into the sternum reach the circulatory system more rapidly.

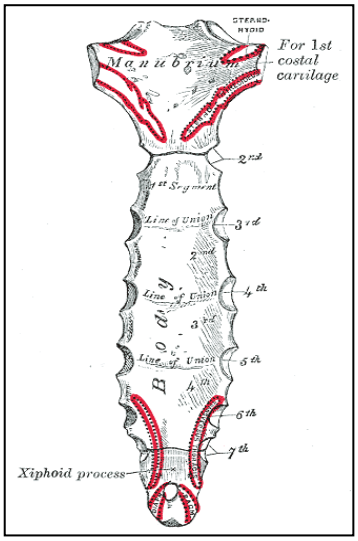


Figure 6. Sternum

Equipment

There are several different manufactures of IO devices. The Committee on Tactical Combat Casualty Care (CoTCCC) concluded that the First Access for Shock and Trauma (FAST1) is the IO device best suited for trauma care on the battlefield. Features such as speedy access, a protected infusion site, and a depth-control mechanism make the FAST1 ideal for emergency use.

Components of the FAST1

Target/Strain-Relief Patch (see figure 7)

The Target/Strain-Relief Patch is a foam patch with an adhesive back. The key features of the patch are the locating notch, a hole indicating the target zone, a band of Velcro fastening, and a connector tube with a female luer on each end. The patch is placed on the patient with the locating notch matching the patient's jugular notch and the target zone over the patient's midline. The adhesive backing prevents the patch from becoming displaced. The target zone, a circular hole, indicates the location of the designated insertion site.

Figure 7. Target/Strain-Relief Patch

Introducer (see figure 8)

The introducer is a hand-held tool. The bone probe cluster, stylet, infusion tube, and depth control mechanism are mounted inside the introducer handle. The bone probe needles are covered by a plastic sharps cap that is removed before use. The introducer allows the operator to push the flexible infusion tube through the skin, tissue, and anterior cortical bone of the manubrium. The force required to penetrate the bone is provided entirely by the operator, it is not spring loaded or battery operated. The depth control mechanism automatically separates the infusion tube from the Introducer body at a pre-set depth, preventing the operator from over or under penetrating the patient's bone.

Figure 8. The Introducer

Infusion Tube (see figure 9)

The Infusion Tube is the primary component of the FAST1 System. It consists of a steel portal (the sharp tip which penetrates the bone), a length of flexible infusion tubing, and luer connector. When the tube is inserted by the introducer, the steel portal penetrates the anterior cortical bone of the manubrium. After insertion, the fluid delivery port is within the marrow space of the bone. The entire steel portal is subcutaneous. The tubing delivers drugs or fluids into the manubrial marrow space. The flexibility of the tubing allows it to move with the patient's skin. The Infusion Tube is connected to the fluid source via the connector tube on the patch.

Figure 9. Infusion Tube

Protector Dome (see figure 10)

The Protector Dome is a clear plastic cover with Velcro fastening, which mates with the ring on the Target/Relief Patch. After drugs or fluids have begun to flow into the patient, the Dome is placed over the patch. The Velcro secures the dome in position over the site. This is the final step in placing the FAST1 system. The dome covers and protects the infusion site.

Figure 10. Protector

Sharps Protection (see figure 11)

Before use, the bone probe cluster and stylet are covered by a clear plastic Sharps Cap. After use, the retracted bone probe needles and stylet tip are pushed into the foam-filled Sharps Plug. This reduces the risk of accidental needle stick injury. For additional protection, the pre-use cap should be placed over the post-use plug once the needles have been fully inserted into the plug.

Figure 11. Sharps Protection

SEQUENCE FOR INITIATING THE FAST1

a. Cleanse insertion site using aseptic technique.

b. Align finger with jugular notch and place patch, verifying patch is midline.

c. Place Introducer in target on patch. Hold with a firm grasp.

d. Insert Introducer perpendicular to the manubrium. Use continuous increasing pressure to insert.

e. Remove Introducer. Pull straight back.

f. Connect Infusion Tube to Target Patch Tube.

g. Cap introducer using post-use cap supplied.

h. Connect to I.V. tubing.

i. Place Dome once all items are connected.

Points to remember when inserting the FAST1

1. Don't pull back and re-push.
2. Don't use extreme force.
3. Insert Introducer perpendicular to sternum.

7. POTENTIAL COMPLICATIONS OF THE FAST1 INSERTION

The sternal notch cannot be located.

Probable Cause: Extreme obesity or abnormal sternal anatomy.

Recommended Action: Abort the procedure. Proper targeting requires accurate location of the patient's sternal notch. Employ an alternative method of vascular access.

The patch has been incorrectly placed.

Probable Cause: Operator error during application, movement of the skin over the manubrium during application, or patient movement after placement.

Recommended Action: Return the patient to his/her original position. If the patch is still incorrectly positioned, remove it and reposition. During placement, ensure that the skin over the sternum is not stretched away from its normal position.

The patch will not adhere to the skin.

Probable cause: Wet skin or thick body hair.

Recommended Action: Shave or dry skin and clean using aseptic technique. The patch can also be taped down using the extended tabs. If the Patch becomes detached during use, it should be taped to the skin.

The Bone Probe Cluster is fully pushed in, but the Introducer does not release.

Probable Cause: Excessively thick tissue, extreme misplacement, or irregular anatomy.

Recommended Action: Pull Introducer back; the Infusion Tube may be in place, although the Introducer could not release due to tissue thickness. Verify by withdrawing marrow, and proceed. Re-attempt with a new FAST1. If second attempt fails, seek alternative method of vascular access.

Introducer does not release with high applied force.

Probable Cause: Extreme bone hardness or technique error.

Recommended Action: Without pulling back on the Introducer, check that the Introducer is perpendicular to the manubrium surface and that force is being applied directly along the Introducer axis. Some patients may have a very hard bone; if control of the Introducer cannot be maintained, find alternate method of vascular access.

The Introducer releases but the Infusion Tube falls out of the patient.

Probable Cause: The Infusion Tube did not adequately penetrate the anterior cortical bone of the manubrium due to excessive tissue thickness or very hard bone.

Recommended Action: Re-attempt with a new FAST1 device.

Low or no flow through Infusion Tube.

Probable Cause: There is a severe kink in the tubing, there is a line blockage, or the portal failed to penetrate the manubrium.

Recommended Action: Check for kinked tubing. If no kink can be found, attempt to clear the line by pushing in 10 cc's of fluid. If this fails to improve the flow rate, use an alternative method of vascular access.

Leakage at the insertion site.

Probable Cause: Fluids are leaking from inside the manubrium past the tip of the Infusion Tube.

Recommended Action: A small amount of leakage sometimes occurs and is commonly acceptable in IO infusion. The operator must judge whether the patient is receiving an adequate amount of drugs or fluids. If leakage is excessive, an alternative method of vascular access should be used.

CASUALTY ASSESSMENT AND FLUID RESUSCITATION

Care Under Fire Phase: The material in this section is unlikely to be addressed in Care Under Fire.

Tactical Field Care Phase: Knowing when it is necessary to start an IV or IO is critical in the Casualty Assessment process. Using the PO route when available saves you time by not starting unnecessary IVs on casualties that do not need it and saves valuable resources for casualties who do. Using the "minimal fluid resuscitation" technique also increases the casualty's chances of survival by not overloading them with unnecessary fluid. Remember to don proper BSI when performing fluid resuscitation.

REFERENCES

FAST1 Intraosseous Infusion System for Adult Patients User's Manual, Pyng Medical Corp
Prehospital Trauma Life Support, current Military Edition

Field Medical Training Battalion

INTRAVENOUS FLUID RESUSCITATION PERFORMANCE EXAMINATION CHECKLIST v3.0

STUDENT (Rank, Last Name, First Name)	**PLT**

PROCEDURAL STEPS FOR PERFORMING AN IV STICK	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
Determine the need for fluid replacement (i.e. uncontrolled hemorrhage, diarrhea/vomiting, burns, unable to tolerate fluids by mouth, to give IV meds)						
Assemble and check equipment (18g needle/catheter, IV solution, administration set, tape, constriction bandage, alcohol, 2x2 gauze, gloves)						
Prepare patient & select site						
Cleanse site						
*** Insert IV**						
*** Remove constriction band**						
Connect fluid administrative set						
*** Administer fluid and monitor flow**						
Secure IV						
Discontinue IV						

GRADING CRITERIA	**1ST**	**2ND**	**3RD**
Total Non-Critical Items (3 or greater constitutes a failure)			
Total Critical Items (Any critical items missed constitutes a failure)			
"Stop & Think" (2 allowed for critical items, third constitutes a failure)			

1st Evaluator:	**2nd Evaluator:**	**3rd Evaluator:**
PASS / REM	**PASS / REM**	**PASS / FAIL**
Student signature:	**Student signature:**	**Student signature:**
Notes:	**Notes:**	**Notes:**

Field Medical Training Battalion

INTRAOSSEOUS FLUID RESUSCITATION PERFORMANCE EXAMINATION CHECKLIST v3.0

STUDENT (Rank Last Name, First Name)	**PLT**

PROCEDURAL STEPS FOR PERFORMING AN INTRAOSSEOUS FLUID RESUSCITATION	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
*** State reason for selecting to perform IO procedure.**						
Assess patient and make decision to perform IO						
Assemble and check equipment (alcohol, FAST1 Kit)						
Cleanse insertion site using aseptic technique.						
* **Align finger with jugular notch and place patch verifying patch is midline.**						
Place introducer in target area on patch; hold with a firm grasp.						
* **Insert introducer perpendicular to manubrium; use continuous increasing pressure to insert.**						
Remove introducer by pulling straight back.						
* **Connect infusion tube to target patch; connect IV tubing.**						
Place dome over infusion tube and secure.						

GRADING CRITERIA	**1ST**	**2ND**	**3RD**
Total Non-Critical Items (3 or greater constitutes a failure)			
Total Critical Items (Any critical items missed constitutes a failure)			
"Stop & Think" (2 allowed for critical items, third constitutes a failure)			

1st Evaluator:	2nd Evaluator:	3rd Evaluator:
PASS / FAIL	PASS / FAIL	PASS / FAIL
Student signature:	Student signature:	Student signature:
Notes:	Notes:	Notes:

Tactical Fluid Resuscitation Review

1. What is the definition of an isotonic solution?

2. What is the preferred fluid resuscitation route for a patient with a normal level of consciousness and the ability to swallow?

3. What is the indication for using the intraosseous route?

4. What are the two most common crystalloids used in the treatment of shock?

5. What is the fluid of choice for a trauma patient in a tactical situation?

6. What gauge needle/catheter is used for IVs in the field setting?

7. Name three potential complications of IV therapy.

8. What is used as a reference point (landmark) for intraossesous placement?

UNITED STATES MARINE CORPS

FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 411

Perform Casualty Assessment

TERMINAL LEARNING OBJECTIVE

1. Given a patient in an operational environment, **perform patient assessment** to identify chief complaint and initiate proper treatment within the scope of care. (8404-MED-2011)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify the procedures for Care Under Fire**, within 80% accuracy, per the Prehospital Trauma Life Support Manual, current Military Edition. (8404-MED-2011a)

2. Without the aid of reference, given a description or list, **identify the procedures for Tactical Field Care**, within 80% accuracy, per the Prehospital Trauma Life Support Manual, current Military Edition. (8404-MED-2011b)

3. Without the aid of reference, given a description or list, **identify the procedures for Tactical Evacuation**, within 80% accuracy, per the Prehospital Trauma Life Support Manual, current Military Edition. (8404-MED-2011c)

4. Without the aid of reference, given a casualty and a Corpsman Assault Pack, **perform casualty assessment**, to prevent further injury or death, per the Prehospital Trauma Life Support Manual, current Military Edition. (8404-MED-2011d)

OVERVIEW

Casualty Assessment (CASAS) is a systematic process for assessment of the trauma casualty and is essential for recognizing life-threatening conditions, identifying injuries, and determining priorities of care based on assessment findings. Using this systematic approach you will be able to assess, prioritize, and treat each trauma casualty and ensure injuries are not missed.

This lesson will go through all the steps of a complete CASAS; however you will not use every step, every time. The number of steps you complete is based on the tactical situation, the casualty and the time and resources available.

1. PHASE 1 – CARE UNDER FIRE

During this phase, the Corpsman and casualty are still under hostile fire. **The first step in saving a casualty is usually to control the tactical situation**. Very limited medical care should be attempted while the casualty and the unit are under hostile fire. Suppression of hostile fire and moving the casualty to a safe position are major considerations at this point. Remember: "The best medicine on the battlefield is fire superiority." Casualties who have sustained injuries that are not life threatening and have the ability to help should continue to assist in suppressing the hostile fire. It may also be critical for you to help suppress hostile fire before attempting to provide care.

Casualties whose wounds do not prevent them from moving to cover should do so to avoid exposing other care givers to unnecessary hazard. If the casualty is unable to move and is unresponsive, the casualty is likely beyond help. Risking the lives of rescuers is not advised. If a casualty is responsive and unable to move, a rescue plan should be developed as follows:

- Determine the potential risk to the rescuers. Did the casualty trip a booby trap or mine? Where is fire coming from? Is it direct or indirect? Are there electrical, fire, chemical, water, mechanical, or other environmental hazards?
- Consider assets. What can rescuers provide in the way of covering fire, screening, shielding, and rescue equipment?
- Make sure all understand their role in the rescue and which movement techniques are to be used (i.e., drag, carry, rope, stretcher). The fastest method for moving a casualty in the Care Under Fire phase is the two person drag (see figure 1). This drag can be used in buildings, shallow water, snow, and down stairs.

Figure 1. Two Person Drag

- Management of an impaired airway is temporarily deferred until the casualty is safe, thereby minimizing the risk to the rescuer and avoiding the difficulty of managing the airway while dragging the casualty. Early control of severe hemorrhage is vital. However, the tactical situation dictates that you must maintain firepower supremacy so **only life-threatening bleeding warrants any intervention during Care Under Fire**.

Situation - Determines tactical situation. Return fire to suppress hostile fire. Direct and expect the casualty to return fire if capable.

Help - Verbally direct casualty and/or buddy to apply tourniquet if casualty and rescuer are separated

Injury - Determines MOI if possible

Patient quantity - Determines the number of patients vs. supplies. Is there need for triage? Are there Marines or other HMs available?

Spinal precautions (if warranted)

Level

Of

Consciousness - Mental Status – AVPU (A – Alert, V – Verbal commands, P – Painful stimuli, U – Unresponsive)

Manage hemorrhage

Identify life-threatening hemorrhage

Apply tourniquet

Move patient to safe location

Reassess tourniquet

2. PHASE 2 - TACTICAL FIELD CARE

During this phase, the Corpsman and casualty are no longer under hostile fire. This also applies to situations in which an injury has occurred on a mission, but hostile fire has not been encountered. However, medical equipment is still limited. Medical care during this phase is directed towards more in-depth evaluation and treatment of the casualty, focusing on those conditions not addressed during the Care Under Fire phase of treatment. While the casualty and rescuer are now in a somewhat less hazardous situation, evaluation and treatment is still dictated by the tactical situation. **Casualties who show signs of an altered mental status should be disarmed immediately.**

Airway Assessment

Casualties that are conscious and can talk, scream, or yell can be presumed to have a patent airway. For unconscious casualties, initial attempts to open the airway should be done using the trauma jaw thrust (for casualties whom you suspect C-spine injury) or trauma chin lift.

Once the airway is open, visually inspect for anything that may potentially cause obstruction. Examples include broken teeth, blood, vomit or tissue swelling. Remember the most common cause of airway obstruction in an unconscious casualty is the tongue.

Clear any obstructions with a finger sweep and **insert a nasopharyngeal airway (NPA) to keep the airway open.** Reassess your interventions to ensure the casualty has an open airway. The standard method of "Look, Listen and Feel" can be used to ensure the patient is breathing. If the previously mentioned methods fail to establish an airway, surgical cricothyroidotomy is indicated.

Remember to **reassess any intervention performed** to determine the effectiveness of the procedure performed. Regardless of the method used to establish an airway, you must also judge the quality and adequacy of the ventilations.

Respiration

The goal of this step is to rule out chest wounds that either have become, or could potentially develop into, a tension pneumothorax. **Needle thoracentesis is indicated if the casualty has difficulty breathing and penetrating trauma to the chest area.**

FYI!!! If a casualty is found to be in cardiopulmonary arrest on the battlefield as a result of combat trauma, CPR is NOT recommended.

The only way for you to identify penetrating trauma is to EXPOSE the area. This includes removing tactical gear such as flak jackets and uniform tops. Once exposed you may also discover larger wounds, such as sucking chest wounds, that will need to be treated with an occlusive dressing before moving on to the next step in the casualty assessment process. Inspecting the area includes looking at the posterior. Examining the posterior is not simply the back; remember that rectal bleeding is a sign of internal hemorrhage. This should be checked as well. **Reassess ALL interventions following a log roll!**

Needle decompression should provide immediate relief. An occlusive dressing should not make a sucking sound upon inspiration.

Circulation

Check for the presence and quality of pulses. Determining the presence and quality (weak / strong) of a radial pulse will affect decisions made later during casualty assessment.

Perform a blood sweep of the casualties entire body by gently sliding your hands underneath the casualty and pulling them back, feeling for any bleeding that was not controlled during "Care Under Fire". Control it at this time.

Assess for the possibility of tourniquet conversion. Tourniquets that were placed due to the time constraints of "Care Under Fire" should be converted to a pressure dressing or Combat Gauze as appropriate. (See Hemorrhage Control lesson if you need to review.)

Head to Toe Assessment (**DCAP-BTLS**)

Deformities **C**ontusions **A**brasions **P**unctures

Burns **T**enderness **L**acerations **S**welling

Again, all life threatening injuries should have been identified and treated by this time. The goal at this stage is to identify and address any additional wounds. You may also identify signs or symptoms that will affect the long term evacuation or treatment of the patient as well. It is important that you carefully inspect the entire casualty. Using the head to toe method described below ensures you do not miss anything.

Head

Check the skull, eyes, ears, nose and mouth for any potential findings. At this time you should also reassess any treatments that have been performed.

Neck

Check the neck to include the C-spine for any irregularities. Jugular vein distension and tracheal deviation are very late signs of tension pneumothorax (a condition you should have treated earlier). If, however, these are encountered at this stage, perform a needle decompression immediately.

Chest

In addition to checking for DCAP-BTLS, you should also attempt to auscultate the chest if the tactical situation permits. Simple rib fractures and flail chest segments should be treated at this time. Reassess any previous treatments, including needle decompression or occlusive dressings, which may have already been performed.

Abdomen

In addition to inspecting for DCAP-BTLS you should also palpate for Tenderness, Rigidity or Distension. Abdominal eviscerations should be treated appropriately. Signs of internal hemorrhage, while not treatable on the battlefield, may affect your decision during tactical evacuation.

Pelvis

If the patient's pelvic area is obviously deformed, DO NOT PALPATE IT, as you will likely cause further instability and damage.

Extremities

Since you are already at the pelvis, palpate the lower extremities first then the upper extremities using the same process (DCAP-BTLS)

Note and treat any minor injuries not already addressed. Reassess any major interventions already performed, especially tourniquets or pressure dressing.

Consider Fluid Resuscitation

Casualties that do not exhibit signs of shock do not require and should not be given IV or IO fluid. They should be encouraged to drink fluids by mouth.

All casualties who exhibit signs of tactically relevant shock (weak pulse and/or altered level of consciousness) should have IV access started using an 18-gauge catheter. Consider the IO route for casualties who require fluid resuscitation but IV access can not be obtained. Administer enough fluid to restore a radial pulse. If giving Hextend, give 500 cc's, wait 30 minutes, and then give another 500 cc's if needed. Do NOT give more than 1000 cc's of Hextend to any patient.

Prevent Hypothermia

The Blizzard Rescue Blanket (NSN 6352-01-524-6932) comes in many colors, including tactical green. It is lightweight and extremely effective in preventing hypothermia.

At this point all life threatening issues should have been identified and treated. You should begin to take precautions against hypothermia. Preventing hypothermia is for more than just patient comfort, it is an important lifesaving step. Hypothermia interferes with the body's blood clotting mechanism and increases mortality.

As soon as all life-threatening injuries are addressed, the patient should have all of their wet clothing removed and replaced with dry clothes or a Blizzard Rescue Blanket. Unless prohibited by wounds, cover the head, as it is a prime source of heat loss. Good hemorrhage control and fluid resuscitation will also help restore the casualty's ability to generate heat.

Monitor Vital Signs

Pain Management

Conscious casualties who remain operationally engaged should be given Mobic (15mg PO qd) and Tylenol Bi-layer Caplet (650 mg 2 PO q8h).

Casualties who cannot continue to remain operationally engaged but have no need for an IV should be given Oral Transmucosal Fentanyl Citrate (OTFC) provided as a "lozenge on a stick" taped to their finger. Reassess the patient every 15 minutes for respiratory depression.

Those who are out of the fight and require an IV should be administered morphine 5mg (IV or IO). This can be given every 10 minutes as necessary. The patient should be monitored for signs of respiratory depression. You should have Naloxone (Narcan) on hand before administering either OTFC or morphine.

Promethazine (Phenergan) 25 mg IV/IO/IM may be administered to counteract the nausea associated with Morphine or OTFC.

Immobilization

Splint any extremities that need it.

Antibiotics

If the patient can tolerate oral medications, administer Moxifloxacin 400mg, PO qd. If not, administer either cefotetan (2g IM/IV/IO) or ertapenem (1g IM/IV/IO). (For more information on giving medications, see the medication appendix at the end of this block.)

Patient Turnover

Document the patient's initial wounds, treatments performed, and response to any treatments. Ensure this, along with the most recent set of vital signs, is transferred with the patient.

3. **PHASE 3 - TACTICAL EVACUATION CARE (TACEVAC)**

During this phase, casualties should be ready for transport to a higher level of care. Since casualty movement following Tactical Field Care may be either CASEVAC or MEDEVAC, the third phase of TCCC has been re-designated Tactical Evacuation Care to include both possibilities. This phase presents the opportunity to bring in additional medical equipment and personnel, allowing for expanded diagnostic and therapeutic measures.

Factors to be Considered

Casualty movement may be difficult up to this point. Improvised litters should be padded, and field-expedient materials should be replaced with conventional supplies as soon as possible.

Patients with torso trauma must be closely monitored during this phase. Expansion of the intrapleural gas may result in tension pneumothorax due to the lower pressure at altitude. All casualties with injuries that interfere with breathing, or have a low O_2 saturation should be given oxygen during TACEVAC.

Efforts to prevent heat loss and, if needed, to actively re-warm the casualty should continue during TACEVAC. The casualty must be aggressively protected against cold stress during the evacuation, given the potential for heat loss due to windchill and the lower temperatures encountered at altitude.

Documentation

The following should be documented and maintained with the casualty:

- All wounds received (location, severity, status)
- Treatments rendered (type of treatment, effectiveness)
- Responses (verbal, medication, etc.)

This is also an excellent time to document and maintain thorough vital signs.

- Pulse rate
- Respiratory rate
- Blood pressure
- SPO_2

Continual and thorough reassessment of the casualty is CRUCIAL at this point!

ZMIST REPORT

The ZMIST report is given on an individual casualty basis as a means to prioritize and lead to more effective treatment.

- Zap Number

  Given at the unit level, this number identifies the casualty, their gear and their personal information.

- Mechanism of Injury

  What caused the injury? IED blast? Gunshot wound?

- Injuries Sustained

  What is the extent of the injuries? Where are they located?

- Signs & Symptoms

  What signs and symptoms are the casualties showing?

- Treatments Rendered

  What treatments have been done? Are they effective? How are they performing?

REFERENCE

Prehospital Trauma Life Support (PHTLS), current Military Edition

Field Medical Training Battalion

CASUALTY ASSESSMENT - TRAUMA
PERFORMANCE EXAMINATION CHECKLIST v3.0

STUDENT (Last Name, First Name, MI.)	**PLT**

	1ST		2ND		3RD	
CARE UNDER FIRE	**P**	**F**	**P**	**F**	**P**	**F**
*** Determines tactical situation. Return fire to suppress hostile fire. Direct and expect the casualty to return fire if capable.**						
Verbally direct casualty and/or buddy to apply tourniquet if casualty and rescuer are separated						
Determines MOI if possible						
Determines the number of patients vs. supplies. Is there need for triage? Are there Marines or other HMs available?						
Spinal Precautions (if warranted)						
Level of Consciousness/Mental Status **–** AVPU (A – Alert, V – Verbal commands, P – Painful stimuli, U – Unresponsive)						
*** Identify and control external life threatening extremity hemorrhage**						
*** Apply tourniquet**						
*** Move patient off the "X"**						
TIME: (2 MINUTE MAX TIME LIMIT)	**1ST**		**2ND**		**3RD**	
TACTICAL FIELD CARE **MASSIVE HEMORRHAGE / AIRWAY MANAGEMENT**	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
*** Reassess tourniquet / massive hemorrhage scan (anything missed on the "X" / unable to apply tourniquet on)**						
Continually talks to patient to ensure airway						
*** Opens airway with trauma jaw thrust or trauma chin lift**						
*** Inspect mouth for potential obstructions and clears airway as required**						
*** Look, listen, and feel (5- 10 Seconds)**						
Insert appropriate airway adjunct						
*** Reassess airway - Look, listen, and feel (5- 10 Seconds)**						

Field Medical Training Battalion

CASUALTY ASSESSMENT - TRAUMA
PERFORMANCE EXAMINATION CHECKLIST v3.0

RESPIRATORY MANAGEMENT	1ST		2ND		3RD	
	P	F	P	F	P	F
*** Assess breathing (rate, rhythm, depth)**						
*** Expose chest and inspect for life threatening wounds**						
Palpate (Crepitus, fractured ribs, flail segments, subcutaneous emphysema)						
***Treat thoracic life threatening injuries**						
*** Reassess or apply occlusive dressing**						
*** Log roll and check for exit wounds (beware of spinal integrity)**						
Posterior assessment (DCAP-BTLS) (Bright red blood in rectum)						
*** Treat posterior life threatening wounds**						
*** Ensures spinal integrity**						
Place patient on litter or spine board if available						
*** Needle thoracentesis**						
*** Reassess all interventions**						
CIRCULATORY MANAGEMENT	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
*** Assess for presence of carotid pulse**						
*** Blood sweep (identify and treat major bleeding and/or reassesses prior interventions - head to toe)**						
*** Assess for bilateral radial pulses (rate and quality)**						
Estimate palpated blood pressure (Radial = systolic of 80 mmHg, femoral = systolic of 70 mmHg, carotid = systolic of 60 mmHg)						
Peripheral Perfusion (Skin color, temperature, condition, and <2-3 Sec capillary refill)						
IV fluid consideration (Based on vital signs, titrate to radial pulses)						
FULL BODY ASSESSMENT **D**eformities, **C**ontusions, **A**brasions, **P**unctures/**P**enetrations, **B**urns, **T**enderness, **L**acerations, & **S**welling **(DCAP-BTLS)**	**1ST**		**2ND**		**3RD**	
HEAD ASSESSMENT	**P**	**F**	**P**	**F**	**P**	**F**
Skull (Inspects and palpates the scalp, skull & facial bones, Battle's sign)						

Field Medical Training Battalion

CASUALTY ASSESSMENT - TRAUMA
PERFORMANCE EXAMINATION CHECKLIST v3.0

HEAD ASSESSMENT (cont.)	1ST		2ND		3RD	
	P	F	P	F	P	F
Ears (Blood, CSF, injury)						
Eyes (PERRLA-EOMI, injury, raccoon eyes)						
Nose (Blood, CSF, injury)						
Mouth (Broken teeth, obstructions, odor)						
NECK ASSESSMENT	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
Posterior (Step offs, deviations)						
Anterior (JVD, Tracheal deviation)						
ABDOMEN ASSESSMENT	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
Inspect (Pulsating masses, bruising, distention, and eviscerations)						
Palpate – All (4) quadrants (Distension, rigidity, and facial grimace)						
Treat / Reassess abdominal injuries						
PELVIS ASSESSMENT	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
Inspect (Bruising, obvious injury, meatus / perineum for blood)						
Palpate (Squeeze medially and roll down pelvis to check for potential fractures)						
Treat / Reassess pelvis injuries						
LOWER EXTREMITIES ASSESSMENT	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
Inspect (Obvious injuries)						
Palpate (Bone crepitus, assess PMS {Movement/sharp/dull test /distal pulse}, note facial grimace)						
Treat / Reassess lower extremity injuries / Split all fractures (Possible conversion of tourniquet to pressure dressing as indicated)						

Field Medical Training Battalion

CASUALTY ASSESSMENT - TRAUMA
PERFORMANCE EXAMINATION CHECKLIST v3.0

UPPER EXTREMITIES ASSESSMENT	1ST		2ND		3RD	
	P	F	P	F	P	F
Inspect (Obvious injuries)						
Palpate (Bone crepitus, assess PMS {Movement/sharp/dull test /distal pulse}, note facial grimace)						
Treat / Reassess upper extremity injuries (Possible conversion of tourniquet to pressure dressing as indicated)						
REASSSESMENT	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
Consider pain medications PRN						
Interventions, LOC, ABCs						
TACTICAL EVACUATION / **OVERALL GENERAL IMPRESSION**	**1ST**		**2ND**		**3RD**	
	P	**F**	**P**	**F**	**P**	**F**
ZMIST report						
Identify transport priority						
Reassess fluid intervention requirements						
TIME: (12 MINUTE MAX TIME LIMIT)	**1ST**		**2ND**		**3RD**	
Scenario						
Total number of non-critical steps missed (Score greater than 10 constitutes a failure)						
Critical steps missed (Any critical step missed constitutes a failure)						

1st Evaluator:	**2nd Evaluator:**	**3rd Evaluator:**
PASS / FAIL	**PASS / FAIL**	**PASS / FAIL**
Student signature:	**Student signature:**	**Student signature:**
Notes:	**Notes:**	**Notes:**

Casualty Assessment Review

1. List and briefly describe the three phases of Tactical Combat Casualty Care (TCCC).

2. Management of a compromised airway would be taken care of during what phase of TCCC?

3. Briefly describe why prevention of hypothermia is so important for the casualty.

4. Describe why patients who can stay in the fight should not be given morphine.

MEDICATION APPENDIX

Medications Used During Tactical Combat Casualty Care (TCCC)

Pain Relief

The Committee on Tactical Combat Casualty Care (CoTCCC) recommends the following medications be used in providing pain relief to casualties. The choice of which medications to use is based on the patients ability to remain in the fight.

Mobic (meloxicam) is a Non Steroidal Anti-Inflammatory Drug (NSAID) given for pain relief. This drug is usually given as soon as possible following injury to casualties who are still able to fight. The CoTCCC recommends this drug be supplied to individual operators as part of a Combat Pill Pack. This drug was chosen because it has no documented platelet dysfunction, meaning that unlike other NSAID's such as Motrin, it does not interfere with the body's natural blood clotting abilities. Although it takes up to five hours to reach its maximum level of effectiveness, it has a long duration time and is stable even at high temperatures.

Tylenol (acetaminophen) 8-Hour Bi-layer Caplets is an analgesic and antipyretic (fever lowering) medication intended to be given with at the same time Mobic is given. The outer layer of the caplet is designed to dissolve quickly to provide quick relief. The CoTCCC recommends this medication because it acts quickly and helps to bridge the gap until the Mobic takes effect. It also should be issued to operators as part of the Combat Pill Pack and should be given to casualties who need pain relief for their injuries but are still able to participate in combat operations.

Morphine is an Opiod (narcotic) and is considered the "gold standard" of analgesia. It should only be administered to a casualty out of the fight who already has IV access established. Dosage should be 5mg given every 10 minutes until pain relief is achieved. Because patients who receive narcotics often suffer from nausea and vomiting, Phenergan (promethazine) should also be administered. Narcan (naloxone) should also be *on hand* whenever narcotics are used in the event the patient suffers from respiratory depression.

Oral Transmucosal Fentanyl Citrate (OTFC) is an Opiod (narcotic) that provides a means of delivering effective, rapid onset pain relief without starting an IV. This medication is produced in a lozenge form. It should be given only to patients who can no longer participate in combat operations. It should be administered by taping the "lozenge-on-a-stick" to the patient's finger and placing the lozenge in the patient's mouth. Once analgesia is achieved the patient may pass out and the lozenge will fall out of his or her mouth. Similar to morphine, promethazine may be needed to reduce nausea and Narcan should be on hand.

Phenergan (promethazine) is given to reduce nausea. It is administered IV, IO, or IM in dosages of 25 mg or 50 mg.

Narcan (naloxone) is an Opiod reversal agent. It is designed to prevent or reverse the effects of narcotics such as morphine or OTFC. It should be administered in an initial dose of 0.2 mg IV, IO, or IM (up to 10 mg total).

Antibiotics

Infection is a late cause of morbidity (sickness) and mortality (death) in battlefield wounds. For this reason the CoTCCC has recommended casualties receive antibiotic treatment as soon as possible. The biggest challenge for you is the logistical requirements that prevent you from carrying a wide variety of items. The CoTCCC identified the antibiotics that provided the most "bang for the buck". The following medications were chosen for their, broad coverage, minimal side effects, resistance to heat or cold, simple dosage requirements, and minimal storage requirements.

Avelox (moxifloxacin) is the oral antibiotic of choice. The dosage is one 400 mg tablet by mouth, once a day. This should be administered to all casualties who can tolerate oral medications as soon after injury as possible.

Cefotan (cefotetan) is the parenteral (injectable) antibiotic drug of choice. The dosage is either 2 grams IV/IO delivered over the span of 3 to 5 minutes or 2 grams IM. This should be given to casualties who can not take oral medications. This includes casualties who are unconscious or those who have significant facial wounds. Patients in hypovolemic shock should not be given antibiotics orally because reduced blood flow to the stomach impairs the body's ability to process oral medications.

Invanz (ertapenum) is the recommended alternative to cefotetan in the event it is not available (as has been the case). The dosage is 1 gram administered IV, IO, or IM. This should be given to casualties who can not take oral medications. This includes casualties who are unconscious or those who have significant facial wounds. Patients in hypovolemic shock should not be given antibiotics orally because reduced blood flow to the stomach impairs the body's ability to process oral medications.

Combat Medicine
Review Questions

NOTE: The following questions are offered for review purposes. <u>This is NOT intended as a sole source of test preparation</u>. Remember all test questions are based on an ELO and any ELO can be used to create a test question.

1. What are the anatomical landmarks for a cricothyroidotomy?
2. What are the components of the cardiovascular system?
3. What are the three basic groups that IV solutions fall into?
4. What causes a Flail Chest?
5. What are the three types of muscles in the body?
6. What major abdominal organs are in the Right Upper Quadrant?
7. What is the initial treatment of a life threatening extremity wound?
8. The skeletal portion of the thorax is formed by what?
9. What are the three types of head injuries?
10. What are the 10 procedural steps of performing an emergency cricothryoidotomy?
11. What are two serious consequences of Tension Pneumothroax?
12. What plasma substitute is the IV fluid of choice for volume replacement due to trauma in a tactical situation?
13. What is the Hemostatic agent used on the battlefield?
14. Which lung is larger than the other and is divided into three lobes?
15. What are the major types of facial injuries?
16. Treatment for strains and sprains includes R.I.C.E. What does R.I.C.E stand for?
17. What is the second leading cause of preventable death on the battlefield?
18. What is homeostasis?
19. Where should a tourniquet NEVER be placed?
20. What major abdominal organs are in the Right Lower Quadrant?
21. For which type of injury is a Modified Barton bandage used?
22. How much blood is in the average adult?
23. What is the difference between a strain, sprain, and dislocation?
24. What are the four classifications of hemorrhagic shock?
25. What major abdominal organs are in the Left Upper Quadrant?
26. What is the most common complication associated with emergency cricothyroidotomy?
27. What are the two types of bruising associated with closed skull injuries?
28. What anatomical landmarks are necessary in order to perform needle thoracentesis?

29. What are the classifications of abdominal organs?
30. What are the causes of cervical spine neck injuries?
31. What is Phlebitis?
32. What are the three phases of Tactical Combat Casualty Care?
33. What are the four types of bones in the body?
34. What is the definitive management of hemorrhagic shock?
35. What are the three types of distributive shock?
36. What are signs and symptoms of intrinsic cardiogenic shock?
37. What major abdominal organs are in the Left Lower Quadrant?
38. What are signs and symptoms of vasculature neck injuries?
39. What are the procedural steps for needle thoracentesis?
40. What is subcutaneous emphysema?
41. What causes an Open Pneumothorax (Sucking Chest Wound)?
42. What are the three types of hemorrhage and what are their distinguishing traits?

COMPONENTS OF FIELD MEDICINE

COMPONENTS OF FIELD MEDICINE

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
Camp Pendleton, CA 92055-5243

FMST 501

Blast Related Injuries

TERMINAL LEARNING OBJECTIVE.

1. Given a mission, Commander's guidance and intent, rules of engagement, escalation of force criteria, and a simulated exploded improvised explosive device (IED), while serving as an individual in a small unit, **react to an exploded improvised explosive device (IED) to prevent further casualties and resume the mission**. (HSS-MCCS-2019)

ENABLING LEARNING OBJECTIVE(S).

1. Without the aid of reference and in writing, **identify the five categories of blast effects on the human body**, within 80% accuracy per Prehospital Trauma Life Support, Current Military Edition. (HSS-MCCS-2019a)

2. Without the aid of reference and in writing**, identify the pattern of injuries from an explosive device**, within 80% accuracy per Prehospital Trauma Life Support, Current Military Edition. (HSS-MCCS-2019b)

3. Without the aid of reference and in writing**, identify the wounding effects of fragmentation**, within 80% accuracy per Prehospital Trauma Life Support, Current Military Edition. (HSS-MCCS-2019c)

4. Without the aid of reference and in writing**, identify the wounding effects of blast overpressure**, within 80% accuracy per Prehospital Trauma Life Support, Current Military Edition. (HSS-MCCS-2019d)

1. **Identify the Five Categories of Blast Effects**

a. The term "blast injuries" refers to the general injuries caused by an explosive force.

b. The five categories of blast injury effects are known as primary, secondary, tertiary, quaternary and quinary. It is important to understand the effects of each, as well as the mechanism of injury and injuries associated with all five.

Effect	Impact	Mechanism of Injury	Injuries
Primary	Direct blast effects (over- and under-pressurization	Overpressure; Interaction of blast wave with body; Stress and Sheer Waves	Pulmonary Tympanic Membrane Hollow-viscus Injuries
Secondary	Projectiles propelled by explosions	Fragments from the exploding weapon as well as from the environment (debris, vehicle metal, rocks etc)	Fragmentation Injuries Penetrating Trauma
Tertiary	Body propelled onto hard surface	Displacement of body and structural collapse	Penetrating Blunt Trauma Crush Injuries
Quaternary	Heat and Combustion Flames	Burns Toxicity	Burns Inhalation Injuries Asphyxiation
Quinary	Additives (Chemicals, Radiation etc)	Contamination	Depends on additive

2. **Pattern of Injuries**

a. Casualties from explosions on the battlefield are generally segregated into two categories, military and civilian. While military casualties are predominately young and otherwise healthy, civilian casualties may be very young or very old. A large percentage of those will be in relatively poor health.

b. Military casualties will be more likely to wear protective gear. Therefore, they will be less likely to suffer injuries to the upper torso and head.

c. Most wounds are non-critical, soft tissue or skeletal injuries. Up to 70% of all mortalities involve head injuries.

3. **Wounding Effects of Fragmentation**

a. Fragmentation injuries are the most common form of injury in a terrorist bombing. Fragments include debris from the munitions itself, the environment surrounding the explosive (sticks, rocks, trash etc) and, in the case of suicide bombers, human body parts.

b. Treatment of fragmentation wounds will be based on the body area involved and the extent of the injury.

c. Limbs are by far the most commonly affected body area, accounting for 70% of the injuries from explosive devices. Primary and secondary effects of the blast may require the patient to receive emergency treatments to prevent exsanguination. As with all war wounds, extremity wounds from explosions will need antibiotics to prevent systemic infection.

d. While eyes are extremely resistant to primary effects of blasts, they are susceptible to secondary and tertiary effects. Explosions that cause shattering of glass have a high incidence of causing penetrating eye injuries. The majority of eye injuries are caused by inadequate eye protection, such as polycarbonate goggles.

4. **Wounding Effects of Blast Overpressure**

a. Physics of Blast Waves

(1) Stress waves are supersonic, longitudinal pressure waves. These waves create high potential for injuries, especially in gas filled organs such as the lungs, ears and intestines.

(2) Sheer waves are lower velocity transverse waves with longer duration than stress waves. These waves cause tissue in the body to move back and forth.

b. Lung Injuries occur when the victim experiences overpressure of greater than 40 psi. Increases in pressure of 200 psi in an open air environment are almost universally fatal. Lung injuries are the most common cause of death related to the primary blast effect.

c. Ear Injuries can occur from as little as 5-15 psi of overpressure. For this reason it is imperative that all blast injury casualties be examined for possible tympanic membrane rupture. Blast induced deafness may heighten the patient's anxiety. It may be permanent or spontaneously resolve in a matter of hours.

d. Gastrointestinal Injuries are more likely to occur in patients of blasts detonated inside a building than those exposed to explosions in an open air environment. Of all abdominal blast injuries, intestinal perforation is the most common. Symptoms include pain in the abdomen, rectum and testes. Signs and symptoms may be difficult to appreciate early in the chain of care.

e. Solid Organ injuries are rare in open air blasts but have been reported in underwater blasts.

f. Central Nervous System injuries to include Traumatic Brain Injuries (TBI) are a significant issue associated with blast injuries. Moderate to sever TBI accounts for 71% of the early deaths associated with explosions and 52% of later deaths. Mild TBI is associated with long term issues such as memory loss, irritability and decreased cognitive functions. For this reason ALL PERSONEL INVOLVED IN AN EXPLOSIVE ATTACK SHOULD BE REFERRED TO THE MEDICAL OFFICER FOR DOCUMENTATION AND EVALUATION.

REFERENCES:

PreHospital Trauma Life Support (PHTLS). Current Edition

Blast Related Injuries Review

1. Identify the five categories of blast effects on the human body?

2. Explain the pattern of injury consistent with a blast victim?

3. Identify the wounding effects fragmentation has on different parts of the body?

4. Describe the wounding effects of blast overpressure?

UNITED STATES MARINE CORPS
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FMST 502

Evaluate Traumatic Brain Injury

TERMINAL LEARNING OBJECTIVE

1. Given a casualty in an operational environment, **evaluate traumatic brain injuries** to reduce the risk of further injury or death. (8404-MED-2016)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference and in writing, **identify the mandatory events requiring TBI evaluation**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2016a)

2. Without the aid of reference and in writing, **identify the signs and symptoms of TBI**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2016b)

3. Without the aid of reference and in writing, **identify the components of the Military Acute Concussion Evaluation (MACE)**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2016c)

4. Without the aid of reference and in writing, **identify the required data for the significant activity (SIGACT) report**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-MED-2016d)

OVERVIEW

It is DoD policy that:

a. DoD shall identify, track, and ensure the appropriate evaluation and treatment of Service members exposed to potentially concussive events, to include blast events.

b. Service members exposed to a potentially concussive event shall be medically assessed as close to the time of injury as possible.

c. Medically documented mTBI/concussion in Service members shall be clinically evaluated, treated, and managed according to the most current DoD clinical practice guidance for the deployed environment found at the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injuries (DCoE) website.

d. Recurrent concussion shall be managed according to the most current DoD clinical practice guidance for the deployed setting.

e. Potentially concussive events, results of concussion screening, and diagnosed concussions shall be appropriately documented, to the maximum extent possible in the Service member's electronic health record.

1. **MANDATORY EVENTS REQUIRING TBI EVALUATION**

   Events requiring mandatory rest periods and medical evaluations and reporting of exposure of all involved personnel include, but are not limited to:

   a. Involvement in a vehicle blast event, collision, or rollover.

   b. Presence within 50 meters of a blast (inside or outside).

   c. A direct blow to the head or witnessed loss of consciousness.

   d. Exposure to more than one blast event (the Service member's commander shall direct a medical evaluation).

2. **SIGNS & SYMPTOMS**

   TBI can be divided into 2 categories:

   a. Primary Brain Injury

   b. Secondary Brain Injury

Primary Brain Injury
- Direct trauma to the brain and associated structures (Contusions, hemorrhages, lacerations)

Secondary Brain Injury
- The ongoing injury process from primary injury
- Management of TBI is focused to limit or stop these secondary mechanisms (ICP, hypoxia, hypotension and inadequate cerebral blood flow)

Mild TBI
- Loss of consciousness is brief, usually a few seconds/minutes
    - Loss of consciousness does not have to occur
- Testing and scans of the brain may appear normal
- Most common: 75%-85% of all brain injuries are mild
- 90% of individuals recover within 6-8 weeks

Moderate TBI
- Loss of consciousness lasts from a few minutes to a few hours
- Confusion lasts from days to weeks
- Physical, cognitive, and/or behavioral impairments last for months or are permanent
- EEG/CAT/MRI are positive for brain injury

Severe TBI
- Prolonged unconscious state or coma lasts days, weeks or months
- Categories include:
    - Coma
    - Vegetative State
    - Persistent
    - Minimally Responsive State
    - Locked-in Syndrome

Commanders or their representatives are required to assess all Service members involved in potentially concussive events, including those without apparent injuries, as soon as possible using the Injury/Evaluation/Distance (I.E.D.) checklist (see Figure 1).

Injury	Physical damage to the body or body part of a Service member?	(Yes/No)
Evaluation	**H** – Headaches and/or vomiting?	(Yes/No)
	E – Ear ringing?	(Yes/No)
	A – Amnesia, altered consciousness, and/or loss of consciousness?	(Yes/No)
	D – Double vision and/or dizziness?	(Yes/No)
	S – Something feels wrong or is not right?	(Yes/No)
Distance	Was the Service member within 50 meters of the blast? Record the distance from the blast.	(Yes/No) Not Applicable

Figure 1 IED Checklist

3. **MILITARY ACUTE CONCUSSION EVALUATION**

Patient Name: _____

SS#: _____-_____-_____**Unit:** _____

Date of Injury: _____/_____/_____ **Time of Injury:** _____

Examiner: _____

Date of Evaluation: _____/_____/_____ **Time of Evaluation:** _____

History: (I – VIII)

I. **Description of Incident**
Ask:
a) What happened?
b) Tell me what you remember.
c) Were you dazed, confused, "saw stars"? ❒ Yes ❒ No
d) Did you hit your head? ❒ Yes ❒ No

II. **Cause of Injury** (Circle all that apply):
1) Explosion/Blast 4) Fragment
2) Blunt object 5) Fall
3) Motor Vehicle Crash 6) Gunshot wound
7) Other _____

III. **Was a helmet worn?** ❒ Yes ❒ No Type _____

IV. **Amnesia Before: Are there any events just BEFORE the injury that are not remembered? (Assess for continuous memory prior to injury)**
❒ Yes ❒ No If yes, how long _____

V. **Amnesia After: Are there any events just AFTER the injuries that are not remembered? (Assess time until continuous memory after the injury)**
❒ Yes ❒ No If yes, how long _____

VI. **Does the individual report loss of consciousness or "blacking out"?** ❒ Yes ❒ No If yes, how long _____

VII. **Did anyone observe a period of loss of consciousness or unresponsiveness?** ❒ Yes ❒ No If yes, how long _____

VIII. **Symptoms** (circle all that apply)
1) Headache 2) Dizziness
3) Memory Problems 4) Balance problems
5) Nausea/Vomiting 6) Difficulty Concentrating
7) Irritability 8) Visual Disturbances
9) Ringing in the ears 10) Other _____

Examination: (IX – XIII)

Evaluate each domain. Total possible score is 30.

IX. **Orientation:** (1 point each)

Month:	0	1
Date:	0	1
Day of Week:	0	1
Year:	0	1
Time:	0	1

Orientation Total Score _____/5

X. **Immediate Memory:**
Read all 5 words and ask the patient to recall them in any order. Repeat two more times for a total of three trials. (1 point for each correct, total over 3 trials)

List	Trial 1	Trial 2	Trial 3
Elbow	0 1	0 1	0 1
Apple	0 1	0 1	0 1
Carpet	0 1	0 1	0 1
Saddle	0 1	0 1	0 1
Bubble	0 1	0 1	0 1
Trial Score			

Immediate Memory Total Score _____/15

XI. **Neurological Screening**
As the clinical condition permits, check
Eyes: pupillary response and tracking
Verbal: speech fluency and word finding
Motor: pronator drift, gait/coordination
Record any abnormalities. **No points are given for this.**

XII. Concentration

Reverse Digits: (go to next string length if correct on first trial. Stop if incorrect on both trials.) 1 pt. for each string length.

4-9-3	6-2-9	0	1
3-8-1-4	3-2-7-9	0	1
6-2-9-7-1	1-5-2-8-5	0	1
7-1-8-4-6-2	5-3-9-1-4-8	0	1

Months in reverse order: (1 pt. for entire sequence correct)
Dec-Nov-Oct-Sep-Aug-Jul-Jun-May-Apr-Mar-Feb-Jan
0 1

Concentration Total Score ____/5

XIII. Delayed Recall (1 pt. each)

Ask the patient to recall the 5 words from the earlier memory test (Do NOT reread the word list.)

Elbow	0	1
Apple	0	1
Carpet	0	1
Saddle	0	1
Bubble	0	1

Delayed Recall Total Score ____/5
TOTAL SCORE _____/30

Notes: _____

_____

Diagnosis: (circle one or write in diagnoses)

No concussion
850.0 Concussion without Loss of Consciousness (LOC)
850.1 Concussion with Loss of Consciousness (LOC)

Other diagnoses _____

_____

4. REQUIRED DATA FOR THE SIGACT REPORT

After the I.E.D. assessment is complete, record the results for each individual involved in the event and submit as part of the significant activities (SIGACT) report required for blast-related events. The line commander is responsible to ensure all reports are completed as operational conditions permit, preferably within 24 hours. The minimum required data fields for the monthly reports are:

a. Date of potentially concussive event.

b. Type of potentially concussive event triggering evaluation.

c. SIGACT number (if applicable).

d. Personal identifier (e.g., DoD identification number or Battle Roster Number).

e. Service member's name.

f. Unit name, unit identification code, and home duty station.

g. Combatant Command in which the event occurred.

h. Service member's distance from the blast when applicable.

i. The disposition following the medical evaluation (return to duty after 24 hours, commander's justification to return to duty prior to 24 hours, or did not return to duty after 24 hours).

REFERENCE:

DoD Instruction 6490.11 - DoD Policy Guidance for Management of Mild Traumatic Brain Injury/Concussion in the Deployed Setting

Evaluate Traumatic Brain Injury Review Questions

1. What are the mandatory events requiring TBI evaluation?

    1)

    2)

    3)

    4)

2. What are the 2 categories of TBI?

    1)

    2)

3. What are the symptoms of mild TBI?

4. What does “IED” stand for?

    I –

    E –

    D –

5. What is the total score for a MACE exam?

6. What is the final data needed for the SIGACT report?

UNITED STATES MARINE CORPS
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FMST 503

Manage Burn Casualties

TERMINAL LEARNING OBJECTIVES

1. Given a casualty in an operational environment and a combat assault pack**, treat burns to reduce the risk of further injury or death**. (8404-MED-2012)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference and given a description or list, **identify the anatomy of the skin**, within 80% accuracy, per the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2012a)

2. Without the aid of reference and given a description or list, **identify the different types of burns**, within 80% accuracy per the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2012b)

3. Without the aid of reference and given a description or list**, identify the degree of burns**, within 80% accuracy per the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2012c)

4. Without the aid of reference and given a description or list**, determine the percent of body surface burned** per the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2012d)

5. Without the aid of reference and given a description or list, **identify the appropriate treatment for burns**, within 80% accuracy per the Pre-Hospital Trauma Life Support, Current Military Edition. (8404-MED-2012e)

1. **ANATOMY OF THE SKIN**

The most important function of the skin is to be a protective barrier against the outside environment. The skin also prevents fluid loss and helps regulate body temperature. Skin is composed of three layers: the epidermis, dermis, and subcutaneous tissue (see figure 1).

Epidermis - the outermost layer, is made up entirely of epithelial cells with no blood vessels
Dermis - a framework of connective tissues containing blood vessels, nerve endings, sebaceous glands, and sweat glands
Subcutaneous Tissue - is a combination of elastic and fibrous tissue as well as fat deposits

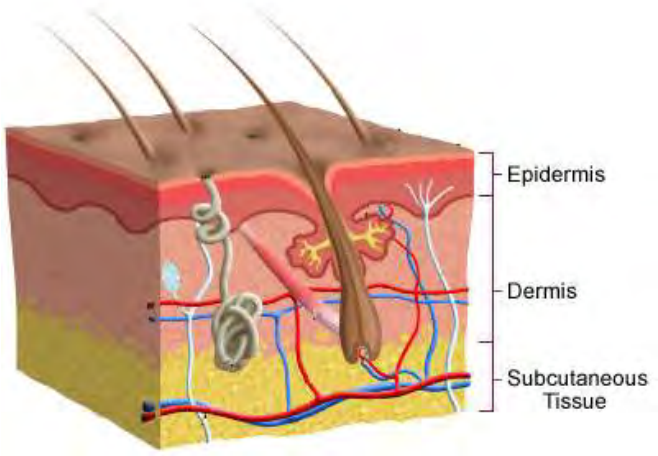

Figure 1. Anatomy of the Skin

2. **TYPES OF BURNS**

Burn injuries have many causes on and off the battlefield. Burns are generated by exposure to extreme heat, a biologic reaction from chemicals, or energy transfer through cells from electrocution or radiation. Many weapons and munitions cause burn injuries. Some, such as incendiary and flame munitions, are designed to cause high heat and burning. Others, such as high explosives, bombs, and mines cause burns secondarily to their primary effect.

Thermal (see figure 2) - thermal burns are the most common type of burn on the modern battlefield. They can result from exposure to flame weapons, incendiary weapons, munitions or from explosions from fuel sources (gasoline, diesel, and jet fuel). These weapons are designed to burn at very high temperatures and incorporate napalm, thermite, magnesium, and white phosphorous.

- The primary effect of incendiary and flame munitions against personnel are to cause severe burns.
- Burns to the airway are also possible, particularly if the casualty is in an enclosed space (bunker, ship compartment, or armored vehicle). Airway burns may result in rapid, life-threatening swelling and obstruction of the upper airway. Monitor the casualty for the following signs and symptoms:
  - Stridor
  - Oropharyngeal swelling
  - Hoarseness
  - Difficulty swallowing
  - Carbonaceous sputum (blackened sputum)
  - Singed nasal or facial hair
  - Dyspnea

Figure 2. Thermal burn to legs

Electrical Burns (see figure 3) - electrical injuries are devastating injuries that can easily be underappreciated. In many cases the extent of tissue damage does not accurately reflect the magnitude of the injury. Tissue destruction and necrosis are excessive compared with the apparent trauma because most of the destruction occurs internally as the electricity is conducted through the casualty. The casualty will have external burns at the points of contact with the electrical source as well as grounding point. As the electricity courses through the casualty's body, deep layers of tissue are destroyed despite seemingly minor injuries on the surface. Electrical and crush injuries share many similarities. In both injuries there is massive destruction of large muscle groups with resultant release of both potassium and myoglobin. The release of potassium from large muscles causes a significant increase in the serum level, which often results in cardiac arrhythmias. All electrical burns are considered a cardiac emergency and the casualty should be TACEVAC'd to a higher echelon of care. Also, when myoglobin is released into the bloodstream in consderable amounts, it can be toxic to the kidneys and can cause kidney failure. Other signs and symtoms include:

Figure 3. Electrical burn to foot

- Tympanic membranes may rupture causing hearing loss.
- Intense muscle contractions (tetany) can result in fractures at multiple levels of the spine. Casualties with electrical injuries should have their spine immobilized.
- Intercranial bleeds and long bone fractures may also occur.

Circumferential Burns (see figure 4) - a circumferential burn is a burn that encircles the trunk of the body (chest) or an extremity (arm or leg). **Circumferential burns are capable of producing a life or limb threatening condition. They can create a tourniquet-like effect that can render an arm or leg pulse-less.** Circumferential burns of the chest can constrict the chest wall to such a degree that the casualty suffocates from inability to breath. Therefore, all circumferential burns should be handled as an emergency and casualties TACEVAC'd immediately. Escharotomies are surgical incisions made through the burn eschar to allow expansion of the deeper tissue and decompression of previously compressed and often occluded vascular structures.

Figure 4. Circumferential burn to foot

Radiation Burns - burns associated with nuclear blasts. Radiation is a hazardous material. The initial priorities are to remove the casualty from the source of contamination, remove contaminated clothing, and irrigate the casualty with water.

- Skin that is exposed to an explosion is burned by the infrared rays emitted at detonation.
- Clothing or shelter can offer some protection.
- Secondary injuries will include first and second degree burns.
- The majority of burns are caused by contact with the secondary sources that ignited

such as buildings and clothing.
- If the doses of ionizing radiation are high enough to cause burns to the skin, systemic effects may overshadow the burn itself.

Chemical - injuries from chemicals are often the result of prolonged exposure to the offending agent. This is contrasted with thermal injuries, where the duration of exposure is usually very brief. You may encounter casualties who have suffered chemical burns caused by weapons, chemicals used to fuel or maintain equipment, or chemical spills following damage to civilian installations. The severity of a chemical injury is determined by four factors: nature of the chemical, concentration of the chemical, duration of contact, and MOI of the chemical. Chemical agents are classified as:

Acids:
- chemicals with a pH between 7 (neutral) and 0 (strong)
- Found in cleaners and swimming pool acidifiers

Bases (alkali):
- chemical with a pH between 7 and 14
- found in fertilizer, industrial cleaners, the structual bonds of cement/concrete, and the most common cause of alkali burns in garrison are the batteries used in our radios
- Alkali burns are usually more serious than acid burns, because alkalis penetrate deeper and burn longer

Organic:
- Contains carbon
- Phenols, creosote and petroleum products such as gasoline

3. DEGREE OF BURNS

The severity of a burn is determined by the depth of the burn and the extent of the total body surface area (TBSA) burned. The severity of all burns will vary depending on the source of the burn, duration of exposure, and location of the burn.

Depth: The depth of the burn is related to how deeply the skin is damaged (see figure 5). Estimation of burn depth can be deceptively difficult. Often, a burn that appears to be a partial-thickness burn (second degree) will prove to be third degree burn in 24 to 48 hours. Therefore it is often wise to withhold final judgment of burn depth for up to 48 hours after injury.

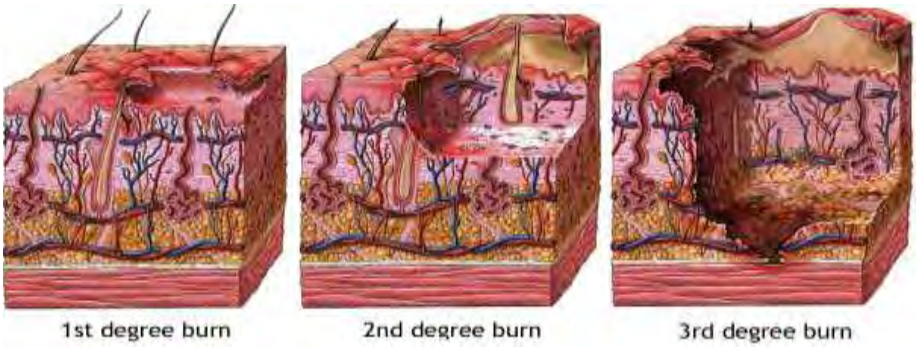

Figure 5. Depth of Burns

Superficial Burn/First-Degree Burn (see figure 6) - first-degree burns involve only the epidermis and are characterized as being red and painful. These wounds heal typically within a week and the casualty will not scar.

Signs and Symptoms:

- Dry, red and inflamed skin
- Painful to touch
- The burned area blanches with pressure
- Minimal swelling (if present)

Figure 6. First Degree burn on

Partial Thickness Burns/Second-Degree Burn (see figure 7) - burns that involve the epidermis and varying portions of the underlying dermis. Second-degree burns will appear as blisters or as denuded, burned areas with a glistening or wet appearing base. These wounds will be painful. Because remnants of the dermis survive, these burns are often capable of healing in 2 to 3 weeks.

Figure 7. Second Degree Burn

Signs and Symptoms:

- Skin is moist, with reddened areas
- Blisters or open weeping wounds
- Deep, intense pain
- Edema will be moderate
- Fluid loss may be significant depending on the extent of the burn

Full Thickness Burn/Third-Degree Burn (see figure 8) - third-degree burns involve all three layers of skin and may have several appearances. Most casualties will have pain because areas of third-degree burn are usually surrounded by second-degree burns.

- Signs and Symptoms:
  - Skin has a dry, leathery appearance
  - The skin can range in color from white, yellow, cherry red, brown, or charred
  - Severe pain around periphery of burn, but little to no pain near center of burn.
  - No capillary refill at affected area

Figure 8. Third Degree burn of lower leg

Fourth-Degree/Complete Burn (see figure 9) - fourth-degree burns are those that not only burn all layers of the skin, but also burn underlying fat, muscles, bone or internal organs.

Figure 9. Fourth Degree burn on arm

4. BURN SIZE ESTIMATION

Estimation of burn size is necessary to begin to resuscitate the casualty appropriately and prevent the complications associated with hypovolemic shock. The most widely applied method is known as the "Rule of Nines."

Rule of Nines: This method applies the principles that major regions of the body in adults are considered to be 9% of the total body surface area (TBSA) (see figure 10). The genital area and palms of the hand (not including the digits) represent 1%.

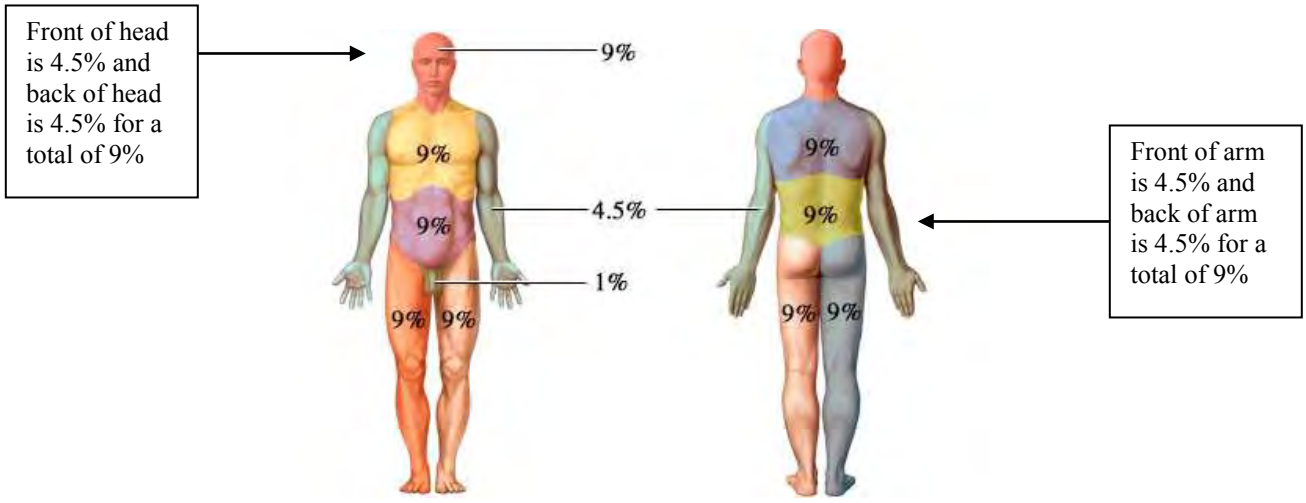

Figure 10. Rule of Nines

Rule of Palms: This method assumes that the palm size of the patient represents approximately 1% of the TBSA. TBSA is estimated by counting the number of the patient's "palms" it takes to completely cover the burn area. The Rule of Palms is helpful for estimating the TBSA of small or irregular shaped burns and small children.

6. TREATMENT OF BURNS

The initial step in the care of a burn casualty is to stop the burning process. The most effective and appropriate method of terminating the burning is irrigation with large volumes of room-temperature water. In the tactical environment however, access to large volumes of water is not always practical. You can also smother any flames with a jacket, blanket, or any other available material. Rolling the casualty on the ground is also effective. Remove all clothing and jewelry; these items retain residual heat and will continue to burn the casualty. However, DO NOT pull away clothing that is stuck to the wound.

Airway - the heat from the fire can cause edema of the airway above the level of the vocal cords and can occlude the airway, so be prepared for a possible surgical airway. Careful and continuous evaluation of the airway is required. O2 should be given, if available.

Breathing - as with any trauma casualty, breathing can be adversely affected by such problems as broken ribs, pneumothoraces (collapsed lung), and open chest wounds. In the event of circumferential chest wall burns, pulmonary compliance may decrease to such an extent that it inhibits the casualty's ability to inhale. In such cases, prompt TACEVAC of casualty to higher level of care in order to perform escharotomies of the chest wall is critical.

Circulation - evaluation of circulation includes the determination of blood pressure, evaluation of circumferential burns, and establisment of intravenous access. Accurate measurement of blood pressure becomes difficult or impossible with burns to the extremities. Blood pressure can be estimated by palpating for distal pulses. Even if the casualty has adequate blood pressure, distal limb perfusion may be critically reduced because of circumferential injuries. Burned extremities should be elevated, when tactically prudent, during transport to reduce the degree of swelling in the affected limb.

Two large-caliber IV catheters are required for burns that cover more than 20% of the TBSA. Ideally, the IV should not be placed through or adjacent to burned tissue; however, placement through the burn is appropriate if no alternative sites are available or consider the intraosseous (IO) route.

Detailed Assessment - perform your assessment, keeping in mind that burns themselves are not immediately fatal and can wait until other priorities are addressed. Therefore, assess for additional injuries, such as associated blast, missile or fragment wounds and treat appropriately.

Hypothermia - burn casualties are not able to retain body heat and are extremely susceptible to hypothermia. Make every effort to preserve body temperature. Apply several layers of blankets. Keep passenger compartment of the TACEVAC vehicle or fuselage of the aircraft warm, regardless of the time of year. As a general rule, if you as the provider treating the burn casualty are not uncomforable, the ambient temperature is not warm enough.

Estimate the Depth and Extent of the Burn - use the "Rule of Nines" or the "Rule of Palms" noted above.

Dressing the burn - before TACEVAC, the wounds should be dressed. The goal of the dressing is to prevent ongoing contamination and prevent airflow over the wounds. Water-jel dressings, if available, are preferred as they help to cool the burn. If not, dry sterile dressings covering the entire burn are sufficient before TACEVAC of the casualty. Several layers of blankets are then placed over the casualty to prevent hypothermia.

Fluid resuscitation- Administration of large amounts of IV fluids is needed to prevent a burn casualty from going into hypovolemic shock. After a burn, the casualty loses a substantial amount of intravascular fluid from the edema, as well as the evaporative losses at the site of the burn. Massive fluid shifts will occur and evaporative losses can be enormous.

The resuscitation of burn shock is aimed at not only restoring the lost volume but also replacement of anticipated losses. When treating a burn casualty, the objective is to calculate and replace the fluids that it is anticipated the casualty will lose over the first 24 hours after the burn injury.

The use of LR solution is the best way to initially manage a burn casualty. The most frequently used formula for calculating fluid replacement is the "Parkland formula." The Parkland formula delivers 4 ml/kg/% TBSA burned. Half this fluid will be administered in the first 8 hours after injury and the remaining half of the volume over the next 16 hours. It is important to remember the first half is administered with 8 hours from the time the casualty was injured, not from the point the provider started to resuscitate the casualty. This is especially important in the tactical situation where there may be an initial delay in treatment. If the casualty presents for emergency care 3 hours after the injury with no or little fluids administered, the first half of the calculated total needs to be administered over 5 hours. For example:

To Pop or Not to Pop, that is the Question?

The blister on a burn does not provide protection to the skin and limits the ability to apply topical antibiotics. So why don't we pop them? Blisters should only be popped when you have the capabilities to debride the wound, provide pain medications, and apply antibiotic ointments. Do not open the blisters unless the above capabilities are available.

Parkland formula example = 4 mL X weight in kg X % TBSA burned

Parkland formula: 4 ml X 76 kg X 36%

76 kg casualty has sustained partial thickness burns to his anterior chest (9%) and abdomen (9%), entire right arm (9%), and anterior right leg (9%). The injury occurred 30 minutes ago.

In this case, the casualty who weighs 76 kg has sustained burns over 36% of his body. So, doing the math:

4 X 76 = 304; 304 X 36 = 10,944 mL (which can be rounded up to 11 liters)

Remember, half of this total should be administered in the first 8 hours following the burn, so, the casualty will need 5 ½ liters in the first 8 hours. Keep in mind, the injury occurred 30 minutes ago, so the entire 5 ½ liters should be administered over a period of 7 ½ hours.

The remainder is administered over the remaining 16 hours:

5,500 mL divided by 16 (time remaining in one day) equals 343 ml per hour for the next 16 hours.

Although the Parkland formula is effective and widely used, the U.S. Army Institue of Surgical Research developed the **"Rule of 10"** to simplify the process of calculating fluid requirements for burn patients in the prehospial setting. Using the rule of 10, the percent of BSA burned is calculated and rounded to the nearest 10. For example, a burn of 36% would be rounded to 40%. The percent burn is then multiplied by 10 to get the number of mL per hour of crystalloid. Thus, in the previous example, the calculation would be 40 X 10 equaling 400 mL per hour. This formula is used for adults weighing 40 to 70 kg. For each 10kg in body weight over 70kg, an additional 100 mL per hour is given.

While you may not be completely responsible for the care of severely burned patients for 24 hours, this example illustrates the need for burn patients to receive quick attention and prompt evacuation to definitive care.

Burns to the Eyes (see figure 11)

Signs and Symptoms:
- Blurry vision
- Vision loss
- Pain
- Tearing
- Conjunctival erythema

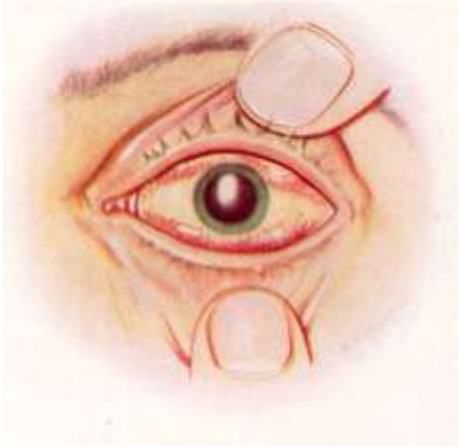

Figure 11. Burns to the eyes

Treatment:
- Thermal burn - irrigate with large amounts of water.
- Chemical burn:
  - *Acids* - irrigate for 5 - 10 minutes
  - *Alkalis* - irrigate for 20 minutes
- Cover eyes with a dry sterile dressing. In a tactical situation, if the patient can partially see out of the affected eye and can otherwise ambulate, defer dressing the eye. Avoid dressing both eyes if only one eye is injured.

If evacuation is delayed
- Clean the burn area with diluted (1:10) Betadine solution and then rinse with saline.
- Remove loose nonviable tissue during cleaning process (this is very painful, especially at the periphery of the burn so pain management should be considered).
- Apply Silvadene (or other bacteriostatic ointment) and cover with dry, loose, sterile dressing, if available
- Gently clean and reapply Silvadene and a fresh dressing every 24 hours.

Critical Burns Requiring Special Care - The American College of Surgeons Committee on Trauma developed a list of burn injuries that are considered critical regardless of depth or TBSA affected. Treatment in a specialized burn unit will improve the chances of survival and reduce complications or disabilities for casualties with any of the following injuries:

- Inhalation injuries.
- Partial-thickness burns over greater than 10% of the TBSA.
- Full thickness burns in any age group.
- Any burn involving the face, hands, feet, genitalia, perineum, or major joints.
- Electrical burns, including lightning injury.
- Chemical burns.
- All burns complicated by injuries of the respiratory tract, other soft tissue injuries, and musculoskeletal injuries.

Pain Management should be provided to burn victims, and small doses of narcotics should be titrated intravenously (see the medication appendix at the end of Block 2 for more information regarding pain medications). Vital signs and respiratory effort are monitored for potential adverse effects. (Note: The use of narcotics is contraindicated in head and spinal trauma.) Water immersion may be applied for 10-15 minutes for pain relief, however, caution should be used as it may intensify shock.

CASUALTY ASSESSMENT AND BURNS

Care Under Fire Phase: Unless casualty also has life-threatening hemorrhage along with a burn, there is no care given for burns in this phase.

Tactical Field Care Phase: During this phase, you will be required to inspect the burned area. A burn can cause significant problems with the airway. If a casualty's airway is jeopardized, securing an airway is vital before edema sets in. Consider a surgical airway, if needed. Don BSI. Complete a head to toe assessment using DCAP-BTLS noting and treating additional injuries. Determine if vascular access is required (see Tactical Fluid Resuscitation lesson) and give fluids if necessary. If the casualty is able to drink fluids, they should be encouraged to do so. Consider pain medications and give antibiotics if warranted. Reassess all care provided. Document care given, prevent hypothermia, and TACEVAC.

REFERENCE

Pre-Hospital Trauma Life Support, Current Military Edition.

Manage Burn Casualties Review

1. Identify three charicteristics of a second degree burn.

2. Using the Rule of Nines, estimate the body surface area affected for a patient with burns to the upper and lower back.

3. Using the Rule of Nines estimate the body surface area affected for a patient with burns to the chest, abdomen and right front arm.

4. Describe the appropriate treatment for burns, assuming no delay in casulty evacuation.

UNITED STATES MARINE CORPS

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FMST 504

Conduct Triage

TERMINAL LEARNING OBJECTIVES

1. Given multiple casualties in a tactical environment, **conduct triage** to ensure patients are treated according to category. (8404-HSS-2002)

2. Given multiple casualties in an operational environment, necessary medical equipment and supplies, **manage mass casualty incident** to reduce the risk of further injury and death. (8404-HSS-2003)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, **identify the purpose of tactical triage**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-HSS-2002a)

2. Without the aid of reference and in writing, **identify the principles of triage**, within 80% accuracy, per Prehospital Trauma Life Support, current Military Edition. (8404-HSS-2002b)

3. Without the aid of reference, given a descriptive list of injuries, identify **the appropriate triage category for specific injuries**, in accordance with Prehospital Trauma Life Support, current Military Edition. (8404-HSS-2002c)

4. Without the aid of reference, given a description or list of injuries, **identify the procedures for coordinating care for a mass casualty incident**, per Prehospital Trauma Life Support, current Military Edition. (8404-HSS-2003a)

1. TRIAGE

Triage is a French word meaning "to sort." Casualties are sorted into groups based on their immediate medical needs. Using a standardized approach to triage casualties helps combat medics correctly segregate, treat, and prioritize evacuation in the shortest time possible. The realities of combat dictate that battlefield triage must take place in an environment limited in resources for treatment and transport. Triaging casualties merely establishes order of treatment and movement. Although all casualties require treatment, triage aids in deciding which casualties have the greatest probability of survival and helps weigh the casualties need for lifesaving interventions (LSIs), thus determining priority and urgency for treatment and evacuation.

> **Triage ensures the greatest care for the greatest number and the maximal utilization of medical personnel, equipment, and facilities, especially in a mass-casualty incident (MCI).**
> **-PHTLS Manual, Current Edition**

Triage establishes the patients' category. Although the type and extent of the wound may offer clues as to the triage category a patient may fall into, it is their physiological state (how well their body is working) that is the critical factor. For instance, a patient with a weak radial pulse indicates an estimated systolic blood pressure of 80 mm/Hg. Studies of combat related injuries indicate that 32% of these individuals will die. The absence of a radial pulse indicates a systolic blood pressure of less than 50 mm/Hg. The same study reported that 92% of these individuals will die. On the other hand, a separate trauma study indicated that no casualty died if they presented during the first stages of triage with a palpable radial pulse and the ability to follow simple commands.

2. PRINCIPLES OF TACTICAL TRIAGE

Accomplish the greatest good for the greatest number of casualties.

Employ the most efficient use of available resources.

Return personnel to duty as soon as possible.

3. THE FOUR CATEGORIES OF TACTICAL TRIAGE

Categories are color-coded and are recognized as follows:

Minimal (Green Tag)

Casualties in this category are often referred to as the "walking wounded." These casualties have minor injuries and can usually care for themselves with self-aid or buddy aid. These casualties should still be employed for mission requirements (e.g. scene security) or to help treat the more seriously wounded.

Examples include, but are not limited to - small burns, lacerations, abrasions, and small fractures.

Delayed (Yellow Tag)

The delayed category includes wounded casualties who may need surgery, but whose general condition permits a delay in surgical treatment without unduly endangering life or limb. Sustaining treatment will be required (e.g. oral or IV fluids, splinting, antibiotics or pain control).

Examples include, but are not limited to - those with no evidence of shock, who have large soft tissue wounds, fractures of major bones, intra-abdominal and/or thoracic wounds, or burns to less than 20% of total body surface area.

Immediate (Red Tag)

This category includes casualties who require immediate LSI and/or surgery. The key to successful triage is to locate these individuals as quickly as possible. Casualties do not remain in this category for an extended period of time. They are either found, triaged and treated, or they will die!

Examples include, but are not limited to - hemodynamically unstable casualties with airway obstruction, chest or abdominal injuries, massive external bleeding, or shock.

Expectant (Black Tag)

Casualties in this category have wounds that are so extensive that even if they were the sole casualty and had the benefit of optimal medical resources, their survival would be highly unlikely. Even so, expectant casualties should not be neglected. They should receive comfort measures, pain medications (if possible) and they deserve re-triage as appropriate.

Examples include, but are not limited to - unresponsive casualties with injuries such as penetrating head trauma with obvious massive damage to the brain.

Triage in Tactical Combat Casualty Care

Because the tactical environment precludes an extensive array of monitoring equipment, optimal battlefield treatment and evacuation rely on simple triage tools. Based on research by the Committee on Tactical Combat Casualty Care, a triage decision algorithm has been developed (see figure 1). Use of this algorithm begins with a cursory evaluation.

- Patients who can ambulate and follow instructions usually will fall into the minimal category. Statements such as "If you can hear my voice get up and move behind the building" (or any other place tactically correct) can triage a large portion of the casualties in a short time.

- Patients with obvious signs of death can be initially placed in the expectant category.

- Casualties who do not fit either of the above categories will need further evaluation. All casualties requiring an LSI are placed initially in the immediate category.

- Patients are placed in the delayed category if they can obey simple commands, possess a normal radial pulse, and are not in respiratory distress.

- Once the LSI has been performed, the patient must be re-triaged. Triage is a continuous process and frequent reassessment is required.

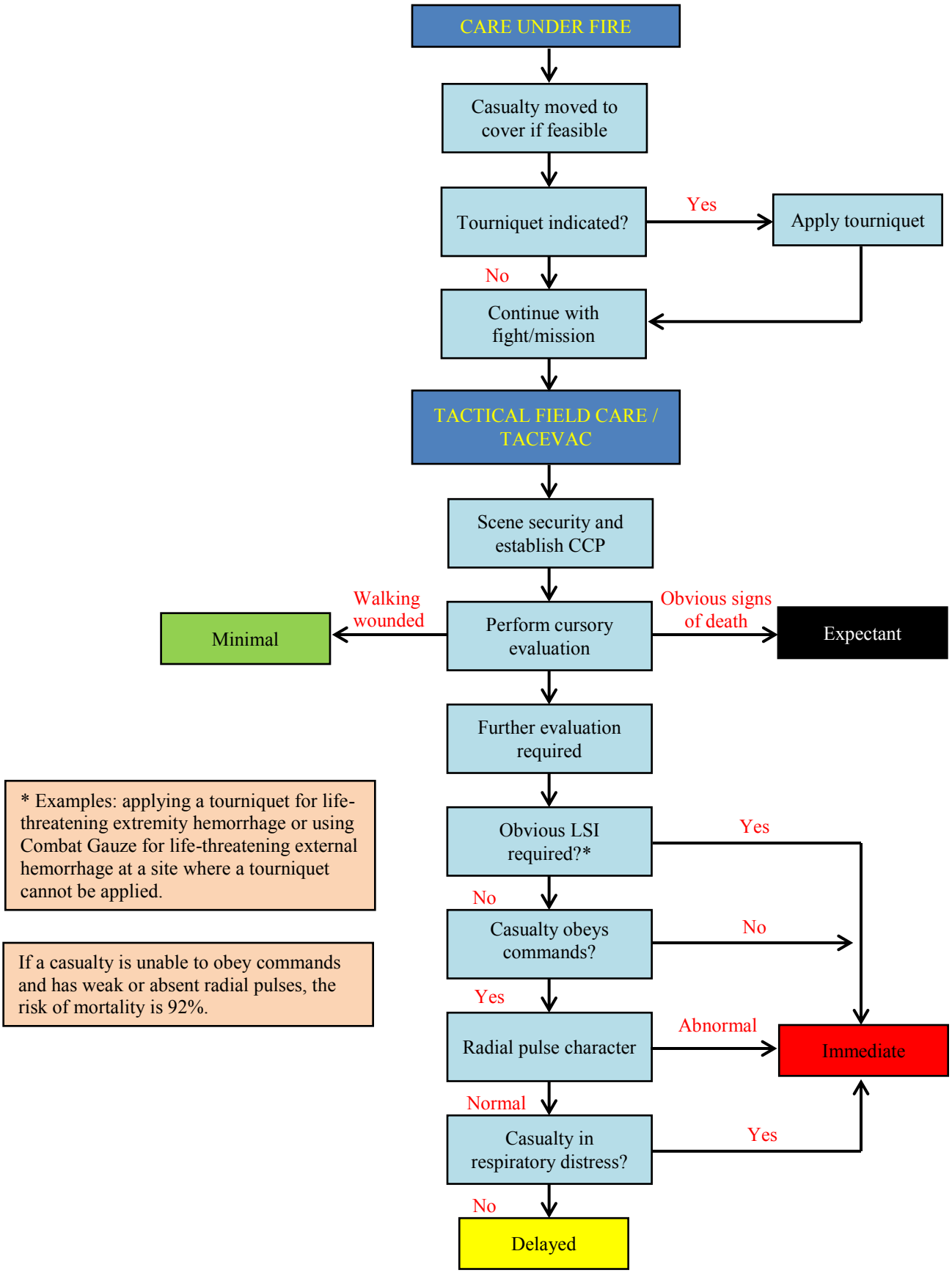

Figure 1. Triage Algorithm for Tactical Combat Casualty Care

4. **MASS CASUALTY TRIAGE**

Medical personnel operating in a tactical environment must always be prepared to deal with a mass casualty incident. Units must establish and rehearse plans for dealing with such a situation. In a mass casualty situation those responsible for triage must remember that triage is not treatment and constant reassessment is needed to identify casualties who may have deteriorated or improved.

Essential Tasks for Mass Casualty Triage

- Secure the area and ensure scene safety
- Establish Command Post (CP), Casualty Collection Point (CCP) and routes of access
- Estimate initial number, severity and additional hazards (e.g. smoke, NBC, etc)
- Assign initial triage categories
- Perform life-saving interventions (LSIs)
- Re-triage with an extended secondary survey as time permits

Triage Tags - Designed to communicate the triage category, treatment rendered, and other medical information. By necessity, the information on the tag is brief. Triage tags are usually placed on the casualty by the triage officer, although other members of the team may place or add information to the tags.

H&H Combat Care Documentation Card (see figure 2) - provides immediate access to vital life-saving information in the field.

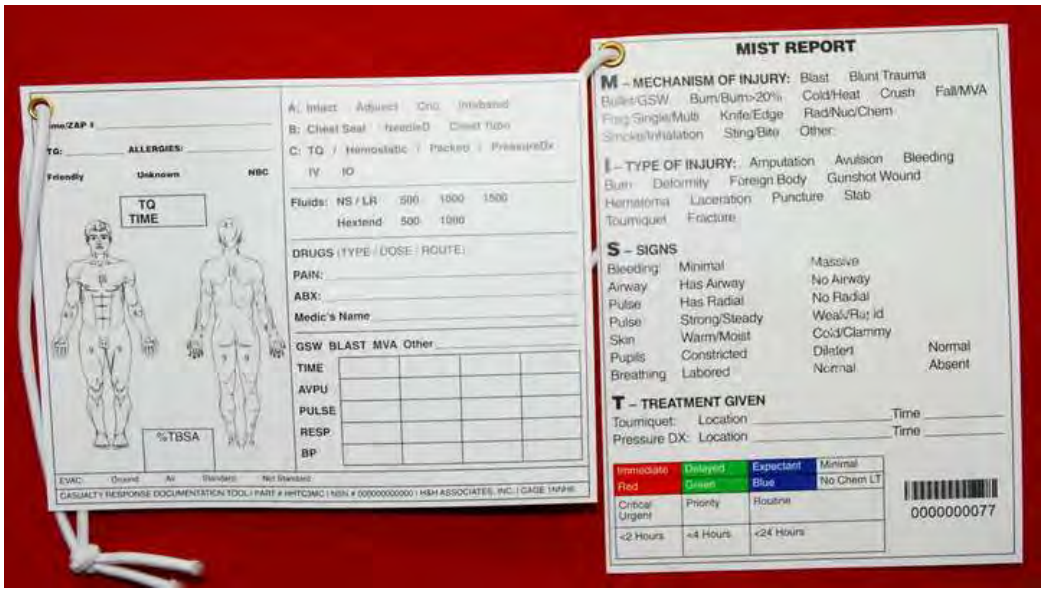

Figure 2. Casualty Response Documentation Card

Medical Emergency Triage Tag (METTAG) (see figure 3) - Each triage tag is coded with a unique sequential seven-character serial number used for identification and tracking of the casualty. The serial number is located on the top right and left diagonal tear-offs.

Figure 3. METTAG (MT-137)

References:

Prehospital Trauma Life Support (PHTLS), current Military Edition

Triage Review

1. What is the purpose of tactical triage?

2. List the three principle of triage.
    1)
    2)
    3)

3. Which category would each of the following injuries be triaged in:
    1) Airway Obstruction _____
    2) Penetrating head trauma _____
    3) Burns less than 20% _____
    4) Small fractures _____

4. Identify three priorities for mass casualty triage.

5. Using the triage algorithm, a patient with controlled hemorrhage that can obey simple commands, has a normal radial pulse, and is not in respiratory distress would be placed in which category?

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FMST 505

Coordinate Casualty/Tactical Evacuation (TACEVAC)

TERMINAL LEARNING OBJECTIVE

1. Given casualties in a tactical environment, **evacuate casualties** for medical treatment to prevent further injury or death. (8404-HSS-2004)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list of capabilities, **identify the capabilities of the taxonomy of care**, within 80% accuracy, per JP 4-02.1, Health Service Support. (8404-HSS-2004a)

2. Without the aid of reference, given a description or list, **identify common litters used as TACEVAC platforms**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2004b)

3. Without the aid of reference, given a description or list, **identify ground vehicles used as TACEVAC platforms**, within 80% accuracy, per FM 8-10-6, Medical Evacuation in the Theater of Operations. (8404-HSS-2004c)

4. Without the aid of reference, given a description or list, **identify aircraft used as TACEVAC platforms**, within 80% accuracy, per FM 8-10-6, Medical Evacuation in the Theater of Operations. (8404-HSS-2004d)

5. Without the aid of reference, given a description or list**, identify Casualty Receiving Treatment Ships (CRTS) used as CASEVAC platforms**, within 80% accuracy, per FM 8-10-6, Medical Evacuation in the Theater of Operations. (8404-HSS-2004e)

6. Without the aid of reference, given a description or list**, identify the casualty evacuation categories**, within 80% accuracy, per FM 8-10-6, Medical Evacuation in the Theater of Operations. (8404-HSS-2004f)

7. Without the aid of references, given a description or list, **identify the purpose of the 9 Line evacuation communication process**, within 80% accuracy, per FM 8-10-6, Medical Evacuation in the Theater of Operations. (8404-HSS-2004g)

8. Without the aid of reference, given the necessary equipment, **transmit a 9 Line Evacuation request**, within 80% accuracy, per FM 8-10-6, Medical Evacuation in the Theater of Operations. (8404-HSS-2004h)

9. Without the aid of reference, given multiple simulated casualties in a tactical environment, standard field medical equipment and supplied, and individual combat equipment, **perform casualty evacuation**, to prevent further injury or death, per FM 8-10-6, Medical Evacuation in the Theater of Operations. (8404-HSS-2004i)

OVERVIEW

Tactical Evacuation Care (TACEVAC) is the third phase in the Tactical Combat Casualty Care process. Tactical evacuation encompasses both medical evacuation (MEDEVAC) and casualty evacuation (CASEVAC). The care delivered in the TACEVAC phase can more closely resemble advanced trauma life support guidelines than that in the first two phases. With either vehicular or air evacuation of wounded casualties from the battlefield, there is an opportunity for access to additional medical equipment not available to the Corpsman during the first two phases. One example is the use of pulse oximetry devices, which detect the percent of hemoglobin with oxygen bound to it and gives you an indication of how well the casualty is breathing. It also allows for early detection of pulmonary compromise or cardiovascular deterioration before physical signs are evident. They are highly reliable and can apply across all ages and races. This lesson will describe the taxonomy of care, different methods of casualty evacuation, and how to call for an evacuation.

1. TAXONOMY OF CARE

The taxonomy of care outlines distinctive and overlapping care capabilities that enhance performance in a military force. The level of care commences at the scene of the injury and continues until the member receives definitive care and is discharged or returned to full duty. While this course teaches you the skills needed to operate using the first responder, forward resuscitative, and en route care capabilities, there are five capabilities in the taxonomy continuum of healthcare which are used when evacuating the wounded from the battlefield (see figure 1).

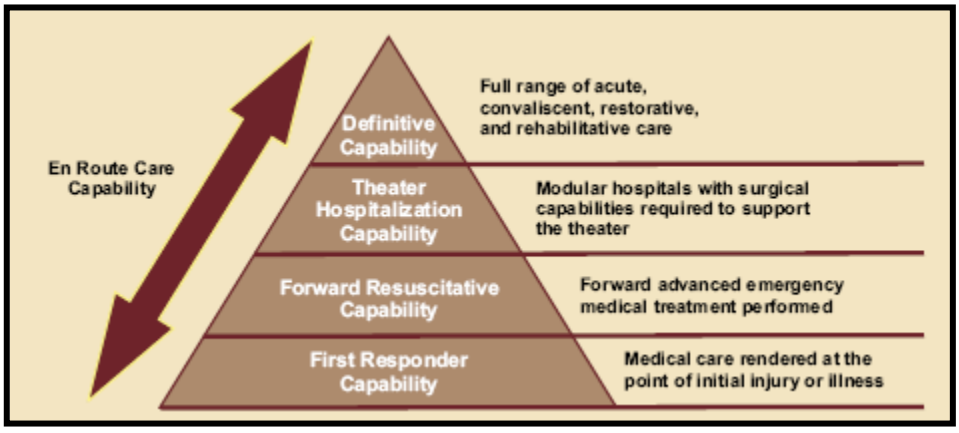


Figure 1. Taxonomy of Care

First Responder Capability - first aid and emergency care rendered at the point of initial injury are the primary objectives of care at this level. Defined by its time requirements, first responder care provides immediate medical care and stabilization to the patient in preparation for evacuation to the next capability in the continuum of care. Examples of First Responder Capabilities include:

- Self-aid/Buddy aid
- Battalion Aid Station (BAS)

Forward Resuscitative Capability - builds on the First Responder Capabilities. Characteristics include performing advance emergency medical treatment as close to the point of injury as possible, stabilizing the patient, and saving life and limb. Stabilization ensures the patient can tolerate evacuation. Examples of Forward Resuscitative Capabilities include:

Medical Battalion - provides surgical care for the MEF. Provides stabilizing surgical procedures. Capable of holding patients up to 72 hours.
Casualty Receiving & Treatment Ships (CRTS) - part of an Expeditionary Strike Group (ESG). They provide additional medical capabilities for receiving a mass casualty (up to 50 casualties).
Shock Trauma Platoon (STP) - small forward unit with one physician supporting the MEF specializing in patient stabilization and evacuation. No surgical capability.
Forward Resuscitation Surgical Suite (FRSS) - staffed with 8 to 10 personnel (two surgeons, one critical care nurse, one anesthesiologist, and four to six corpsmen). It consists of a two tent surgical system that provides a fully powered, climate-controlled environment with enough space for one operating room and one pre- and post-operative care room. The shelter is equipped with cutting-edge surgical gear and takes less than one hour to set up or break down.

Theater Hospitalization Capability - services are delivered via modular hospital configurations and/or hospital ships required to sustain forces in theater. These capabilities deploy as modules or multiple individual capabilities that provide increasing medical services in a more robust theater. The care offered either returns the patient to duty or stabilizes the patient to ensure they can tolerate evacuation to a definitive care facility. Services encompass primary inpatient and outpatient care, emergent care, and enhanced medical, surgical, and ancillary capabilities, including:

Fleet hospitals - deployable ground asset that is located away from enemy threat providing up to 500 hospital beds, 80 ICU beds, and 6 OR's.
Hospital ships (USNS Mercy and USNS Comfort) - deployable medical assets providing up to 1,000 beds, 100 ICU beds, and 12 OR's.

Definitive Capability - rendered to conclusively manage a patient's condition and is usually delivered from, or at, facilities in the homeland, but may be delivered in facilities outside the homeland. This capability generally leads to rehabilitation, return to duty, or discharge from the armed forces. Because this care is usually given outside the operational area, the most advanced health care can be made available and accessible to the patient. It includes:

CONUS Military, Veteran's and selected civilian hospitals - provide full convalescent, restorative, and rehabilitative care to all patients returned to the Continental United States (CONUS).
Overseas Medical Treatment Facilities - offers the surgical capability found in the theater hospitalization capability, along with further definitive therapy for those patients in the recovery phase who can be returned to duty within the theater evacuation policy. A patient who cannot be returned to duty will be evacuated through the en route care capability.

En Route Care Capability - en route care is the continuation of care during evacuation within the continuum without clinically compromising the patient's condition. This capability can take one of three forms – medical evacuation (MEDEVAC) in which dedicated special medical non-combatant platforms are used. The Air Force is the primary provider of MEDEVAC assets. Casualty evacuation (CASEVAC) are primarily non-medical evacuation platforms, however, some may have medical attendants such as a Hospital Corpsman or an Army Medic. The third capability is Aeromedical evacuation. This type of evacuation is generally beyond the scope of TCCC but it is typically used when transferring patients between medical treatment facilities. This course deals specifically with CASEVAC, which involves the unregulated movement of casualties aboard ships, land vehicle, or aircraft.

2. METHODS OF EVACUATION

The level of urgency and the tactical situation dictates the method of evacuation. Depending upon which level of care you are in, Care Under Fire, Tactical Field Care, or Tactical Evacuation Care, will dictate how the casualty is transported. The most common forms of evacuation are: ambulatory, manual carries, litter evacuation, ground evacuation, air evacuation, or sea evacuation. Regardless, the casualty should be made as comfortable as possible and kept warm and dry. If an improvised litter is used, it should be padded and field-expedient material replaced with conventional splints, tourniquets, and dressings as soon as feasible. A patient with minimal injuries should be encouraged to stay in the fight if possible and to ambulate to an area where care can be safely provided.

Manual Carries

Fireman's Carry - Used for unconscious and conscious patients. (See figure 2)

1. Secure your arms around the patient's waist with their body lightly tilted backward to prevent their knees from buckling. Place your right foot between their feet and spread them six to eight inches apart.
2. With your left hand, grasp their right wrist and raise it over your head.
3. Bend at the waist and knees, pull the patient's arm over and down your left shoulder, bring their body across your shoulders. Pass your right arm between their legs.
4. Place the patient's right wrist in your right hand and your left hand on your left knee for support in rising.
5. Rise with the patient correctly positioned with your left hand free.

Figure 2. Fireman's Carry

One-man Supporting Carry - Conscious patients only. The patient is able to walk using you as a crutch. (See figure 3)

1. Raise the patient from the ground as in the Fireman's Carry.
2. With your left or right hand, grasp the patient's left or right wrist and draw it around your neck.
3. Place your left or right arm around their waste.

Figure 3. One-man Supporting Carry

Saddle-back Carry - Conscious patients only. (See figure 4)

1. Raise the patient to an upright position.
2. Support patient by waist and move to the front of the patient.
3. Have patient encircle arms around your neck.
4. Stoop, raise patient to your back and clasp hands beneath his thighs.

Figure 4. Saddl-back Carry

Pack-strap Carry – Good for unconscious patients, however do not use if patient has fractures. (See figure 5)

1. Raise the patient from ground as in Fireman's Carry.
2. Support by wrist and move to front of patient.
3. Grasp patient's wrist and hoist onto your back until their armpits are over your shoulders.

Figure 5. Pack-strap Carry

Two-man Supporting Carry – Patient is conscious and has no suspected fractures. (See figure 6)

1. Same as One-man Carry, but done with two individuals.

Figure 6. Two-man Supporting Carry

Two-man Carry – Used for placing patient on a litter or moving short distances. Similar to performing a patient log roll. (See figure 7)

1. Two corpsmen kneel at one side of patient.
2. One places one arm beneath the hips and the other beneath the knees.
3. The second bearer places one arm beneath the shoulder and one beneath the back.
4. Lift patient to knees, then stand up and carry at chest level to lessen fatigue.

Figure 7. Two-man Carry

Fore-aft Carry – Used to carry an unconscious patient for short distances. (See figure 8)

1. With patient lying on their back, front bearer spreads legs of patient and steps between legs with back towards patient, grasps legs behind the knees.
2. Rear bearer kneels at the head of the patient, places arms under the armpits and clasps hands on their chest.
3. Bearers rise together.

Figure 8. Fore-aft Carry

Four Hand Carry – Patient must be conscious. (See figure 9)

1. Each bearer grasps their left wrist with the right hand and then each other's right wrist with the left hand.
2. Patient sits on the interlocked hands supporting themself by putting one arm around each of the bearer's necks.

Figure 9. Four Hand Carry

Two Handed Seat Carry – Used for conscious patients with no fractures. (See figure 10)

1. With patient on their back, bearers on each side of the patient's hips.
2. Bearers interlock their wrists behind the patient's thighs and back.
3. Bearers rise together lifting patient.

Figure 10. Two Handed Seat Carry

Clothes Drag Carry – Used during "under fire" conditions. (See figure 11)

1. Grasp the patient's shirt collar or gear and drag to safety.

Figure 11. Clothes Drag Carry

Types of litters - there are six commonly used litters within the FMF.

Talon Litter (See figure 12) - the Talon collapsible handle litter was developed to meet the US Army's urgent requirement to provide casualty evacuation. The Talon litter allows a casualty to be transported in one vehicle then transitioned to a standard evacuation platform without the need to transfer a casualty from one litter to another. This is the **most commonly used** litter.

Figure 12. Talon Litter

Standard Army Litter (See figure 13) - the standard collapsible litter folds along the long axis.

Stokes Litter (See figure 14) - affords maximum security for the patient when the litter is tilted.

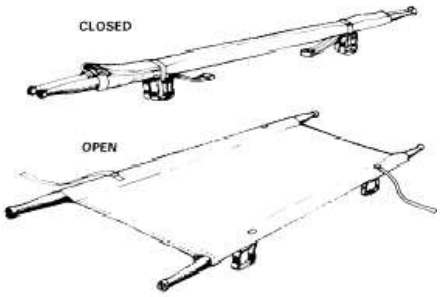


Figure 13. Standard Army Litter

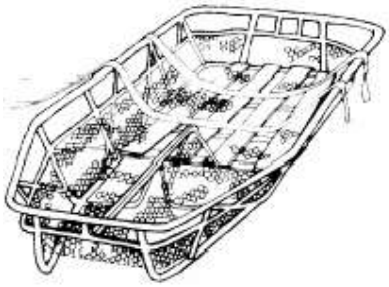


Figure 14. Stokes Litter

Pole-less Non-rigid Litter (See figure 15) - this litter can be folded and carried by the Field Medical Service Technician. It has folds into which improvised poles can be inserted for evacuation over long distances.

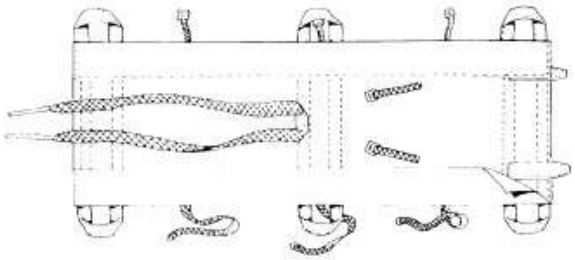


Figure 15. Pole-less Non-rigid Litter

Miller (full body) Board (See figure 16) - the Miller Board is constructed of an outer plastic shell with an injected foam core. It is impervious to chemicals and the elements and can be used in virtually every confined-space rescue and vertical extrication. It fits in stokes stretcher and will float a 250-pound person.

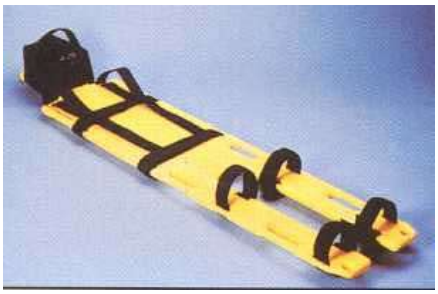
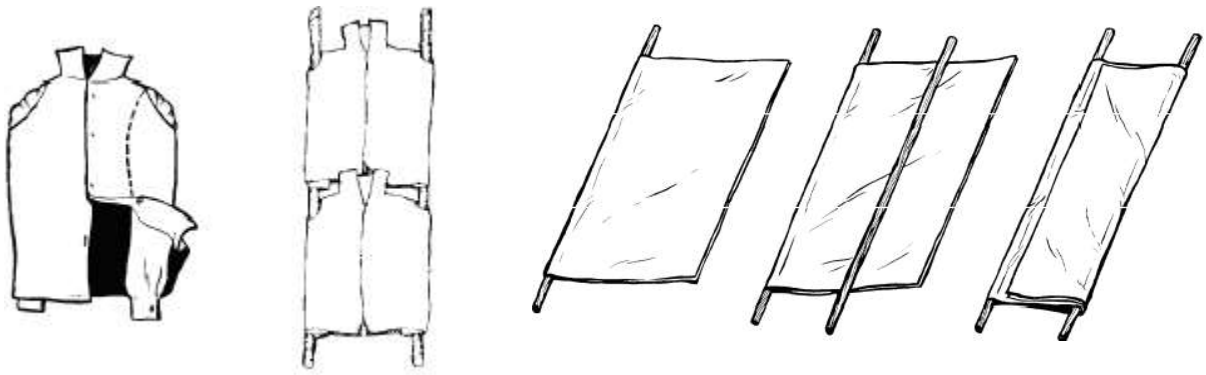


Figure 16. Miller (full body) Board

Improvised Litters (See figure 17) - used for moving a casualty when a standard litter is not available, the distance may be too great for manual carries, or the casualty may have an injury that would be aggravated by manual transportation. These litters are to be used in emergency situations only and must be replaced by standard litters at the first opportunity.



Blouse / Flak Jacket Litter

Rolled Blanket Litter

Figure 17. Improvised Litters

Procedures for Carrying Litters

1. When moving a patient, the litter bearers must make every movement deliberately and as gently as possible. The command "steady" should be used to prevent undue haste.
2. The rear bearers should watch the movements of the front bearers and time their movements accordingly to ensure a smooth and steady action.
3. The litter must be kept as level as possible at all times, particularly when crossing obstacles such as ditches.
4. Normally, the patient should be carried on the litter feet first, except when going uphill or up stairs
5. When the patient is loaded on a litter, his individual equipment is carried by two of the bearers or placed on the litter. When available, use Marines as your litter bearers.

3. **GROUND EVACUATION PLATFORMS** (See figure 26)

M997 Ambulance (See figure 18)- HMMWV frame with armor protection for crew and patients. It is capable of transporting up to 4 litter or 8 ambulatory patients.

Figure 18. M997 Ambulance

M1035 Ambulance (See figure 19) - HMMWV frame with removable soft-top. It is capable of transporting 2 litter and 3 ambulatory patients.

Figure 19. M1035 Ambulance

MK 23 7 Ton(See figure 20) - non-medical vehicle that may be utilized for casualty transportation when available. It is capable of transporting 10 litter or 20 ambulatory patients.

Figure 20. MK 23 7 Ton Truck

4. **AIR EVACUATION PLATFORMS** (See figure 26)

CH-46 Sea Knight (See figure 21)

- Dual rotor medium lift helicopter used to transport personnel and cargo (being phased out by the MV-22 Osprey Tilt Rotor Aircraft).
- When configured for litter racks, able to carry 15 litters or 22 ambulatory patients.

Figure 21. CH-46 Sea Knight

UH-1 Huey (See figure 22)

- Light transport helicopter used to transport personnel and cargo.
- When configured for litter racks, able to carry 6 litters or up to 10 ambulatory patients.

Figure 22. UH-1 Huey

Figure 23. MV-22 Osprey

MV-22 Osprey(See figure 23)
- Tilt-rotor aircraft that takes off and lands vertically but flies like a plane. This aircraft is designed to eventually replace the CH-46.
- When configured for litter racks, able to carry 12 litters or 24 ambulatory casualties.

CH-47 Chinook (See figure 24)
- Dual rotor medium lift helicopter used to transport personnel and cargo for the US Army.
- When configured for litter racks can carry 24 litter patients or 31 ambulatory patients.

Figure 24. CH-47 Chinook

Figure 25. UH-60 Blackhawk

UH-60 Blackhawk (See figure 25)
- Single rotor helicopter with multiple uses by not only the Army but the Navy as well.
- Can carry up to 6 litter patients if litter modification kit is installed.
- Can carry up to 7 ambulatory patients if litter modification kit is not installed.
- Patients can be loaded from either side.

NOTE: The Marine Corps does not have dedicated CASEVAC aircraft. Any of its aircraft can be utilized as a "lift of opportunity" upon completion of its primary mission. The use of helicopter evacuation provides a major advantage because they greatly decrease the time between initial care and definitive treatment thereby increasing the casualty's chances of survival. Figure 17 below reflects USMC assets as well as those available through the Army and Air Force.

AIRCRAFT				
TYPE	**SERVICE**	**LITTER**	**AMBULATORY**	**ATTENDANTS**
UH-60 Blackhawk	USA	6	7	1 Medic
CH-47 Chinook	USA	24	31	2 Medics
UH-1 Huey	USMC	6	10	1 Corpsman
CH-46 Sea Knight	USMC	15	22	2 Corpsmen
CH-53 Super Sea Stallion	USMC	24	37	2 Corpsmen
MV-22 Osprey	USMC	12	24	2 Corpsmen
MEDICAL GROUND VEHICLES				
TYPE	**SERVICE**	**LITTER**	**AMBULATORY**	**ATTENDANTS**
M997 HMMWV	USA/ USMC/ USAF	4	8	1 Corpsman
M1035 HMMWV	USA/ USMC/ USAF	2	3	1 Corpsman
VEHICLES OF OPPORTUNITY (GROUND)				
TYPE	**SERVICE**	**LITTER**	**AMBULATORY**	**ATTENDANTS**
MK 23 (7-Ton Truck)	USMC	10	20	None

Figure 26. Ground/Air CASEVAC Platform Data Description

5. CASUALTY RECEIVING TREATMENT SHIPS

Specific ships within an Amphibious Task Force are designated as Casualty Receiving Treatment Ships (CRTS).

LHD/LHA - Amphibious Assault Ships with medical capabilities (See figure 27).

Mission

- Assault via helo, landing craft, and amphibious vehicle.
- Primary amphibious landing ships for MEF's, MEB's, and MEU's.
- Primary CRTS

Transport capabilities

- Flight deck with large internal hangar deck and well deck.
- May receive casualties via helicopter or waterborne craft.

Figure 27. LHA Tarawa Class

Medical Capabilities

Largest medical capability of amphibious ships. When fully staffed, capabilities include:
- 4 Operating Rooms
- 15 ICU Beds
- 45 Ward Beds

Hospital Ships (T-AH) (see figure 28)- the COMFORT and the MERCY are operated by the Military Sealift Command and are designed to provide emergency, onsite care for US combatant forces deployed in war and other operations. The T-AHs provide a mobile, flexible, rapidly responsive afloat medical capability to acute medical and surgical care in support of ATF; Marine Corps, Army, and Air Force elements; forward-deployed Navy elements of the fleet; and fleet activities located in areas where hostilities may be imminent. The T-AHs also provide a full-service hospital asset for use by other government agencies involved in the support of disaster relief and humanitarian operations worldwide.

Transport Capabilities
- Flight deck capable of receiving rotary wing aircraft.

Medical Capabilities
- Operating Rooms (12)
- ICU Beds (100)
- Intermediate Care Beds (400)
- Ward Beds (500)
- Ancillary capabilities of lab, x-ray, pharmacy, computerized tomography scanner, and blood storage.

Figure 28. Hospital Ship

6. **CASEVAC CATEGORIES** (See figures 29-31)

Once a patient has been triaged and stabilized at the BAS, should that patient require further or additional medical treatment, he/she will be categorized for evacuation from the BAS to the next higher capability of care. While evacuating patients, ensure that they are kept warm to prevent hypothermia! The category levels are as follows:

Urgent Evacuation
- Evacuation to next higher capability of medical care is needed to save life or limb.
- Evacuation must occur within two hours.

Urgent Surgical Evacuation

- Same criteria as Urgent. The difference is that these patients need to be taken to a facility with surgical capabilities.

Priority Evacuation

- Evacuation to next higher capability of medical care is needed or the patient will deteriorate into the URGENT category.
- Evacuation must occur within four hours.

Routine Evacuation

- Evacuation to the next higher capability of medical care is needed to complete full treatment.
- Evacuation may occur within 24 hours.

Convenience

- Used for administrative patient movement.

URGENT/URGENT SURGICAL - 2 Hours or Less

Life threatening injuries such as temporarily corrected hemorrhage, temporarily controlled airway injuries, or temporarily controlled breathing issues.

Examples include (but not limited to) patients with:

Tourniquets	Needle Decompression
Cricothyroidotomy	Major Internal Bleeding

(Figure 29)

PRIORITY - 4 Hours or less

Potentially life threatening injuries such as compensated shock, fractures causing circulatory compromise, and uncomplicated but major burns.

Examples include (but not limited to) patients with:

Compensated Shock	Broken arm with loss of distal pulse

2^{nd} degree burns to a large portion of the abdomen or extremities

(Figure 30)

ROUTINE - 24 Hours or less

Injuries so insignificant or extreme that chances of survival are not based on evacuation time.

Examples include (but not limited to) patients with:

Abrasions	Cardiac Arrest	Massive Head Trauma
Small Fractures	Frostbite	2^{nd} /3^{rd} degree burns >70% BSA

(Figure 32)

7. **NINE LINE CASEVAC** (See figure 33)

A nine-line evacuation request is a standard format used by the Armed Forces for coordinating the evacuation of casualties. Evacuation request transmissions should be by the most direct communication means available to the medical unit controlling evacuation assets. The means and frequencies used will depend on the organization, availability, and location in the area of operations as well as the distance between units.

The information must be clear, concise, and easily transmitted. This is done by use of the authorized brevity code. The authorized brevity code is a series of phonetic letters, numbers, and basic descriptive terminology used to transmit casualty information. These codes

indicate the standard information required for an evacuation commonly known as the "9 Line". This message is verbally transmitted in numerical "line" sequence utilizing the following brevity codes:

Line 1 - Location - location of the Landing Zone (LZ) where the casualties are to be picked up. This information will be transmitted in the form of an eight digit grid coordinate.

Line 2 - Radio Frequency, Call Sign - radio frequency and call sign that will be used by the ground unit at the LZ. You should know this information before every operation.

Line 3 - Precedence (Urgent, Urgent Surgical, Priority, and Routine) - number of casualties by precedence. Use the following codes:

Alpha - Urgent
Bravo - Urgent Surgical
Charlie - Priority
Delta - Routine
Echo - Convenience

Line 4 - Special Equipment - identifies any special equipment that will be needed, such as a hoist in the case where a helo cannot land. Use the following codes:

Alpha - none
Bravo - hoist
Charlie - extraction equipment
Delta - ventilator

Line 5 - Number of Patients by Type - number of patients who are ambulatory and the number of litter patients. This determines whether or not the helo should be configured to carry litters. Use the following codes:

Lima - litter patients
Alpha - ambulatory patients

Line 6 - Security of Pickup Site - whether or not the enemy is near the LZ. If all of your casualties are routine and the LZ is not secured, then you may not get your requested CASEVAC approved. Use the following codes:

November - no enemy troops in area
Papa - possible enemy troops (approach with caution)
Echo - enemy troops in area (approach with caution)
X-Ray - enemy troops in area (armed escort required)

Line 7 - Method of Marking Pickup Site - methods that you will use to mark your LZ and then ask the pilot to identify. Use the following codes:

Alpha - panels
Bravo - pyrotechnic signal
Charlie - smoke signal
Delta - none
Echo - other

Line 8 - Patient's Nationality and Status - patients' nationality and status. Use the following codes:

Alpha - US military
Bravo - US civilian
Charlie - non US military
Delta - non US civilian
Echo - enemy prisoner of war

Line 9 - NBC Contamination - whether the LZ has been contaminated with NBC agents. Use the following codes:

November - nuclear
Bravo - biological
Charlie - chemical

Example: During a routine patrol your platoon takes two casualties. One receives a gunshot wound to his right arm. The other receives a gunshot wound to his abdomen and has signs and symptoms of shock associated with internal hemorrhage. While you perform initial treatment, members of your platoon determine that the closest potential landing zone for a helicopter is 300 feet to the West. Its grid location on the map is DH 1234 5678. Your call sign is Blue Thunder and your unit is operating on the frequency 99.65. Your unit commander informs you that the site is secure and will be marked with green smoke. The following would be your nine line radio CASEVAC Request transmission:

Line 1: DH 12345678

Line 2: 99.65 Blue Thunder

Line 3: 1 Bravo, 1 Charlie

Line 4: Alpha

Line 5: 1 Lima, 1 Alpha

Line 6: November

Line 7: Charlie

Line 8: 2 Alpha

Line 9: None

Figure 33. Nine-Line Casualty Evacuation Request Example

REFERENCES

Prehospital Trauma Life Support, current edition
Medical Evacuation In A Theatre of Operations, FM 8-10-6, Chapters 5, 7-11
Health Service Support, JP 4-02, Chapter I

CASEVAC/TACEVAC Review

1. Identify three different facilities that fall under the Forward Resuscitative Capability.

2. How many litter patients can be carried in an M-997 vehicle.

3. Describe the difference between the Urgent and Urgent Surgical categories.

4. In relation to the Nine Line evacuation request, what are “authorized brevity codes”?

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 506

Perform Aid Station Procedures

TERMINAL LEARNING OBJECTIVES

1. In various environments, given standard field medical equipment and supplies, **provide first responder medical support to meet mission requirements**. (8404-HSS-2005)

2. Given the requirement, **identify the health services support elements within the Marine Corps Operating Forces to support mission requirements**. (HSS-MCCS-2034)

ENABLING LEARNING OBJECTIVES

1 . Without the aid of reference, given a description or list, **identify the mission of the Aid Station**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2005e)

2 . Without the aid of reference, given a description or title, **identify the areas of responsibility within the Aid Station in various environments**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2005f)

3 . Without the aid of reference, given a description or list, **identify the medical support responsibilities of the Aid Station in various environments**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2005g)

4 . Without the aid of reference, given a description or list**, identify equipment used to establish an Aid Station**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2005h)

5 . Without the aid of reference, given the requirement in a simulated combat scenario, **operate in an Aid Station**, to meet mission requirements, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2005i)

6 . Without the aid of reference and in writing, **identify the HSS components of the MEF**, within 80% accuracy, in accordance with MCWP 4-11.1 Health Service Support Operations. (HSS-MCCS-2034a)

7 . Without the aid of reference and in writing, **identify the HSS components of the MAW**, within 80% accuracy, in accordance with MCWP 4-11.1 Health Service Support Operations. (HSS-MCCS-2034b)

8 . Without the aid of reference and in writing, **identify the HSS components of the MARDIV**, within 80% accuracy, in accordance with MCWP 4-11.1 Health Service Support Operations. (HSS-MCCS-2034c)

9 . Without the aid of reference and in writing, **identify the HSS components of the MLG**, within 80% accuracy, in accordance with MCWP 4-11.1 Health Service Support Operations. (HSS-MCCS-2034d)

10 . Without the aid of reference and in writing, **perform Battalion Aid Station procedures**, within 80% accuracy, in accordance with MCWP 4-11.1 Health Service Support Operations. (HSS-MCCS-2034e)

OVERVIEW

Health Service Support (HSS) of today's Marine Corps Operational Forces emphasizes the provision of far-forward, mobile, medical support in the stabilization and evacuation of casualties. The Aid Station is the HSS unit that will deliver these services to our Marine Corps Forces (MARFOR) in sustaining the combat power of the force. Throughout this lesson, the term Battalion Aid Station (BAS) is used to describe various Aid Stations. A true BAS is a term used to describe an Infantry Battalion Aid Station. Know that there are many different Aid Stations, i.e. BAS, Group Aid Station (GAS), Regimental Aid Station (RAS), etc., each with different numbers of personnel assigned.

1. MISSION OF THE AID STATION

The overall mission of the aid station is to be the primary HSS source for a unit. The aid station is broken down into two separate missions, one that will be fulfilled while in a field/combat environment, and the other fulfilled while in garrison. While in a field/combat environment, the mission of the Aid Station is to minimize the effect wounds, injuries, and diseases have on a unit's effectiveness, readiness and morale. Treatments such as surgical airways, administration of IV fluids and antibiotics, as well as stabilization of wounds and fractures are common. The mission of the Aid Station while in garrison is to keep the Marines assigned ready for deployment. As such, responsibilities include conducting sick-call, providing medical support during training, and undergoing continued medical training.

2. AREAS OF RESPONSIBILITY IN VARIOUS ENVIRONMENTS

Aid stations throughout the Marine Corps are staffed based on the mission of the individual organization. Manpower requirements for each unit are listed on its Table of Organization (T/O). Large units, such as Infantry Battalions, may have up to two medical officers (MO) and 65 Corpsmen to support 1,000 Marines. Smaller units, such as Combat Engineer Battalion or a Tank Battalion may only have one or no MO and a few Corpsmen but receive additional support from a Headquarters Company. In the field, the BAS is co-located with the command post. Around-the-clock operating capability is required. The BAS is manned by Hospital Corpsmen of the battalion medical platoon under the direction of the battalion surgeon.

Aid Station Group (Infantry Battalion) - a section of H&S Company, the aid station group is headed by the Battalion Surgeon, and is capable of splitting into two sections to operate two separate aid stations when necessary; the Assistant Battalion Surgeon heads the second aid station.

Medical officer - there are two MOs within each medical battalion
- Battalion Surgeon
- Assistant Battalion Surgeon

Religious Ministry Team (RMT) - each BAS is assigned one RMT consisting of:
- Chaplain
- Religious Programs Specialist (RP)

Headquarters - there are 21 corpsmen headed by a Leading Chief assigned to the Aid Station under the Assistant Battalion Surgeon

Line Company Corpsmen - there are 44 Corpsmen assigned to the line companies. They are divided into four groups of 11 Corpsmen.

3. MEDICAL SUPPORT RESPONSIBILITIES IN VARIOUS ENVIRONMENTS

Within a garrison setting, the responsibility of the Aid Station includes:

Maintain medical and dental readiness - One of the most important missions of the BAS while in garrison is to keep the unit medically and dentally prepared to deploy. Aid Stations use a web based data tracking system known as the Medical Readiness Reporting System (MRRS). Because it is web based, immunization information for Marines and Sailors can be transferred electronically when they check-in to a new unit. This system provides an overall readiness snapshot of the unit.

Conduct sick call - Aid stations act as the primary medical treatment facility for active duty Sailors and Marines for that particular unit. Sick call will normally be conducted under the direction of the MO or Independent Duty Corpsman (IDC). Responsibilities of the general duty Corpsman include identifying the chief complaint and performing a routine patient assessment to include vital signs. You may be expected to present the patient to the MO or IDC to complete the assessment and develop the treatment plan. It is also the responsibility of the sick call Corpsman to complete much of the official documentation.

Sick Call Procedures

Check in - Aid Stations generally have sick call hours each morning. Patients will sign in and receive their medical record from the records office. Vital signs are taken and documented on a Standard Form (SF) 600.

Patient encounter - is documented using the SOAP Note fashion (Subjective, Objective, Assessment and Plan). You may be expected to complete and document the first half of the note before presenting the patient to the IDC or MO at which time the assessment will be made and a treatment plan will be developed.

Discharge - basic treatments that can be performed at the BAS will be accomplished as required. Routine medications that are stocked in the BAS will be dispensed as

needed. The patient is given instructions on the remainder of the plan of care and when they should report back for any follow up appointments.

Binnacle List - each morning a Binnacle List (Report of the Sick and Injured) is sent to the company office detailing individuals who had been seen that day. It also lists Marines who are Sick in Quarters or currently on Light Duty.

Disease Non Battle Injury - information from the Sick Call log is also transferred into a Disease Non Battle Injury (DNBI) Report. This report breaks down the categories of injuries and illness for the unit. It is forwarded up the chain and collected for the major unit. This information can be used to track the spread of disease or identify injury trends.

Administration - Aid Stations are the focal point of all medical administrative matters for the unit. These include everything from simple light duty chits to complicated Physical Exam Boards (Med Boards).

Supply - Aid Stations in garrison have limited amounts of consumable supplies. Unit funds are used to provide office supplies and medical supplies needed to provide basic care for unit personnel.

Provide medical coverage as needed for training - whenever Marines train, they will need Corpsmen. Examples of events requiring medical coverage include weapons ranges, obstacle courses, and physical fitness tests.

Provide training to non-medical personnel to enhance self/buddy aid and litter team responsibilities - training programs such as Combat Life Saver are taught while in garrison. A thorough training program for your Marines, to include sustainment training, will save lives on the battlefield.

Within a field/combat setting, the responsibility of the Aid Station includes:

While in the field or combat operations, some of the responsibilities the BAS performed while in garrison will continue. However, there are additional responsibilities the BAS and the corpsman assigned to the BAS will assume. For instance;

- Conduct sick call
- Conduct Triage
- Treat casualties to minimize mortality, prevent further injury, and stabilize for further evacuation.
- Record all casualties received and treated, and report them to the appropriate unit section for preparation of casualty reports.
- Provide temporary shelter in conjunction with emergency treatment.
- Return patients to duty when possible.
- Transfer evacuees from the BAS to ambulance, helicopter, or other evacuation transportation.
- Initiate treatment of combat stress casualties.
- Maintain deployment health records (DHR) of battalion personnel.
- Provide personnel replacement and medical re-supply for company level Hospital Corpsmen.

During combat operations, the BAS is structured to be able to split its personnel and supplies into two BAS's (Alpha and Bravo) and "leapfrog" ahead as the battlefield advances, (see figure 2). As Alpha BAS advances with the battalion, Bravo BAS will remain behind and continue to provide medical care/evacuations until all patients have been evacuated, or until relieved by medical support elements such as Medical Battalion Shock Trauma Platoon (STP). This allows for continuity of care as the unit advances. Once the STP assumes all casualties, Bravo BAS, personnel and supplies will rejoin Alpha BAS to form the complete BAS (see figure 1).

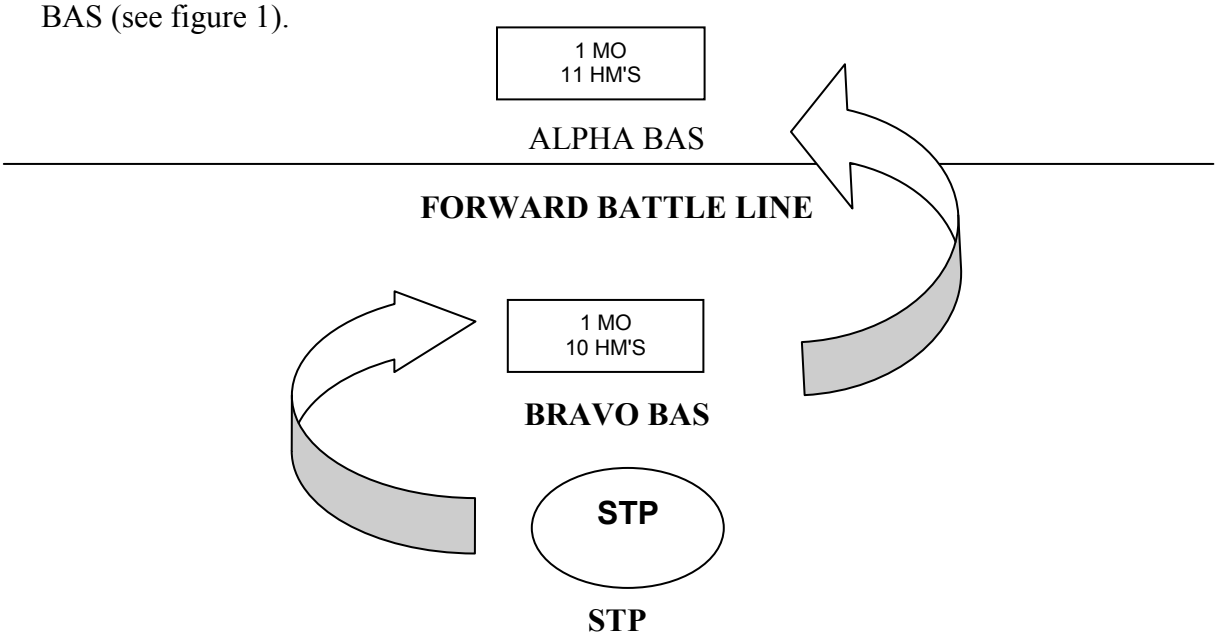


Figure 1. BAS Employment during combat operations

The BAS does not have a patient holding capability. It is similar to a crude emergency room. Depending on the tactical situation, the BAS can be assembled in a fully equipped General Purpose (GP) tent or employed in a mobile configuration from two M1035s and two 7-ton trucks. An individual's privacy is a main concern while they are being treated. Any and all practical measures necessary to provide patient privacy should be used. A Religious Ministry Team (RMT) may be assigned to the BAS. The RMT is made up of a Chaplain and a Religious Program Specialist (RP). Their job is to aid in the comfort of the sick and wounded and to perform religious rites, as needed. This team can provide emotional support for the wounded and can also assist the BAS personnel at the discretion of the Medical Officer.

Sections of the BAS - the BAS can be broken down into five internal sections, which operate as a whole in providing HSS to the Marine Infantry Battalion. (See figure 2)

Internal Security - provides perimeter security for the immediate BAS area, searches patients for weapons, munitions, and booby traps prior to being admitted to the triage area. **AT NO TIME will any weapon or ammunition be allowed into the medical treatment area.**

Triage - sorts and records all incoming patients prior to entry into treatment area. Limited emergency first aid and fluid replacement may be provided here while patients

are waiting to enter treatment area. Initiate and/or continue patient documentation of treatment provided in this area. Also provides comfort/ease of pain to the dying.

Treatment Area - usually done in the GP tent, but could be any secure area assigned by the Battalion Surgeon to treat patients. It's where all the life saving treatment/procedures are performed as directed by the MO or Senior Medical Department Representative.

Evacuation Area - staging area for patients awaiting evacuation, those requiring continued monitoring or continued care. It is also the area where casualty reporting and CASEVAC requests are made.

Expectant Area - area used to hold personnel with very serious injuries who are not expected to survive. Supportive medical care is provided, i.e. pain medications, and ministry and sacrament for the dying are provided appropriate for the casualties' faith group.

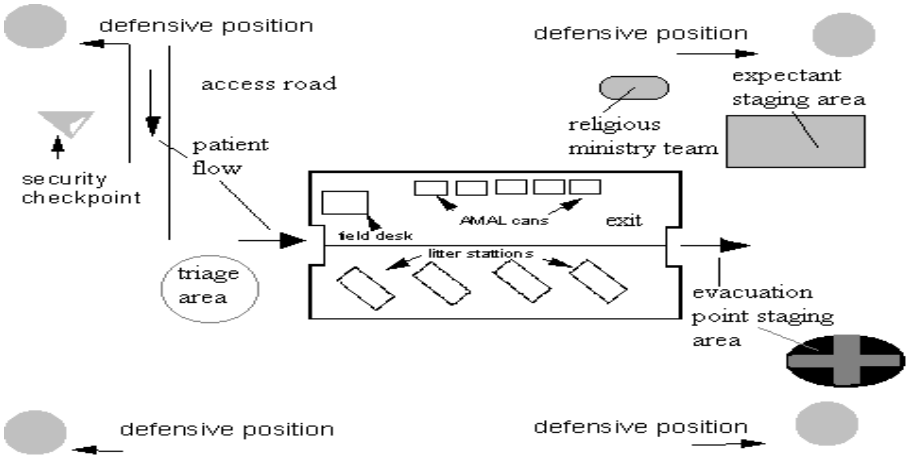


Figure 2. Typical Field BAS Setup

Responsibilities of Specific Personnel

Battalion Surgeon

One of the two medical officers in an infantry battalion is designated as the Battalion Surgeon. The Battalion Surgeon is a special staff officer who advises the battalion commander on matters pertaining to the health and medical care of battalion personnel. The duties of the Battalion Surgeon include:

- Supervising patient treatment, planning, and organization.
- Education of the battalion medical staff.
- Other duties as the battalion commander may direct.

Assistant Battalion Surgeon

The other medical officer in an infantry battalion is designated as the Assistant Battalion Surgeon. The primary job of the Assistant Battalion Surgeon is to:

- Direct, manage, and supervise the operation of the BAS.
- Perform such additional duties as may be assigned by the Battalion Surgeon.

Battalion Chief

Maintains the BAS to include:

- Administration, personnel, and logistical matters.
- Ensures that all battalion HSS commitments and operational requirements have the appropriate medical and logistical support.
- Advises the Battalion Surgeon on all matters relating to the BAS or battalion medical personnel.

Joint responsibilities of the Battalion Surgeon/Chief

- Organizing/Assignment of medical platoons personnel.
- Preparing HSS appendix to battalion's operational plan.
- Supervising and assisting in the collection, treatment, and evacuation of the sick and injured.
- Develop HSS Standard Operation Procedures (SOP) in accordance with guidance by higher authority.
- Conduct medical sanitation inspections.
- Maintaining and submitting appropriate records and reports.
- Train medical personnel in subjects relating to HSS.
- In the absence of a Preventive Medicine Technician, supervise instruction for non-medical personnel in personal hygiene, preventive medicine, and field sanitation.
- Ensuring medical supplies and equipment are properly managed, and that a responsive re-supply system is established to ensure adequate re-supply at garrison and combat levels.

4. EQUIPMENT USED TO ESTABLISH AN AID STATION

Logistics is the military specialty dealing with the procurement, storage, distribution, inventory, and maintenance of material. Supplies and equipment are divided into ten (X) classes as annotated by roman numerals for management purposes. Class VIII supplies are specifically medical related items. Careful consideration should be given to stock levels of Class VIII materials (consumable and equipment) so as not to overstock. The following information is crucial when medical planners develop HSS logistical support system:

- Concept of operation/scheme of maneuver
- Combat intensity
- Duration of the operation
- Casualty estimates

Supply Terminology

Table of Equipment (T/E) - a unit's T/E includes items necessary for basic support of the organization and include:

- Tentage
- Vehicles
- Tools
- Communication equipment
- Nuclear, biological and chemical (NBC) gear
- Office equipment and supplies

Authorized Medical Allowance List (AMAL) - a list of authorized allowances of equipment and consumable supplies required to perform operational HSS. There are many types of AMALs that can be requested based on the nature of the operation. Each AMAL is composed of equipment and consumable supplies. The T/E assigned AMALs for the BAS are designed to support one Infantry Battalion.

AMAL 635 (Equipment) - Aid Station equipment and reusable material supporting HSS of the BAS. Examples include:

- Litters
- Litter stands
- Blankets

AMAL 636 (Consumable Items) - Consumable supplies required to provide HSS to the BAS, to include, initial resuscitation, and stabilization of 50 casualties with major wounds prior to evacuation, and re-supplying to the company line Corpsmen. Examples include:

- Intravenous solutions
- Bandages
- Medications

Authorized Dental Allowance List (ADAL) - a list of authorized allowances of equipment and consumable supplies required to perform a dental function. As with the AMAL, there are various types of ADALs and they are also composed of equipment and supplies.

ADAL 662 Field Dental Items - equipment and reusable material required establishing a dental clinic in the field. Consumable supplies required providing emergency, diagnostic, and preventive maintenance of dental care for 400 patients.

DD-1348 (see figure 3) - form used to requisition materials. It is used primarily by the battalion corpsman in ordering supplies by line item only, e.g., IV fluids, bandages, splints, etc., to re-stock the equipment and consumable AMAL/ADAL.

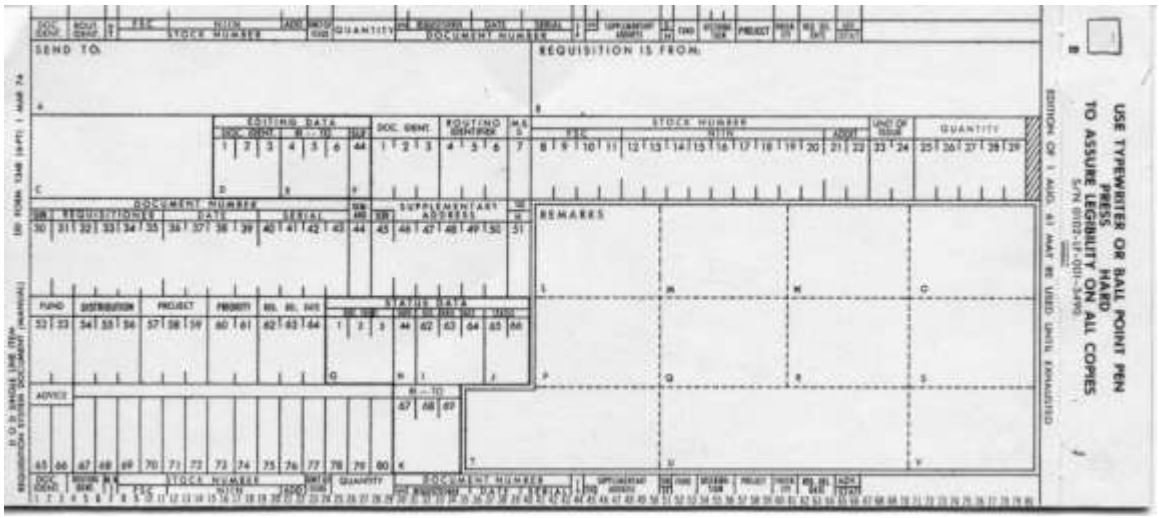


Figure 3. DD FORM 1348

Line Items- Items having a National Stock Number (NSN)

5. HEALTH SERVICE SUPPORT (HSS) COMPONENTS OF THE MEF

MEF Commanders are responsible for coordinating and integrating HSS within their area of operations. The MEF surgeon, medical planner, medical administrative officer, preventive medicine officer, and hospital corpsmen are responsible for establishing HSS requirements and ensuring the HSS systems established by MEF major subordinate commands from an integrated and responsive network of support.

6. HEALTH SERVICE SUPPORT (HSS) COMPONENTS OF THE MAW

The medical staff of the Marine aircraft wing (MAW) headquarters has a wing surgeon, medical administrative officer, an environmental health officer, industrial hygienist, optometrist and hospital corpsmen. Medical staff responsibilities are similar to the MEF's but are more specifically related to the activities within the air combat element (ACE).

A MAW has four Marine aircraft groups (MAGs). Each MAG has a flight surgeon and hospital corpsmen. Each MAG is supported by a Marine wing support squadron (MWSS) that consists of their own flight surgeon and hospital corpsmen.

7. HEALTH SERVICE SUPPORT (HSS) COMPONENTS OF THE MARDIV

The medical staff of the division headquarters consists of a division surgeon, a medical planner/administrator, a psychiatrist, and hospital corpsmen. The breakdown of HSS for division is built to support the mission of each unit. Following are the components within division.

Element	Officer	Enlisted
Division HQ	7	17
Infantry Regiment	11	201
Infantry Battalion	3	66
Tank Battalion	2	31
Assault Amphibian Battalion	2	21
Artillery Regiment	23	59
Artillery Battalion	5	13
Combat Engineer Battalion	2	26
Light Armored Reconnaissance Battalion	3	66
Headquarters Battalion	8	41
Force Reconnaissance Company	0	9

Figure 4. Components of the MARDIV

8. **HEALTH SERVICE SUPPORT (HSS) COMPONENTS OF THE MLG**

Medical logistics group has the majority of the MEF's medical capability. MLG is led by the group surgeon who advises the MLG commander on all health relations within MLG. MLG also has a health service support officer (HSSO) who is responsible for coordinating medical support for both GCE and ACE.

MLG has a medical battalion with three surgical companies (Surg CO) and eight shock trauma platoons (STP's) MLG also has a dental battalion to provide field dentistry.

REFERENCES

Marine Corps Warfighting Publication (MCWP), 4-22 MED 021-6
Combat Health Support in Specific Environments, FM 8-10-1
Class VIII Supplies, MCO 6700.2
Hospital Corpsman, NAVEDTRA 14295
Emergency War Surgery Handbook NATO, 2004
Medical Evacuation in a Theater of Operations, FM 8-10-6
Organization of the Marine Corps Forces MCWP 5-12D

Aid Station Review

1. Describe the Disease Non Battle Injury Report (DNBI).

2. List five requirements of the BAS in combat.

3. What types of items are found on a Table of Equipment (T/E)?

4. Which AMAL contains consumable supplies? List three.

UNITED STATES MARINE CORPS

FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST 507

Medical Support for Military Operations in Urban Terrain (MOUT)

TERMINAL LEARNING OBJECTIVES

1. In various environments, given standard field medical equipment and supplies, **provide first responder medical support to meet mission requirements**. (8404-HSS-2006)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, **identify the definition of urban warfare**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2006a)

2. Without the aid of reference, given a list**, identify the potential health threats of MOUT**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2006b)

3. Without the aid of reference, given a list, **identify the special requirements of casualty evacuation (CASEVAC) in MOUT**, within 80% accuracy, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2006c)

4. Without the aid of reference, given the requirement in a simulated combat scenario, **operate in a MOUT environment**, to meet mission requirements, per Prehospital Trauma Life Support, Current Military Edition. (8404-HSS-2006d)

1. **DEFINITION OF MOUT**

Background - Throughout history, battles have been fought on urbanized terrain. Recent examples are Beirut, Panama City, Mogadishu, and Iraq. It is impossible to develop one set of tactics, techniques and procedures that can be applied to every scenario. Combatants and medical providers are required to quickly adapt to each mission, terrain, and situation.

Military Operations in Urban Terrain (MOUT) Defined - Urban warfare, or Military Operations in Urban Terrain (MOUT), is best defined as those military actions planned and conducted on a terrain where man-made structures impact the tactical options available to the commander. This terrain is characterized as a four-dimensional (air, buildings, streets, and subways) battlefield with the following features:

- Considerable rubble.
- Ready-made fortified fighting positions.
- An isolating effect on all combatants.

2. **POTENTIAL HEALTH THREATS IN MOUT.**

a. The medical threats in MOUT present unique challenges to Health Services personnel. Each of the tactical considerations requires a parallel plan for medical response.

b. Combat in urban terrain and the populations encountered can complicate the ability of medical personnel to provide timely, sustainable support. The patient collection point must be preplanned and established at relatively secure area accessible to both ground and air ambulances.

c. Casualty rates are generally higher than conventional battles. Explosions are the most frequent cause of injury in an urban setting. These explosions may be generated from tanks, mortars, or improvised explosive devices (IED's). These explosions are likely to produce blast related injuries which are covered in a separate lesson. Small units may be spread out across a large area. Unit training in the practice of "self-aid" and "buddy-aid" is essential. Each combatant should be able to quickly and effectively apply a tourniquet, field dressing, and hemostatic agent.

Other Potential Health Threats of MOUT include:

(1) Isolation and reduced response to casualties

(2) Imposition of civilian casualties and refugees

(3) Undefined lines of battle that delay medical treatment

(4) Mass casualty/casualty overload situations

(5) Communicable disease endemic to the area

(6) Lack of water and sanitation

(7) Combat stress

(8) NBC environment

Psychological Casualties

In addition to blast injuries, units are likely to experience an increase in psychological injuries. This is due to lengthy exposure to factors resulting from a constant threat of a hidden enemy. Prolonged fear of sniper fire and hidden IEDs along with the repeated sight of the dead and dying are predominant factors leading to combat stress casualties. Medical units should be prepared to treat these individuals.

Civilian Casualties

Medical units must be prepared for the influx of large numbers of civilian casualties. Units should prepare for the possibility of geriatric and pediatric patients. Large numbers of civilians could overwhelm the capabilities of military medical units. Units should, therefore, establish a plan for this possibility prior to engaging.

AL TAQADDUM, Iraq– Servicemembers help triage injured Iraqi civilians outside of Taqaddum's medical facility after a suicide truck bomb exploded in northern Habbiniyah.

Infectious Disease

Areas experiencing urban combat are likely to have many infectious diseases in the area. The problem will be worse due to poor general sanitation measures and limited amount of public health services.

Animals: Diseases can also be carried by the many animals in the area (rats, mice, dogs, etc.).

People: Interacting with the civilian populace or enemy prisoners of war can expose you or your Marines to such diseases as malaria, tuberculosis or leishmaniasis. Sexually transmitted diseases such as gonorrhea, syphilis, hepatitis, and HIV may also be prevalent.

Water: Potable water will be limited. Troops in urban conflict can consume up to 5 quarts per day on a normal occasion and 12 quarts of water per day in extreme heat environments. If the demand for water is greater than the ability to re-supply, they may be tempted to drink water from local sources. This exposes them to hepatitis, intestinal parasites, and industrial toxins.

3. CASUALTY EVACUATION

Moving casualties in an urban environment can be difficult and time consuming. Moving a litter patient only a few hundred yards could take an hour or more. Ground evacuation vehicles will require heavy armor that can withstand small arms fire as well as rocket propelled grenades (RPG) and IEDs. Helicopter evacuation is difficult due to the tight operating environment. They too are susceptible to small arms fire and RPG's.

Special equipment requirements of CASEVAC
Simply finding casualties in an urban environment can be difficult. Explosions can cause buildings to crumble trapping patients inside. Vehicles can crash due to explosions, hostile fire or operator error. Events such as these may lead to complicated rescue efforts that require special equipment such as: axes, crowbars, jacks, ropes, collapsible litters and cutting tools.

Twentynine Palms, CA- Marines from 3rd Battalion, 5th Marine Regiment, carry a 'casualty' to safety in the urban assault lane of the training at Range 215. The MOUT facilities were built to replicate the actual environment that Marines will face when deployed.

4. OPERATING IN A MOUT ENVIRONMENT

The military commander must take many factors into consideration when planning MOUT operations. Two of which, terrain and rules of engagement, are discussed here:

Terrain

- Enemy observation positions are likely in high, isolated structures such as steeples or lone high-rise buildings.
- Assaulting forces can become quickly isolated, confused and cut-off by a tangle of unfamiliar structures.
- Small assaulting units are at a great disadvantage due to multiple floors, rooms, stairways, and doors. The enemy may make great use of these obstacles to inflict serious losses.

FALLUJAH, Iraq - A vehicle gunner with 1st Battalion, 6th Marine Regiment, looks out on the city as his unit patrols the back alleyways of Fallujah. The unit typically patrols the city streets several times a day, maintaining a strong military presence and searching for insurgents and illegal arms.

Rules of Engagement (ROE) - "US Forces and allies operate with restrictive ROE, reflecting the morals and values considered proper for a civilized society. Unfortunately, the tactical advantage will often go to the belligerent, who disregards or actively endangers the safety of civilians" (PHTLS 6th ed. P 586). Therefore, it is important to remember that every action has consequences. ROE may change from day to day, or from situation to situation. ROE are designed to:

- Avoid alienation of the local population.
- Reduce the risk of adverse world opinion.
- Preserve structures and facilities for future use.
- Preserve vital cultural facilities and grounds.

REFERENCE

Pre-Hospital Trauma Life Support, Current Military Edition

MOUT Review

1. Describe the characteristics of the terrain associated with MOUT.

2. Identify the predominant factors that lead to combat stress casualties in a MOUT environment.

3. List three sources of infectious disease that are found in a MOUT environment.

4. Identify some events that may lead to complicated CASEVAC efforts in a MOUT environment.

NOTE: The following questions are offered for review purposes. <u>This is NOT intended as a sole source of test preparation</u>. Remember all test questions are based on an ELO and any ELO can be used to create a test question.

1. What is the mission of the aid station?
2. What are the six most commonly used methods of evacuation?
3. What are the four categories of tactical triage?
4. What are the degrees of burns?
5. What does the acronym "HEADS" stand for?
6. On the nine-line CASEVAC request, what information is on line six?
7. What is the definition of urban warfare (MOUT)?
8. Who are the two medical officers in an aid station group?
9. What are some of the potential health threats of MOUT?
10. What are the two methods used to estimate burn size?
11. First aid and emergency care is the primary objective of which taxonomy of care level?
12. Restorative and rehabilitative care is the primary objective of which taxonomy of care level?
13. Why are military blast casualties less likely to suffer injuries to the upper torso and head?
14. What are the responsibilities of the aid station while in garrison?
15. What is the most common form of injury in a terrorist bombing?
16. When dealing with blast injuries, how can the absence of ruptured tympanic membranes help rule out other injuries?
17. What are you the 2 categories of TBI?
18. What burn injuries are considered critical regardless of depth or TBSA affected?
19. What are the six commonly used litters within the FMF?
20. What are the five CASEVAC priority levels?
21. What are the five basic sections of the BAS?
22. What are the two types of blast waves?
23. Why might an electrical burn be underappreciated?
24. What are the special requirements of casualty evacuation in MOUT?
25. What are the routine patient assessment procedures (sick call)?
26. What the symptoms of severe TBI?
27. When dealing with blast injuries, what is the most commonly affected body area?
28. What is the most common type of burn on the modern battlefield?

WEAPONS


FMTB-West
FIELD MEDICAL TRAINING BATTALION
CAMP PENDLETON CA

Weapons Table of Contents

UNITED STATES MARINE CORPS

FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST WP1

Weapons Handling

TERMINAL LEARNING OBJECTIVES

1. Given a service rifle/Infantry Automatic Rifle (IAR), sling, magazines, cleaning gear, individual field equipment, and ammunition, **perform weapons handling procedures with a service rifle/Infantry Automatic Rifle (IAR)** in accordance with the four safety rules. (HSS-MCCS-2004)

2. Given a service rifle and cleaning gear, **maintain a service rifle** to ensure the weapon is complete, clean, and serviceable. (HSS-MCCS-2005)

3. Given a service rifle that has stopped firing and ammunition, **perform corrective action** with a service rifle to return the weapon to service. (HSS-MCCS-2006)

4. Given a service rifle/Infantry Automatic Rifle (IAR), individual field equipment, sling, and magazines, **demonstrate weapons carries with a service rifle/Infantry Automatic Rifle (IAR)** in accordance with the four safety rules. (HSS-MCCS-2007)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference and given a service carbine, **determine the condition of the weapon** without error, per MCRP 3-01A. (HSS-MCCS-2005a)

2. Without the aid of reference, given a service carbine, a magazine, ammunition, and necessary equipment at an approved range, **execute weapons commands for the service carbine** without safety violations, per MCRP 3-01A. (HSS-MCCS-2004f)

3. Without the aid of reference, **identify the cycle of operation** without error in accordance with MCRP 3-01A. (HSS-MCCS-2006a)

4. Without the aid of reference, given individual field equipment, sling, and magazines, **perform immediate action** with a service rifle to return the weapon to service without violating safety rules and in accordance with MCRP 3-01A. (HSS-MCCS-2006b)

5. Without the aid of reference, given individual field equipment, sling, and magazines, **perform remedial action** with a service rifle to return the weapon to service without violating safety rules and in accordance with MCRP 3-01A. (HSS-MCCS-2006c)

6. Given the requirement, a service rifle/Infantry Automatic Rifle (IAR), individual field equipment, and a magazine, **execute the three weapons carries** without violating the safety rules and in accordance with MCRP 3-01A. (HSS-MCCS-2007a)

1. DETERMINING THE CONDITION OF A RIFLE

You must know the condition of your weapon at all times. Any time you take possession of a weapon, you must determine its condition. Situations include taking charge of your own weapon after it has been unattended (e.g., from the armory, out of a rifle rack, left in a vehicle), coming across an unmanned rifle in combat, or taking charge of another person's weapon that is attended or unattended. The conditions are as follows:

Determine if a magazine is present

Ensure the weapon is on safe

Conduct a chamber check

A chamber check may be conducted at any time to determine if ammunition is present:

1. Pull the charging handle slightly to the rear and visually and physically inspect the chamber.
2. Right-handed Individuals: Insert one finger of your left hand into the ejection port and feel whether a round is present.
3. Left-handed Individuals: Insert the thumb of the right hand into the ejection port and feel whether a round is present.
4. Release the charging handle and observe the bolt going forward.
5. Tap the forward assist.
6. Close the ejection port cover (if time and the situation permit).

2. WEAPONS COMMANDS

a. **Commands** – weapons commands dictate the specific steps to load, make ready, and unload the M4 carbine. Six commands are used on the rifle range and in weapons handling:

   1. "Load" is the command used to take a weapon from Condition 4 to Condition 3.
   2. "Make Ready" is the command used to take a weapon from Condition 3 to Condition 1.
   3. "Fire" is the command used to specify when you may engage targets.
   4. "Cease Fire" is the command used to specify when you must stop target engagement.
   5. "Unload" is the command used to take a weapon from any condition to Condition 4.
   6. "Unload, Show Clear" is the command used to require a second person to check the weapon to verify that no ammunition is present before the rifle is put into Condition 4. To execute this command, you must remove the magazine, lock the bolt to the rear, and inspect the chamber to ensure that it is empty. Then someone else must inspect and confirm that your weapon is completely unloaded.

The commands are executed as follows:

Unload

On the command "Unload," perform the following steps to take the rifle from any condition to Condition 4:

1. Ensure the rifle is on safe.
2. Remove the magazine from the rifle and retain it on your person.
3. Pull the charging handle to the rear to eject any ammunition in the chamber.
4. Lock the bolt to the rear.
5. Put the rifle on safe now if it would not go on safe earlier.
6. Ensure the chamber is empty and no ammunition is present.
7. Release the bolt catch and observe the bolt going forward on an empty chamber.
8. Close the ejection port cover
9. Return the ejected round to the magazine.
10. Return the magazine to the magazine pouch and fasten the pouch.

Load

On the command "Load," perform the following steps to take the rifle from Condition 4 to Condition 3:

1. Ensure the rifle is on safe.
2. Withdraw a magazine from the magazine pouch.
3. Fully insert the magazine into the magazine well until the magazine catch engages the magazine. The magazine catch will “click” as it engages which can be felt or heard by the shooter. Without releasing the magazine, tug downward on the magazine to ensure it is seated.
4. Fasten the magazine pouch.

Make Ready

On the command "Make Ready," perform the following steps to take the rifle from Condition 3 to Condition 1:

1. Pull the charging handle fully to the rear and release. Do not “ride” the bolt forward. Allow the bolt to “slam” forward.
2. To ensure ammunition has been chambered, conduct a chamber check.
3. Close the ejection port cover (if time and the situation permit).

Fire

On the command "Fire," perform the following steps:

1. Aim the rifle, take the rifle off safe, and squeeze the trigger.
2. After completion of firing, lower the rifle sights to just below eye level so a clear field of view is maintained until a new target has been identified or the threat has been eliminated.

Cease Fire

On the command "Cease Fire," perform the following:

1. Place your trigger finger straight and off the trigger.
2. Place the weapon on safe.

Unload, Show Clear

On the command "Unload, Show Clear", perform the following steps to take the rifle from any condition to Condition 4:

1. Follow the procedures for unloading the weapon.
2. Have a second party inspect the rifle to ensure no ammunition is present.
3. After receiving acknowledgement that the rifle is clear, release the bolt catch and observe the bolt going forward on an empty chamber.
4. Close the ejection port cover.
5. Return the ejected round to the magazine.
6. Return the magazine to the magazine pouch and fasten the pouch.

Weapons transfer procedures

Show Clear Transfer

When time and the tactical situation permit, the rifle should be transferred using the Show Clear Transfer. To properly pass a rifle between individuals, perform the following procedures:

The person handing off the rifle must

1. Ensure the rifle is on safe.
2. Remove the magazine if it is present.
3. Lock the bolt to the rear.
4. Visually and physically inspect the chamber to ensure there is no ammunition present.
5. Leave the bolt locked to the rear and hand the weapon to the other person, stock first with the muzzle elevated.

The person receiving the weapon must

Place the rifle in Condition 4 by performing the following procedures:

1. Ensure the rifle is on safe.
2. Visually and physically inspect the chamber to ensure there is no ammunition present.
3. Release the bolt catch and observe the bolt going forward on an empty chamber.
4. Close the ejection port cover.

Condition Unknown Transfer

To properly take charge of a rifle when its condition is unknown, you must perform the following procedures:

1. Ensure the rifle is on safe.
2. Conduct a chamber check to determine the condition of the weapon.
3. Remove the magazine and observe if ammunition is present in the magazine. If time permits, count the rounds.
4. Insert the magazine into the magazine well.

4. CYCLE OF OPERATION

There are eight steps in the cycle of operation for the service carbine:

1. **Firing** – the ignition of the propellant within the cartridge case forcing the projectile down and out the barrel.
2. **Unlocking** – the rotation of the bolt until the locking lugs no longer align with the lugs on the barrel extension.
3. **Extracting** – the withdrawal of the cartridge case from the chamber by the extractor claw and the rearward motion of the bolt.
4. **Ejecting** – the expulsion of the cartridge case by the ejector and spring.
5. **Cocking** – the resetting of the hammer on the sear as the bolt moves rearward over the hammer.
6. **Feeding** – the stripping of a round from the magazine by the bolt.
7. **Chambering** – the pushing of the round into the chamber by the bolt.
8. **Locking** – the alignment of the locking lugs on the bolt as it rotates into the chamber and lugs align with the lugs on the chamber.

5. IMMEDIATE ACTION

a. Stoppage:

A stoppage is an unintentional interruption in the cycle of operation. A stoppage is normally discovered when the rifle will not fire. Most stoppages can be prevented by proper care, cleaning, and lubrication of the rifle and magazines.

b. Malfunction:

A malfunction is a failure of the rifle to fire satisfactorily or to perform as designed. A malfunction does not necessarily cause an interruption in the cycle of operation. An example of a malfunction is that the weapon fires on automatic (burst) rather than semiautomatic even though the selector lever is set on SEMI. The rifle will still fire, but it will not perform as designed. When a malfunction occurs, the weapon usually has to be repaired by an armorer.

The Bolt is Forward or Ejection Port Cover Closed – to return the weapon to operation:

1. Tap - Tap or strike upward on the bottom of the magazine to ensure it is fully seated.
2. Rack - Pull the charging handle all the way to the rear and release it to ensure a round is chambered.
3. Bang - Sight in and attempt to fire.

6. **REMEDIAL ACTION**

a. **Indicator – The Bolt is Locked to the Rear** – to return the weapon to operation: Conduct a speed reload.

1. Press the magazine release button and remove the empty magazine and retain it on your person if time permits.
2. Insert a filled magazine into the magazine well and tug downward on the magazine to ensure it is properly seated.
3. Depress the bolt catch to allow the bolt to move forward and chamber a round.
4. Sight in and attempt to fire.

b. **Indicator – Obstruction in the Chamber Area** – this usually indicates a failure to eject or extract. It is also the procedure for removing any foreign object that may be impeding function of the weapon. To return the weapon to operation:

1. Remove the magazine.
2. Attempt to lock the bolt to the rear. If the bolt will not lock to the rear:
3. Rotate the rifle so the ejection port is facing down.
4. Hold the charging handle to the rear and shake the rifle to free the round(s).
5. If the rounds do not shake free, hold the charging handle to the rear and strike the butt of the rifle on the ground or manually clear the round.
6. Reload.
7. Sight in and attempt to fire.

c. **Indicator – Brass is Stuck Over and Behind the Bolt Face** This stoppage will prevent the bolt from moving and is caused by the weapon failing to feed or extract properly. To return the weapon to operation:

1. Attempt to place the weapon on Safe.
2. Remove the magazine and place the butt stock on the deck.
3. Hold the bolt face to the rear with a sturdy, slender object (e.g., stripper clip, knife, Multi-Tool). Maintain rearward pressure on the bolt and simultaneously push forward on the charging handle to remove the obstructing round.
4. Check the chamber area to ensure it is clear.

5. Conduct a speed reload.
6. Sight in and attempt to fire, if applicable.

d. **Audible Pop or Reduced Recoil** – an audible pop occurs when only a portion of the propellant is ignited, or only the primer is ignited. It is normally identifiable by reduced recoil and a lower report. This is sometimes accompanied by excessive smoke escaping from the chamber area

7. **WEAPONS CARRIES**

a. **Tactical Carry** (see figure 1) The tactical carry is used when no immediate threat is present.

b. **Alert Carry** (see figure 2) The alert is used when enemy contact is likely (probable).(ALERT TO THE DIRT)

c. **Ready Carry** (see figure 3) The ready is employed when contact with the enemy is imminent.

TACTICAL CARRY
(Figure 1)

ALERT CARRY
(Figure 2)

READY CARRY
(Figure 3)

REFERENCES

MCRP 3-01 Rifle Marksmanship

UNITED STATES MARINE CORPS

FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST WP2

Fundamentals of Rifle Marksmanship

TERMINAL LEARNING OBJECTIVE

1. Given a service rifle, individual field equipment, sling, magazines, ammunition, and known distance targets, execute fundamental rifle marksmanship table 1A to strike the target without any safely violations. (HSS-MCCS-2010)

ENABLING LEARNING OBJECTIVES

1. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a known distance target, **apply the three elements of a good shooting position** to achieve effect on target in accordance with MCRP 3-01A. (HSS-MCCS-2010a)

2. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a known distance target, **apply the seven factors common to all shooting positions** to achieve effect on target in accordance with MCRP 3-01A.(HSS-MCCS-2010b)

3. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a known distance target, **apply the fundamentals of marksmanship** to achieve effect on target in accordance with MCRP 3-01A.(HSS-MCCS-2010c)

1. **THREE ELEMENTS OF A SHOOTING POSITION**

   a. **Bone Support** - The body's skeletal structure provides a stable foundation to support the rifle's weight and manage the recoil after a shot is fired. One of the principles of bone support involves hard and soft tissue. This provides maximum stability and recoil management.

   b. **Muscular Relaxation** - Muscular relaxation helps to hold the body steady, increases the accuracy of aiming and provides maximum use of bone support.

   c. **Natural Point of Aim** - Natural point of aim is the point at which the rifle sights settle when in a firing position. Move your body to settle the sights. "DO NOT MUSCLE THE WEAPON." If a shooter is doing this the shooter should stop and reevaluate their position to get their natural point of aim.

2. **SEVEN COMMON FACTORS TO ALL SHOOTING POSITIONS**

   a. **Forward hand relaxed and elbow close to weapon**

      (1) Wrist should be straight and locked. This creates resistance on the sling close to the muzzle. This allows for the front sight to be stabilized.

      (2) Elbow should be inverted under weapon as much as possible to allow for maximal bone support and a consistent resistance to recoil.

      (3) Forward elbow should not be on the ball of the elbow.

   b. **Butt of the weapon high in the pocket of the shoulder** (see figure 1)

      (1) Outboard tension is applied on sling by the support elbow to drive the buttstock into the pocket of the shoulder.

      (2) Buttstock is placed high in the shoulder to achieve proper stock weld. This ensures that the shooters neck remains erect so that the shooter is looking straight through the sights to acquire sight picture.

Figure 1. Buttstock High in the Shoulder

c. **High firm pistol grip** (see figure 2)
This should be consistent throughout course of fire and can be accomplished by doing the following:

(1) Place the "V" formed between the thumb and index finger high on the pistol grip directly behind the trigger.

(2) Place the fingers and thumb around the pistol grip in a location that allows the trigger finger to rest naturally on the trigger.

(3) The shooter should also pull the weapon slightly to the rear into the pocket of the shoulder.

Figure 2. High Firm Pistol Grip

d. **Placement of the rear elbow**

(1) Should be positioned naturally to provide balance and to create a pocket in the shoulder for the rifle butt.

(2) Consistent shoulder placement will ensure that resistance to recoil will remain constant.

e. **Stock weld and eye relief** (see figure 3) This consists of proper placement of the shooters cheek against the stock. It should remain firm and consistent from shot to shot, and can be accomplished by doing the following:

(1) Place the stock so it's anchored under the shooter's cheek bone.

(2) Ensure that shooter has proper eye relief, which is the distance of the aiming eye in relation to the rear sight aperture (2 to 6 inches).

(3) Head will remain erect to allow aiming eye to look straight through the rear sight aperture.

Figure 3. Stockweld and Eye Relief

f. **Breathing**

(1) Natural respiratory pause - Inhale-Exhale-Pause-Shoot (see figure 4)

(2) Technique for Breath Control During Slow Fire:

(a) Assume a firing position

(b) Stop breathing at your natural respiratory pause and make final adjustments to your natural point of aim.

(c) Breathe naturally, until your sight picture begins to settle.

(c) Take a slightly deeper breath.

(d) Exhale and stop breathing at the natural respiratory pause.

(e) Fire the shot during the natural respiratory pause.

(3) Techniques for Breath Control During Rapid Fire - There are two methods that can be used:

(a) Breathing Between Shots

1 Assume a firing position.

2 Stop breathing at your natural respiratory pause.

3 Fire the shot during the natural respiratory pause.

4 Repeat until all five shots have been fired.

(b) Holding the Breath

1 Assume a firing position.

2 Take a deep breath filling the lungs with oxygen.

3 Hold your breath and apply pressure to the trigger.

4 Fire the shots.

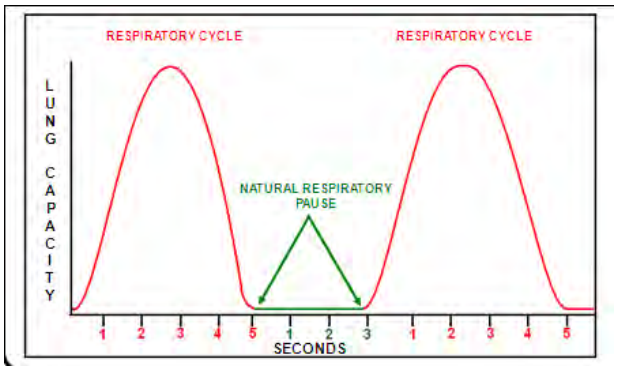


Figure 4. Natural Respiratory Pause

g. **Controlled Muscular Tension** - With the loop sling donned, muscular tension is used to stabilize the rifle. However, excessive muscular tension will result in trembling, shaking, and fatigue. Muscular tension should only be applied to the point at which it allows the sights to settle.

3. APPLYING THE FUNDAMENTALS

a. **Sight Alignment and Sight Picture** (see figure 5)

(1) Sight Alignment - The relationship between the front sight post, rear sight aperture, and aiming eye. This must be consistent from shot to shot or it could result in a misplaced shot. The steps to acquiring correct sight alignment are as follows:

(a) Center the tip of the front sight post vertically and horizontally in the rear sight aperture.

(b) Imagine a horizontal line drawn through the center of the rear sight aperture. The top of the front sight post will appear to touch this line. Imagine a vertical line drawn through the center of the rear sight aperture. The line will appear to bisect the front sight post. This method causes the least amount of inconsistency from shot to shot.

(2) Sight Picture - The placement of the tip of the front sight post in relation to the target, while maintaining sight alignment. Correct sight alignment but improper sight placement on the target will cause the bullet to impact the target incorrectly on the spot where the sights were aimed when the bullet left the muzzle.

(a) The tip of the front sight post is placed at the center of the target while maintaining sight alignment.

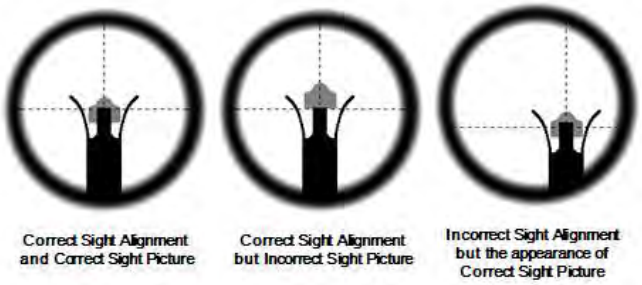


Figure 5. Sight Alignment and Sight Picture

b. **Relationship Between the Eye and Sights** - For accurate shooting, it is important to focus on the tip of the front sight post throughout the sighting and aiming process.

(1) While exhaling and bringing the front sight to the target, your focus should be shifted repeatedly from the front sight post to the target until the correct sight picture is obtained. Once sight picture is obtained, your primary focus should be the tip of the front sight post. This enables the detection of minute errors in sight alignment.

(2) During firing, your peripheral vision will include the rear sight and the target. The rear sight and the target will appear blurry.

NOTE: The final focus must be on the tip of the front sight post with the target appearing indistinct.

c. **Trigger control -** The skillful manipulation of the trigger that causes the rifle to fire, while maintaining sight alignment and sight picture.

(1) Uninterrupted trigger control - When the trigger is moved straight to the rear with a single, smooth motion.

(2) Interrupted trigger control - When the application of the trigger pressure is interrupted, when an error in the aiming process is detected. The applied pressure is kept on the trigger until the error is corrected.

d. **Factors Affecting Trigger Control**

(1) Grip - Failure to have a firm grip causes the trigger to feel inconsistent from shot to shot. As pressure is applied to the trigger, there is a tendency to tighten the grip on the pistol grip. If the grip is firmly established prior to applying trigger pressure, trigger control is consistent from shot to shot.

(2) Trigger Finger Contact with the Trigger - You should keep the middle of the trigger finger clear of the pistol grip. If the finger touches the side of the pistol grip, it causes pressure to be applied at a slight angle rather than straight to the rear. Side pressure applied, no matter how slight, tends to pull the sights off the aiming point.

e. **Breathing**

Natural Respiratory Pause - A respiratory cycle (inhaling and exhaling) lasts about four or five seconds. Between respiratory cycles there is a natural pause of two to three seconds; this is the natural respiratory pause. During the respiratory pause, muscles are relaxed and the rifle sights settle at their natural point of aim. You should fire at this point.

f. **Follow-Through** - Follow-through is the continued application of the fundamentals until the round has exited the rifle barrel. Your body has absorbed the recoil and has settled back on your natural point of aim. Care should be taken not to shift your position, move your head, or let the muzzle of the rifle drop until the bullet has left the barrel. This is important so the direction of your shot will not be disturbed. Proper follow-through reduces the likelihood of errors. Once the follow through is completed, put the weapon on safe and remove it from your shoulder during slow fire, or continue with your next shot in the rapid fire.

REFERENCES

MCRP 3-01 Rifle Marksmanship

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST WP3

Shooting Positions

TERMINAL LEARNING OBJECTIVE

1. Given a service rifle, individual field equipment, sling, magazines, ammunition, and known distance targets, **execute fundamental rifle marksmanship table 1A** to strike the target without any safely violations. (HSS-MCCS-2010)

ENABLING LEARNING OBJECTIVES

1. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a known distance target, **assume a prone position** to achieve effect on target in accordance with MCRP 3-01A and tables within MCO 3574.2K. (HSS-MCCS-2010g)

2. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a known distance target, **assume a sitting position** to achieve effect on target in accordance with MCRP 3-01A and tables within MCO 3574.2K. (HSS-MCCS-2010d)

3. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a known distance target, **assume a kneeling position** to achieve effect on target in accordance with MCRP 3-01A and tables within MCO 3574.2K. (HSS-MCCS-2010e)

4. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a known distance target, **assume a standing position** to achieve effect on target in accordance with MCRP 3-01A and tables within MCO 3574.2K. (HSS-MCCS-2010f)

1. ASSUMING THE PRONE POSITION

Description The prone position is the steadiest of the four shooting positions providing the shooter stability and control during firing. The prone position also provides the lowest profile however, mobility and observation are reduced.

Moving Forward into Position

1. Stand erect, face the target, and spread your feet a comfortable distance apart (approximately shoulder width).
2. Place your support (forward) hand on the handguard, your firing hand on the pistol grip.
3. Lower yourself into position by dropping to both knees.
4. Shift your weight forward to lower your upper body to the ground using your firing hand to break the forward motion.

Variations: The prone position has two variations:

Straight Leg Position with the Sling (see figure 1)

1. To assume the straight leg prone position with the sling, either move forward or drop back into position.
2. Once on the ground, extend your support elbow in front of you. Stretch your legs out behind you. Spread your feet a comfortable distance apart with your toes pointing outboard and the inner portion of your feet in contact with the ground.
3. As much of your body mass should be aligned directly behind the rifle as possible.If your body alignment is correct, then your whole body will absorb the weapon's recoil and not just your shoulder.
4. Grasp the pistol grip with your firing hand and place the rifle butt in your firing shoulder pocket.
5. Lower your head and place your cheek firmly against the stock to allow the aiming eye to look through the rear sight aperture.
6. Rotate your support hand up, slightly gripping the hand guard. The magazine must be on the inside of your support arm.
7. Adjust the position of your support hand on the handguard to allow the sling to support the weapon and the front sight to be centered in the rear sight aperture.
8. To adjust for a minor cant in the rifle, rotate the left or right by rotating the pistol grip left or right.

Figure 1. Straight Leg Position

Cocked Leg Position with the Sling (see figure 2)

1. To assume the cocked leg prone position with the sling, either move forward or drop back into position.
2. Once on the ground, roll your body to the support side and extend your support elbow on the ground. Your support leg is stretched out behind you, almost in a straight line. This allows the mass of the body to be placed behind the rifle to aid in absorbing recoil.

3. Turn the toe of your support foot inboard so the outside of your support leg and foot are in contact with the ground. Bend your firing leg and draw it up toward your body to a comfortable position. Turn your firing leg and foot outboard so the inside of your firing boot is in contact with the ground. Cocking the leg will raise the diaphragm, making breathing easier.
4. Grasp the pistol grip with your firing hand and place the rifle butt in your firing shoulder pocket.
5. Lower your head and place your cheek firmly against the stock to allow the aiming eye to look through the rear sight aperture.
6. Rotate your support hand up, slightly gripping the hand guard. The magazine must be on the inside of your support arm.
7. Roll your body to the firing while lowering your firing elbow to the ground. Slide both elbows outboard on the ground so there is outboard tension against the sling (moving the elbows out tightens the sling). The firing shoulder is higher than the support shoulder in the cocked leg position.
8. Adjust the position of your support hand on the handguard to allow the sling to support the weapon and the front sight to be centered in the rear sight aperture.
9. To adjust for a minor cant in the rifle, rotate the left or right by rotating the pistol grip left or right.

Figure 2. Cocked Leg Position

2. ASSUMING THE SITTING POSITION

MCO 3574.2K states the following requirements for the rifle sitting position:

1. The buttocks and feet or ankles will support the body's weight. No other portion of the body will touch the ground.
2. Both hands, the sling, and one shoulder will support the rifle.
3. The arms may rest on the legs at any point above the ankles.
4. The magazine will be allowed to touch the clothing or the arm supporting the rifle, and may be gripped along the sides but the bottom of the magazine may not be used to support the weapon.

Description – the sitting position provides an extremely stable base and provides good bone support. The sitting position provides better observation than the prone position while still maintaining a fairly low profile.

Variations – there are three variations of the sitting position that can be adapted to the individual shooter: crossed ankle, crossed leg, and open leg. Experiment with all the variations and select the position that is easiest to assume and provides the most stability for firing.

Crossed Ankle Sitting Position with the Loop Sling Apply the three elements and seven factors to this position. To assume crossed ankle sitting position with the loop sling: (see figure 3)

Figure 3. Crossed Ankle Sitting Position

1. Position the body at approximately a 30-degree angle to the target.
2. Place the support hand under the hand guard.
3. Bend at knees and break the fall with the firing hand.
4. Push backward with the feet to extend the legs and place the buttocks on the ground.
5. Cross the support ankle over the firing ankle.
6. Bend forward at the waist and place the support elbow on the support leg below the knee.
7. Grasp the rifle butt with the firing hand and place the rifle butt into the firing shoulder pocket.
8. Grasp the pistol grip with the firing hand.
9. Lower firing elbow to the inside of the firing knee.
10. Lower the head and place the cheek firmly against the stock to allow the aiming eye to look through the rear sight aperture.
11. Move the support hand to a location under the hand guard, which provides maximum bone support and stability of the weapon.

Crossed Leg Sitting Position with the Loop Sling Apply the three elements and seven factors to this position. To assume crossed leg sitting position with loop sling: (see figure 4)

Figure 4. Crossed Leg Sitting Position

1. Position body at a 45- to 60-degree angle to target.
2. Place the support hand under the hand guard.
3. Cross the support leg over the firing leg.
4. Bend at the knees while breaking the fall with the firing hand.
5. Place the buttocks on the ground as close to the crossed legs as you comfortably can.
6. Bend forward at the waist while placing the support elbow on the support leg into the bend of the knee.
7. Grasp the rifle butt with the firing hand and place the rifle butt into the firing shoulder pocket.
8. Grasp the pistol grip with the firing hand.
9. Lower firing elbow to the inside of the firing knee.
10. Lower the head and place the cheek firmly against the stock to allow the aiming eye to look through the rear sight aperture.
11. Move the support hand to a location under the hand guard that provides maximum bone support and stability of the weapon.

Open Leg Sitting Position with the Loop Sling

Apply the three elements and seven factors to this position. To assume the open leg sitting position with the loop sling: (see figure 5)

Figure 5. Open Leg Sitting Position

1. Position the body at approximately a 30-degree angle to the target.
2. Place the feet approximately shoulder width apart.
3. Place the support hand under the hand guard.
4. Bend at the knees while breaking the fall with the firing hand.
5. Push backward with the feet to extend the legs and place the buttocks on the ground.
6. Place the support elbow on the inside of the support knee.
7. Grasp the rifle butt with the firing hand and place the rifle butt into the firing shoulder pocket.
8. Lower firing elbow to the inside of the firing knee.
9. Lower the head and place the cheek firmly against the stock to allow the aiming eye to look through the rear sight aperture.
10. Move the support hand to a location under the hand guard which provides maximum bone support and stability of the weapon.

3. ASSUMING THE KNEELING POSITION

Description – the kneeling position presents a medium silhouette, provides limited body contact with the ground, forms a stable firing position, and provides mobility for quick reaction. In the kneeling position a tripod of support is formed by the left foot, right foot, and right knee, providing a stable foundation for shooting. The kneeling position presents a higher profile to facilitate a better field of view as compared to the prone and sitting positions.

Variations – the kneeling position has three variations: high kneeling, medium kneeling, and low kneeling. Try each variation and choose a position that is natural and provides balance, stability, and control during firing.

Assuming the Kneeling Position – the kneeling position can be assumed by either moving forward or dropping back into position, depending on the combat situation. For example, it may be necessary to drop back into position to avoid crowding cover, or to avoid covering uncleared terrain.

Moving Forward into Position – to move forward into the kneeling position, step forward toward the target with your left foot and kneel down on your right knee.

Dropping Back into Position – to drop back into the kneeling position, leave your left foot in place and step backward with your right foot and kneel down on your right knee.

Assuming the kneeling position with the loop sling

High Kneeling Position (see figure 6)

1. Stand with your feet approximately shoulder width apart and face the target approximately 45 degrees to the right of the line of fire.
2. Step forward with your left foot toward the target.
3. Place your left hand under the hand guard.
4. Kneel down on your right knee so your right lower leg is approximately parallel to the gun-target line.
5. Keep your right ankle straight, with the toe of your boot in contact with the ground and curled under by the weight of your body.
6. Place the right portion of your buttocks on your right heel, making solid contact.
7. Place your left foot forward to a point that allows your shin to be vertically straight. Your left foot should be flat on the ground since it will be supporting the majority of your weight.
8. Place the flat part of your upper left arm, just above the elbow, on your left knee so it is in firm contact with the flat surface formed on top of your bent knee. This means the point of your left elbow will extend just slightly past the left knee.
9. Lean slightly forward into the sling for support.
10. Grasp the rifle butt with your right hand and place the butt of the rifle into the pocket of your right shoulder.
11. Grasp the pistol grip with your right hand.
12. Bend your right elbow to provide the least muscular tension possible and lower it to a natural position.
13. Relax your weight forward and place your cheek firmly against the stock to obtain a correct stock weld.
14. Move your left hand to a location under the hand guard, which provides maximum bone support and stability for the weapon.

Figure 6. High Kneeling Position

Medium Kneeling Position – (see Figure 7) This is also referred to as the bootlace kneeling position. Assume the medium kneeling position in the same way as the high kneeling position with the exception of the right foot. The right ankle is straight and the foot is stretched out with the bootlaces in contact with the ground.

Figure 7. Medium Kneeling Position

Low Kneeling Position – (see Figure 8) The low kneeling position is most commonly used when firing from a forward slope. Assume the low kneeling position in the same way as the high kneeling position with the exception of the placement of your right foot. Turn your right ankle so the outside of the foot is in contact with the ground and the buttocks are in contact with the inside of the foot.

Figure 8. Low Kneeling Position

Adjusting natural point of aim Natural point of aim can be achieved in the kneeling position by making minor body adjustments.

Adjusting Up or Down – if the natural point of aim is above or below the desired aiming point:

Vary the placement of the stock in the shoulder

1. Moving the stock higher in the shoulder lowers the muzzle of the weapon, causing the sights to settle lower on the target.
2. Moving the stock lower in the shoulder raises the muzzle of the weapon, causing the sights to settle higher on the target.

Vary the placement of the left hand in relation to the hand guards

1. Moving the left hand forward on the hand guards lowers the muzzle of the weapon, causing the sights to settle lower on the target.
2. Moving the left hand back on the hand guards raises the muzzle of the weapon, causing the sights to settle higher on the target.

Vary the placement of the left elbow on the knee

1. Moving the left elbow forward on the knee lowers the muzzle of the weapon, causing the sights to settle lower on the target.
2. Moving the left elbow back on the knee raises the muzzle of the weapon, causing the sights to settle higher on the target.

Adjusting Right or Left – natural point of aim can be adjusted right or left in the kneeling position by adjusting body alignment in relation to the target.

4. ASSUMING THE STANDING POSITION

Description – the standing position is the quickest position to assume and the easiest to maneuver from. It allows greater mobility than other positions. The standing position is often used for immediate combat engagement. The standing position is supported by the shooter's legs and feet and provides a small area of contact with the ground. In addition the body's center of gravity is high above the ground. Therefore, maintaining balance is critical in this position. The standing position can be easily assumed and acquired quickly.

Assuming the Standing Position Using the Parade Sling (see figure 9)

1. Hold the rifle vertical with the barrel pointing upward.
2. Apply a parade sling with sling located on left side of the rifle.
3. Face the target approximately 90 degrees to the right of the line of fire preferably on a level piece of ground.
4. Spread your feet apart to a comfortable distance. Normally, this distance will not exceed the width of the shoulders. Distribute your weight evenly over both feet and hips. Your legs should be straight but your knees should not be locked.
5. Place your left hand under the hand guard in a position to best support and steady the rifle. The left triceps may rest against the torso but may not rest or be supported by equipment mounted on the cartridge belt.
6. Grasp the pistol grip with your right hand.
7. Place the toe of the butt stock in your right shoulder.
8. Position your left elbow across your upper torso. Most of the rifle's weight is held with your left arm resting naturally against your upper torso and should be supported by bone structure, not muscle.
9. Hold your right elbow in a natural position.

Figure 9. Standing Position

10. Bring the rifle sights up to eye level instead of lowering your head to the sights. Ensure your head is erect. This allows you to look straight through the sights. Eye relief will normally be increased in the standing position due to the head being held more erect and depending on placement of the rifle butt.
11. Place the stock firmly against your cheek in the same place each time to ensure consistency from shot to shot.

Adjusting Natural Point of Aim – natural point of aim can be achieved in the standing position by making minor body adjustments.

If the natural point of aim is above or below the desired aiming point:

a. Vary the distance between the feet, either placing them wider apart or closer together.

(1) Moving your feet further apart lowers the muzzle of the weapon, causing the sights to settle slightly lower on the target. Care should be taken not to move your feet too far apart because it may affect balance and bone support.

(2) Moving your feet closer together raises the muzzle of the weapon, causing the sights to settle higher on the target. Care should be taken not to move your feet too close together because it may affect balance and bone support.

b. Vary the placement of the butt stock in the shoulder.

(1) Moving the butt stock higher in the shoulder lowers the muzzle of the weapon, causing the sights to settle lower on the target.

(2) Moving the butt stock lower in the shoulder raises the muzzle of the weapon, causing the sights to settle higher on the target.

c. Vary the placement of the "V" formed by the left hand in relation to the hand guards.

(1) Moving the left hand forward on the hand guards raises the muzzle of the weapon, causing the sights to settle lower on the target.

(2) Moving the left hand back on the hand guards raises the muzzle of the weapon, causing the sights to settle higher on the target.

If the natural point of aim is too far to the left or right of the desired aiming point:
The natural point of aim can be adjusted right or left in the standing position by varying the placement of the feet in relation to the target.

REFERENCES

MCO 3574.2K and MCRP 3-01 Rifle Marksmanship

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST WP4

Combat Marksmanship Fundamentals

TERMINAL LEARNING OBJECTIVE.
1. Given a service rifle, individual field equipment, sling, magazines, ammunition, known distance and moving targets **execute basic combat rifle marksmanship table 2** to strike the target without any safely violations. (HSS-MCCS-2011)

ENABLING LEARNING OBJECTIVES.
1. Given a service rifle, individual field equipment, sling, magazines, ammunition, moving and known distance targets, **compress the fundamentals of marksmanship** to strike the target without any safely violations. (HSS-MCCS-2011a)

2. Given a service rifle, individual field equipment, sling, magazines, ammunition, and known distance targets, **apply combat marksmanship fundamenta**ls to strike the target without any safely violations. (HSS-MCCS-2011b)

1. **COMPRESSING THE FUNDAMENTALS**. While the fundamentals of marksmanship are applied in all shooting scenarios, the speed of their application is increased in combat to quickly and effectively engage targets from various locations and distances. In combat, the fundamentals of marksmanship must be applied in the shortest period of time possible while still achieving accurate target engagement. There is no room for error or hesitation. The time required is unique to each individual and his own capabilities.

The ultimate goal in quick engagement is to achieve sight alignment and sight picture simultaneously, and to fire the shot at the moment sight alignment and sight picture are acquired.

Executing your shots at a rapid but effective rate can be achieved only through practice and experience. Eventually, you can become so skilled that you are not even conscious of the separate steps you take to fire your shot.

You must know your abilities. Fire only as quickly as you are capable of firing accurately. Do not exceed your shooting skills in an effort to get rounds quickly on target. Chances are those rounds will be ineffective. In combat, you might not have a second chance. NEVER fire with the weapon on Burst. There is no way to manage the recoil to maintain accuracy beyond the first of the three rounds. Using Burst is a waste of ammunition.

2. **APPLICATION OF COMBAT MARKSMANSHIP FUNDAMENTALS**.

a. **Aiming**.

Sight Alignment/Sight Picture – in combat, the fundamentals are applied simultaneously in a compressed time so sight alignment and sight picture are achieved as the shot is fired. Although the target must be quickly engaged in combat, sight alignment is still the first priority.

Sight Alignment and Distance to the Target – during combat, the fundamentals of marksmanship must be applied in a time frame consistent with the size and distance to the target. As the distance to the target increases, sight alignment becomes more critical for accurate target engagement.

Long-range Engagements – at greater distances (i.e., over 100 yards), correct sight alignment and sight picture are essential for accurate target engagement and should not be compromised.

As the distance to the target increases, the front sight post covers more of the target. Since you must see the target to engage it, there is a tendency to lower the tip of the front sight post to acquire the target because it is natural to aim at what you can see. This will cause your rounds to impact low on the target or even to miss the target. You must make a conscious effort to aim center mass.

Short-range Engagements – proper sight alignment is always your goal. However, as the distance to the target decreases (i.e., 100 yards or less), perfect sight alignment is not as critical to delivering effective shots on the target.

At very short ranges, a deviation in sight alignment can still produce accurate results as long as the tip of the front sight post is in the rear sight aperture and on the target.

A mental adjustment must be made to place the aligned sights on the target, creating an acceptable sight picture as the trigger is pulled. Time, distance to the target, and personal ability will dictate what this acceptable sight picture is. Each individual must define an acceptable sight picture within his own capability. As you become more proficient, your sight picture will become more precise to center mass.

Weapons Presentation as an Aid to Achieving Sight Alignment/Sight Picture.

Presentation should help you achieve proper and consistent stock weld and eye relief. This will aid in getting sight alignment quickly. Do not move your head down to meet the stock of the weapon. Hold your head as erect as possible to allow the aiming eye to see directly through the sights.

If the butt of the rifle is placed correctly and stock weld is correct, you should be looking through the rear sight as your rifle is presented. As the rifle levels, pick up the front sight and establish sight alignment and sight picture. With practice, this becomes so automatic that it requires minimal effort to align the sights.

In combat, you will be looking at the target as you are presenting your rifle. As the rifle settles, shift your focus back to the sights to place the tip of the front sight post on the target and obtain sight picture. As you become more skilled through practice, sight alignment and sight picture will appear to come together simultaneously.

'0-2' Rear Sight Aperture. The '0-2' rear sight aperture is designed for close range engagements under 200 meters and at night.

The '0-2' sight has a larger aperture for rapid acquisition of targets because it allows for a wider field of view. Therefore, the aperture can make aligning the sights more difficult due to its larger size. However, at very close ranges, sight alignment is not as critical to accuracy.

Flipping the larger '0-2' aperture up will automatically give a zero at 200 yards when the elevation knob is set on the 300-yard setting (8/3).

Breath Control. In combat, your breathing and heart rate will often be increased due to physical exertion (e.g., running) or the stress of battle. Therefore, you must interrupt your breathing cycle to create a pause (i.e., hold the breath) that is long enough to fire a shot.

Trigger Control. When a combat target appears, it must be engaged as quickly as you can accurately fire. You must stay within your capabilities and strike a balance between speed and accuracy to deliver well-aimed shots on target. Firing quickly but inaccurately is ineffective and will give the enemy time to respond with his own fire. The goal in combat is uninterrupted trigger control. You must be aggressive in applying uninterrupted trigger control. Trigger control in combat is achieved by the following:

Maintain a firm grip on the weapon to increase stability and counter the effects of recoil. Even with a tighter grip, the trigger finger must be able to operate independently from the gripping hand so the trigger can be moved straight to the rear without disturbing sight alignment.

As presentation of the weapon begins, the safety is disengaged and the trigger finger begins moving toward the trigger.

When the trigger finger contacts the trigger, slight pressure may be applied.

As soon as the sight picture is achieved, the trigger is moved to the rear in one continuous movement, taking care not to disturb sight alignment.

Follow-Through/Recovery. In fundamental marksmanship training, you practiced follow-through to avoid altering the direction of the round by keeping your rifle as still as possible until the round exited the barrel. In combat, recovery is important to get the rifle sights back on the target for another shot. Recovery starts immediately after the round leaves the barrel. Applying a consistent amount of muscular tension within the position throughout the shot process will allow you to automatically recover the sights back on target. Applying recovery techniques ensures the sights are on target as quickly as possible to fire another shot.

Controlled Pair.

Definition. A controlled pair is two aimed shots fired upon a target in rapid succession; sight picture is acquired for both shots. The range to the target will determine the rate of fire, i.e., the closer to the target, the faster the rate of fire. The intent is to fire two shots quickly so that the second shot is fired before the target can react to the first shot.

Purpose. In combat, it may not always be possible to eliminate a target in a single engagement, regardless of how well the fundamentals are applied, because two shots may not cause enough trauma to the body to eliminate the threat. Two aimed shots fired in rapid succession to the target causes twice the amount of trauma, thereby increasing the chance of incapacitation of the enemy.

The size and distance to the target will affect how quickly two shots can be delivered on the target. The speed at which two shots are fired is also dependent on the ability of the Marine and how fast he can reacquire his front sight.

The Marine/Sailor must not compromise accuracy for speed; the key to successful target engagement is to fire only as quickly as the Marine/Sailor can fire effectively.

Technique. Controlled pair is the preferred technique of delivering two rapidly fired shots at ranges of greater than fifteen yards.

Present your weapon to the target.

Acquire sight picture, fire a shot, and recover the sights back on target.

Reestablish sight picture and fire a second shot in rapid succession to the first.

Failure to stop drill.

Definition. A failure to stop drill is an assessment of the target following an engagement in which the target is not incapacitated, followed by a single shot fired to an alternate aiming area. A failure to stop drill is commonly executed following a pair fired to the torso in which the target still poses a threat.

A failure drill is used when the torso shots have failed to stop or eliminate the target. There may be numerous reasons why body shots may not have worked, for example, body armor, psychological or physiological reactions to a violent encounter, ballistic failure, drugs, etc.

An alternate aiming area is the head or the pelvic girdle. A shot in the 'T-box' of the head is considered an incapacitating shot. A shot to the pelvic girdle is an immobilizing shot, which means the target will go down, but it will not necessarily be eliminated.

Technique

After firing a controlled pair to the torso, assess the situation.

If the target has not been eliminated, establish sight picture on the alternate aiming area.

Fire a precision shot on the alternate aiming area.

Search and assess.

Two Threats. Recognizing multiple adversaries and then determining the greater threat forces you to consider what is the appropriate method of engagement. Because you are now confronted with more than one life-threatening opponent, the speed that you engage them with becomes critical.

Acquire sight picture and engage the first target with two shots to the torso. Do not attempt to assess the first target yet; the immediate priority is to eliminate both threats.

Immediately transition to the second target utilizing the recoil of the second torso shot from the first target.

Acquire sight picture and engage with two shots to the torso.

Follow through back to the torso of the second target. Then and only then, assess both targets.

Box Drill Using a Failure Drill. If two shots to the torso fail to eliminate one or both of the threats, employ a box drill:

Acquire sight picture on the greatest threat and engage it two shots to the torso.

Immediately transition to the second target utilizing the recoil of the second torso shot from the first target.

Acquire sight picture and engage with two shots to the torso.

Assess the target. If required, find an alternate aim point, get a clear sight picture and fire a single shot on the target.

Utilize the recoil of the last shot and index your weapon to an alternate aim point on the first target. Aim and fire a single shot. Follow through back to the same alternate aim point and then assess both targets.

REFERENCES

MCO 3574.2K
MCRP 3-01 Rifle Marksmanship

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST WP5

Data Book Analysis

TERMINAL LEARNING OBJECTIVE.

1. Given a service rifle, individual field equipment, sling, magazines, ammunition, and known distance targets, **execute fundamental rifle marksmanship table 1A** to strike the target without any safely violations. (HSS-MCCS-2010)

ENABLING LEARNING OBJECTIVE(S).

1. Without the aid of reference, given a service rifle, individual field equipment, sling, magazines, ammunition, known distance targets, data book and shot groups, **record tri fire data** to establish a true zero in accordance with MCRP 3-01A.(HSS-MCCS-2010h)

2. Without the aid of reference, given a service rifle, individual field equipment, sling, magazines, ammunition, known distance targets, and a data book**, record slow fire data** in accordance with MCRP 3-01A. (HSS-MCCS-2010i)

3. Without the aid of reference, given a service rifle, individual field equipment, sling, magazines, ammunition, known distance targets, and a data book**, record rapid fire data** in accordance with MCRP 3-01A. (HSS-MCCS-2010j)

4. Without the aid of reference, given a service rifle, individual field equipment, sling, magazines, ammunition, known distance targets, and a data book, **compare true zeroes** to ensure data book is maintained in accordance with MCRP 3-01A. (HSS-MCCS-2010k)

Purpose of Data Book Analysis. Data book analysis is a careful shot by shot, group by group, page by page review of the firing conducted during the day. Sizes, shapes, and locations of shot groups are examined to provide clues in aiding the coach to confirm and refine a shooter's true zeros. Data book analysis provides clues into specific shooting problems a shooter may be having, allowing the coach to identify weaknesses and correct performance.

1. RECORDING DATA FOR 200-YARD TRI-FIRE

Recording Data Before Firing. Recording information in the data book prior to firing saves valuable time on the firing line that should be used to prepare for firing. Some information can be recorded before going to the firing line. In the BEFORE FIRING section of the data book, record the following:

Initial Sight Setting or Known BZO

a) Initial Sight Setting: Front Elev. Enter the front sight post setting by recording the number of clicks up (↑) or down (↓) under FRONT ELEV. We will start with a 0 initial sight setting on our front sight post and carry this example throughout instruction.

b) Initial Sight Setting: Rear Elev. Circle the 200-yard setting for the rear sight elevation knob, 8/3-2, under REAR ELEV.

c) Initial Sight Setting: Wind. Under the WIND column, the R represents clicks right on the rifle from the initial sight setting and the L represents clicks left on the rifle. Enter the rear sight windage knob setting by recording the number of clicks right (clockwise) or left (counterclockwise) under WIND. In our example, we will start with a 0 initial sight setting for our windage knob setting.

Wind. Prior to firing, check the wind. If wind conditions are present, a sight adjustment will have to be made prior to firing to ensure shots group at the center of the target.

a) Direction. Determine the direction of the wind and draw an arrow through the clock indicating the direction the wind is blowing. In our example, there is a wind blowing from 4:30 to 10:30.

b) Value. Look at the clock to determine if the wind is full, half, or no value wind. Under VALUE, circle FULL or HALF to indicate the wind value. In our example, we will circle HALF to indicate a half value wind.

c) Speed. Observe the flag on the range and circle the appropriate flag indicating the wind's velocity (SPEED). In our example, the wind is blowing at 10 MPH so we will circle the flag blowing from right to left (4:30 to 10:30) above 10 MPH.

d) Determine any Windage Adjustment. The chart beneath the flag indicates the number of clicks on the rear sight windage knob to offset the effects of the wind at 200 yards. Circle the number of clicks where the wind value and wind speed intersect. In our example, we will circle 1 because the wind is HALF value, blowing 10 MPH.

Zero. Determine the zero you will place on your rifle to accommodate wind conditions to begin firing at 200 yards. This ZERO will be the Initial Sight Setting or Known BZO plus the rear sight windage setting to compensate for the effects of wind.

a) Front Elev and Rear Elev. Elevation adjustments are not affected by wind so the same settings will be carried over from the Initial Sight Setting or Known BZO column.

b) Wind. Wind will affect the strike of the round right or left on the target. Therefore, if wind is a factor, the rear sight windage knob must be adjusted to compensate for the effects of wind.

(1) If the wind is blowing from the right, add the number of clicks circled by moving the windage knob to the right. For example, our WIND setting from Initial Sight Setting is 0, and the number of windage clicks circled is 1 for a 10 MPH right wind, so we will move the windage knob 1 click right for a 1 R windage setting for our ZERO.

(2) Once the windage setting is determined, it is recorded in the WIND column and the rear sight windage knob is adjusted to this setting to begin firing.

Recording Data During Firing

Fire the First String. Fire the first 3-shot string. While firing the string, make a mental note of any shots called out of the group. Then immediately check the wind flag to see if the speed or direction of the wind changed.

After the String is Fired. After firing the string, and when the target is marked, plot all 3 shots with a dot precisely where they appear on the large target diagram in the block marked PLOT (1ST 3-SHOT GROUP). In our example, we will plot our shot group outside the right shoulder.

Sight Setting for 2d String. Make a sight adjustment if required. Triangulate the shot group by drawing a line to form a triangle connecting all 3 shots. Locate the center of the triangle. If the shots form a group, make the necessary sight adjustments off of the center of the triangle. If shots do not form a group (i.e., a group that fits inside the center scoring ring) and do not contain a poor shot, do not make a sight adjustment.

We will determine the sight adjustment by locating the center of the shot group and using the grid lines on the "D"-MOD target in the data book. These grid lines represent the number of inches to bring a shot group center. Looking at the shot group:

a) Front Elev. Locate the closest horizontal grid line to the center of the plotted shot group. Follow the line across to the numbered vertical scale to determine the number of inches of elevation the shot group is off of target center. Calculate the number of clicks on your front sight post to bring your shot group center. At 200 yards, 1 click adjustment on the front sight post will move the strike of the round 2 1/2 inches.

(1) To move your shot group up, rotate the post clockwise (in the direction of the arrow marked UP) or to the right.

(2) To move your shot group down, rotate the post counterclockwise or to the left.

(3) For example, our ZERO front sight post setting was 0, and the center of our 3-shot group is approximately 7 inches or 3 clicks above target center. So we will rotate our front sight post 3 clicks counterclockwise for a new setting of 3 ↓ and record this under SIGHT SETTING FOR 2ND STRING.

b) Wind. Locate the closest vertical grid line to the center of the plotted shot group. Follow the line down to the numbered horizontal scale to determine the number of inches of windage the shot group is off of target center. Calculate the number of clicks on your rear sight windage knob to bring your shot group center. At 200 yards, 1 click adjustment on the rear sight windage knob will move the strike of the round 1 inch.

(1) To move your shot group to the right, rotate the rear sight windage knob clockwise (in the direction of the arrow).

(2) To move your shot group to the left, rotate the rear sight windage knob counterclockwise.

(3) For example, our ZERO windage setting was 1 R, and the center of our 3-shot group was approximately 9 inches or 9 clicks to the right of target center, so we will rotate our rear sight windage knob 9 clicks counterclockwise for a new windage setting of 8 L and record this under SIGHT SETTING FOR 2ND STRING.

(4) Repeat steps 1 – 3 and fire the second 3-shot string. We will plot this group center.

(5) Additional, Helpful Data. After firing a stage, record any data or information that can be helpful in improving shooting in the future.

Recording Data After Firing. In the AFTER FIRING section of the data book, record the following:

Zero. Upon completion of firing, determine the elevation and windage to center the shot group, if necessary, and record this sight setting in the ZERO block of the AFTER FIRING section. In our example, because our 2nd 3-shot string was centered on the target, it will not be necessary to make an additional sight adjustment. Enter the final elevation and windage adjustment setting in the data book:

a) Front Elev. Under the column FRONT ELEV, record the final elevation setting made on the front sight post. In our example, we will record 3 ↓ because our shot group was centered vertically on the target.

b) Rear Elev. Under the column REAR ELEV, record 8/3-2.

c) Wind. Under the column WIND, record the final windage setting made on the rear sight windage knob. In our example, we will record 8 L because our shot group was centered horizontally on the target.

Wind. Calculate the prevailing wind.

a) Direction. In our example, the wind was fairly steady, blowing from 4:30 to 10:30.

b) Value. We will circle HALF to indicate a half value wind.

c) Speed. In our example, the wind was blowing at 10 MPH so we will circle the flag blowing from right to left (4:30 to 10:30) above 10 MPH.

d) Determine any Windage Adjustment. We will circle 1 because the wind is HALF value, blowing 10 MPH.

True Zero. A true zero is the established zero without the windage adjustments to compensate for the effects of the wind. A true zero is calculated because, the next time you fire, the wind conditions will probably be different. Therefore, the rear sight windage knob adjustments made to compensate for a string of fire's wind will not be the correct setting for wind conditions during other strings or on other days.

a) Front Elev and Rear Elev. Because elevation adjustments are not affected by wind, the same settings will be carried over from ZERO: 3 ↓ and 8/3-2.

b) Wind. Calculate the windage adjustment to compensate for today's wind conditions the same way it was calculated in the BEFORE FIRING information of the data book. The only exception is now windage adjustments are being removed from the rifle rather than added to the rifle.

(1) Because the windage setting is being removed from the rifle, the number of clicks of windage are subtracted right or left from the ZERO windage setting.

(2) If the wind is blowing from the right, subtract the number of clicks circled by moving the windage knob to the left. For example, our WIND setting from our ZERO is 8 L, and the number of windage clicks circled is 1, so we will move the windage knob 1 click left for a 9 L TRUE ZERO windage setting.

2. RECORDING DATA FOR SLOW FIRE STAGES

Recording Data Before Firing

True Zero. Record the sight settings determined from 200-yard tri-fire under TRUE ZERO in the AFTER FIRING portion of the data book page.

Wind. Prior to firing, check the wind. In our example, the wind is blowing directly at the shooter's back so it is of no value. We will not have to fill out the rest of this block.

Zero. Because wind is not a factor, record the same settings as recorded in the TRUE ZERO block.

Recording Data During Firing. The method for calling and plotting slow fire shots in the data book is called "the shot behind method." It allows the Marine to spend less time recording data and more time firing on the target. This is because all the calling and plotting is done while the target is in the pits being marked. This information is recorded in the DURING FIRING portion of the data book page. The proper and most efficient method for recording data during KD slow fire stages is as follows:

Fire the First Shot. Fire the first shot. Then immediately check the wind flag to see if the speed or direction of the wind changed.

Call the Shot Accurately. As soon as the shot is fired and the target is pulled into the pits, record the exact location where the tip of the front sight post was on the target at the exact instant the shot was fired. Record this on the target provided under number 1 in the block marked CALL.

Prepare to Fire the Second Shot. As soon as you have recorded the call for the first shot, prepare to fire the second shot.

Look at Where the First Shot Hit. As the target reappears out of the pits, look where the first shot hit the target. Remember this location so it can be plotted after firing the second shot.

Fire the Second Shot. Fire the second shot. Then check the wind flag to see if the wind changed speed or direction.

Call the Second Shot and Plot the First Shot. As soon as the second shot is fired and the target is pulled into the pits, record the call of the second shot. Now plot the precise location of the first shot by writing the numeral 1 on the large target diagram provided in the block marked PLOT.

Prepare to Fire the Third Shot. Repeat steps 1 through 6 until three shots have been fired. Indicate each slow fire shot with the appropriate number (e.g., 1, 2, 3).

Make a Sight Adjustment if Required. Sight adjustments should be made off of a shot group, not a single shot. Determine if a sight adjustment is necessary off of the first three shots fired. If the shots form a group (i.e, a group that fits inside the center scoring ring), but are not where they were called, make the necessary sight adjustment.

Elevation. If an elevation setting change is required, record it under Elevation under CALL 3.

Wind. If a windage setting change is required, record it under Wind under CALL 3.

In our example, shots #1, #2, and #3 were on call. No windage or front sight elevation adjustments will be made.

Prepare to Fire the Fourth Shot. Repeat steps 1 through 8 until the final two shots have been fired. Indicate each slow fire shot with the appropriate number (e.g., 4, 5).

a) In our example, we will plot shots #4, and #5 on call.

b) No sight adjustments will be made.

Recording Data After Firing

Zero. Since no additional sight adjustments were made, record the sight settings from the ZERO block under BEFORE FIRING.

Wind. In our example, wind was not a factor.

True Zero. Because wind is not a factor, record the same settings as the ZERO block.

Coaches Analysis Slow Fire.

500 yrd line Slow Fire Example.

3. RECORDING DATA FOR RAPID FIRE STAGES The following procedure should be used for recording data in the data book for KD rapid fire stages:

Recording Data Before Firing. In the BEFORE FIRING section of the data book, record the following:

True Zero. The sight setting determined during 200-yard slow fire sitting is entered in this block.

Front Elev. In our example, we will record a 3 ↓ setting on our front sight post.

Rear Elev. Because we are firing from 300 yards, we will enter 8/3 on our rear sight elevation knob.

Wind. We finished 200-yard slow fire sitting with a 9 L setting on our rear sight windage knob.

Wind. Prior to firing, check the wind. If wind conditions are present, a sight adjustment will have to be made prior to firing to ensure shots group at the center of the target.

Direction. In our example, the wind is blowing from 3 o'clock to 9 o'clock.

Value. In our example, we will circle FULL to indicate a full value wind.

Speed. In our example, the wind is blowing at 10 MPH so we will circle the flag blowing from right to left (3 o'clock to 9 o'clock) above 10 MPH.

Determine any Windage Adjustment. In our example, we will circle 6 because the wind is FULL value, blowing 10 MPH.

Zero

Front Elev and Rear Elev. Since wind does not affect elevation, these settings are the same as for TRUE ZERO.

Wind

(1) If the wind is blowing from the right, add the number of clicks circled by moving the windage knob to the right; if the wind is blowing from the left, move the windage knob to the left.

(2) For example, our WIND setting from TRUE ZERO is 9 L, and the number of windage clicks circled is 6 for a 10 MPH right wind, so we will move the windage knob 6 clicks right for a 3 L windage setting for our ZERO.

Recording Data During Firing. In the DURING FIRING section of the data book, record the following:

Mentally Call Shots While Firing. While firing the rapid fire string, make a mental note of any shots called out of the group.

After the String is Fired. After firing the rapid fire string, and when the target is marked, plot all visible hits with a dot precisely where they appear on the large target diagram in the block marked PLOT. In our example, we will plot our shot group centered on the target.

Recording Data After Firing. In the AFTER FIRING section of the data book, record the following:

Zero. In our example, because our shot group was centered on the target and on call, it will not be necessary to make a sight adjustment.

Front Elev. In our example, we made no elevation change so we will record 3 ↓.

Rear Elev. The rear sight elevation knob is never moved off of 8/3 when firing at 300 yards so we will circle 8/3.

Wind. In our example, we made no windage change so we will record 3 L.

Wind. Calculate the prevailing wind.

Direction. In our example, the wind remained steady, blowing from 3 o'clock to 9 o'clock, so we will draw this direction on the clock.

Value. We will circle FULL to indicate a full value wind.

Speed. In our example, the wind is blowing at 10 MPH so we will circle the flag blowing from right to left (3 o'clock to 9 o'clock) above 10 MPH.

Determine any Windage Adjustment. We will circle 6 because the wind is FULL value, blowing 10 MPH.

True Zero

Front Elev and Rear Elev. Since wind does not affect elevation, these settings are the same as for ZERO.

Wind

Because the windage setting is being removed from the rifle, the number of clicks of windage are subtracted right or left from the ZERO windage setting. If the wind is blowing from the right, subtract the number of clicks circled by moving the windage knob to the

left. For example, our WIND setting from our ZERO is 3 L, and the number of windage clicks circled is 6 for a 10 MPH right wind, so we will move the windage knob 6 clicks left for a 9 L windage setting for our TRUE ZERO.

4. COMPARING TRUE ZEROS ACROSS DATA BOOK PAGES

Purpose. For a shooter to have consistency in sight settings across positions, he must be applying the fundamentals correctly and assuming stable firing positions incorporating the seven factors. By comparing true zeros across positions and days of firing, the coach can determine two things:

> The coach can identify those shooters who need assistance in assuming solid positions and applying the fundamentals.
>
> For shooters who have a good grasp of the fundamentals and firing positions, the coach can identify a needed sight adjustment change to center a shot group.

Compare TRUE ZEROs Across Positions. The coach analyzes the data book to look for consistency in applying the fundamentals across positions and yard lines.

Troubleshoot Elevation Adjustments Between Positions. It is possible that minor elevation adjustments will be required from position to position; these adjustments should be made to the rear sight elevation knob (once a BZO has been firmly established). Because the standing position is the least stable of the positions, the shooter has less stability of hold, which can cause shots to impact higher on the target. In this case, the shooter may need to come down 1 click of elevation when he shoots standing.

Troubleshoot Windage Adjustments Between Positions. The shooter's windage setting for each position should be within 1 or 2 clicks of each other. A shooter with differences of 4 or more clicks between positions may have problems incorporating the seven factors. The coach should concentrate on the shooter's performance during the next day's firing. The coach should analyze the shooter's application of the fundamentals and his position through the seven factors to determine if there is a problem with a particular position.

Compare TRUE ZEROs Across Days. The shooter should review each shooter's true zeros at the end of each day's firing to identify and correct any shooting weaknesses.

A shooter with a good grasp of the fundamentals and consistent shooting positions will have minimal sight adjustments (not more than 1-2 clicks of elevation and windage change, usually in the same direction) from position to position and yard line to yard line. On the other hand, the shooter with a poor grasp of the fundamentals and a weak shooting position may find himself with rear sight elevation and windage settings from one side of the scale to the other.

The shooter should identify and correct a zero change as training progresses. As a shooter gets more comfortable and used to assuming positions and applying the fundamentals across a couple of days of training, shooting positions often settle, muscles limber up, etc. A slight change in zero from Day One to Qualification Day may be normal due to these factors and should be made to move the shot group to center.

REFERENCES

MCRP 3-01A

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST WP6

Rifle Range Operations

1. RANGE PERSONNEL

Coaches - Coaches are the individuals on the range who instruct marksmanship. This is their primary responsibility. Coaches are assigned to each firing point to assist the shooter. If you have a problem, either on or off the firing line, seek assistance from your coach. If you are in position on the firing line and raise your hand, a coach will come to your assistance.

Block NCO - The block NCO assists the coach in determining alibis. The block NCO will assist the coach when a shooter needs extra assistance.

Line SNCO - The line SNCO assists the range safety officer in operation of the range. He enforces range safety regulations and monitors the conduct of fire.

Tower NCO - The tower NCO assists the line SNCO during range operations. The tower NCO gives all line and firing commands. The tower NCO is located at the center of the firing line where he can observe all firing positions. Commands (to move on or off the firing line, load your rifle, fire your rifle, etc.) are given by the tower NCO.

Range Safety Officer (RSO) - The RSO is responsible for the safe and efficient operation of the range. The RSO has the final determination on alibis, should there be any question.

Pit NCO - The pit NCO is responsible to the RSO for pit operations. He oversees and controls all pit operations and enforces pit regulations. The pit NCO gives commands and directs the pit operators during firing operations.

Pit Operator - During live fire training, shooters are assigned to relays. When not firing, shooters pull targets in the pits and function as pit operators. The pit operator raises and lowers the target on command from the pit NCO. He must work quickly but effectively to pull and mark the targets. Responsibilities of the pit operator include:

1. Raising and lowering the target on command from the pit NCO.

2. During slow fire, when a shot hole appears on the target, the pit operator lowers the target and places the appropriate spotter in the shot hole. White spotters are placed in shot holes in the black areas of the target, and black spotters are placed in shot holes in the white areas of the target. When the spotter is moved to the next shot hole, the pit operator pastes the previous shot hole with the appropriately colored paster.

3. Following a string of rapid fire, the pit operator raises and lowers the target at the pit NCO's command and places the appropriately colored spotters in the shot holes. At the pit NCO's command, the pit operator runs the target back to show the shooter his shot group. He also removes the spotters and covers the shot holes with the appropriately colored pasters when directed by the pit NCO.

2. RANGE SAFETY

Safety on the Firing Line

a. Range commands are given by the tower NCO; however, in the event of an emergency, anyone can call a "Cease Fire." Anyone observing a condition that makes firing dangerous will immediately call "Cease Fire." Report the unsafe condition to a coach, the tower NCO, the pit NCO, or the RSO.

b. Weapons will not be loaded except while on the firing line. Shooters will not load weapons until the command to load is given by the tower NCO. \

c. Never shoot outside the right or left lateral limits of the range as indicated by markers or pit flags. Never shoot at your target while the scoring disk is in the air.

d. Weapons are always in Condition 4 except:

   1. On the firing line when live fire is in progress.

   2. When snapping-in. Snapping-in is allowed only in designated areas.

e. On the command "Cease Fire," immediately place your weapon on safe, your finger straight along the receiver, and wait for instructions from the tower. Muzzles are pointed down range and shooters remain in position until the "Unload, Show Clear" command is given and the weapons safety inspection is complete. Upon completion of the weapons safety inspection, place the weapon in Condition 4 before moving off the firing line.

f. Hearing protection must be worn at all times while on the firing line and the ready line while firing is in progress.

Safety in the Pits

The pit NCO will enforce safety regulations and constantly remind pit operators about safety.

a. The noise level must be kept to a minimum so the pit NCO can maintain communications with the line and the pit operators.

b. Pit operators must move in a fast but safe and orderly manner.

c. Pit operators must not expose any part of their body above the red limiting line on the overhang above the catwalk.

d. Pit personnel must remain inside the limiting lines in the pits at all times. DO NOT CROSS ANY RED LINES IN THE PITS WHILE FIRING IS IN PROGRESS, OR WITHOUT THE CONSENT OF THE PIT NCO!!!!!

e. Pit operators will make no attempt to snap-in, adjust their sights, clean their weapons, or handle their weapons while working in the pits.

3. SCORING PROCEDURES

Shot Spotters - Shot spotters have a black side and a white side and are used to mark the location of shot holes on the targets. They are placed on the target black on white or white on black for easy sighting at a distance.

a. 3" spotters are used for 200- and 300-yard rapid fire stages and triangulation fire.

b. 5" spotters are used for 200- and 300-yard slow fire stages. If the shot is in or near the center of the aiming black, the shooter may request the target be spotted with a 3" spotter instead of the 5" spotter.

Pasters - Pasters are black or white and are used to cover shot holes on the targets. Once the spotters are removed from the target, the shot holes are covered with the appropriate colored pasters. For economic purposes, each paster should be torn in half. Only use half a paster to cover each individual shot hole.

Scoring Disk - The scoring disk is a 10 inch shot spotter that has a red side and a black side and is used to indicate scoring on a target. This disk is used to indicate to the shooter on the firing line the point value of the last shot fired. The scoring disk is always displayed on the target with the red side facing the firing line.

a. To score a 5, place the disk in the lower left corner of the target.

b. To score a 4, place the disk in the lower right corner of the target.

c. To score a 3, place the disk in the upper right corner of the target.

d. To score a 2, place the disk in the upper right corner of the target.

e. To score a miss, place the disk at the 12 o'clock position on the target.

Rapid Fire

Count Shot Holes on Target - A command given by the pit NCO to a specific target pit to count the number of hits on the target.

Excessive Hits on Target - The pit operator indicates he has more than 10 shots on his target by signaling the pit NCO or the pit verifier. The target will be held in the pits until the pit verifier acknowledges the excessive hits. At this time, the pit verifier will have all shot holes pasted up and the target raised to half-mast with the value disk placed in the appropriate spot for excessive hits.

Insufficient Hits on Target - The pit operator indicates he has fewer than 10 shots on his target by signaling the pit NCO or the pit verifier. If a target has 8 hits or less, the pit verifier will tell the pit operator to score for the number of rounds impacting the target and run the target all the way up. If the target has 9 hits all in the "aiming black" with no excessive hits on two targets to either side, the shooter will be given the option of receiving an alibi or accepting the score for the 9 shots fired.

4. **PIT COMMANDS**

Slow Fire

Mark
The shooter on line has shot. Pull the target down and look for the shot hole.

Disregard
Disregard the value of the last shot. The pit operator will line through this value on his scorecard and initial it.

Re-disk
Re-disk the value of the last shot. The scoring disks must be held up at least three seconds to allow the shooter enough time to see it.

Put the Target Back in the Air
Raise the target.

Inverted Spotter
Spotters must be white on black and black on white.

Straighten Target
Align the target in the target carriage.

Slow Target
The pit operator has been labeled as a slow target and is told he needs to speed up his pit service. The pit operator should not take more than 20 seconds to pull and mark a target. There are times when a slow target cannot be helped, for instance, when a target goes down in the pits for repairs or verifiers are busy verifying other targets.

Target in Repair
The target or target carriage has been broken and an attempt to repair it is underway.

REFERENCES

MCO 3574.2 Marine Corps Combat Marksmanship Programs

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST WP 7

Zero the Rifle Combat Optic (RCO)

TERMINAL LEARNING OBJECTIVE

1. Given a service rifle, Rifle Combat Optic (RCO), sling, individual field equipment, magazines, cleaning gear, ammunition, and a target, **zero a Rifle Combat Optic (RCO) to a service rifle** to achieve Point of Aim (POA) equals Point of Impact (POI) at 100 meters. (HSS-MCCS-2008)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, **identify the characteristics of a Rifle Combat Optic (RCO)**, within 80% accuracy, and in accordance with TM 11064-OR/1. (HSS-MCCS-2008a)

2. Without the aid of reference, **identify the nomenclature of a Rifle Combat Optic (RCO)**, within 80% accuracy, and in accordance with TM 11064-OR/1. (HSS-MCCS-2008b)

3. Given a Rifle Combat Optic (RCO), **maintain the RCO so that it is clean and serviceable**, in accordance with TM 11064-OR/1. (HSS-MCCS-2008c)

4. Given a service rifle and Rifle Combat Optic (RCO), **mount the RCO**, in accordance with TM 11064-OR/1. (HSS-MCCS-2008d)

5. Given a service rifle, Rifle Combat Optic (RCO), sling, individual field equipment, magazines, cleaning gear, ammunition, and a target, **employ the Rifle Combat Optic (RCO)** to achieve Point of Aim (POA)/Point of Impact (POI), in accordance with TM 11064-OR/1. (HSS-MCCS-2008e)

6. Without the aid of references, given a service rifle, Rifle Combat Optic RCO, sling, magazines, individual field equipment, target, and data book**, perform zeroing procedures** to achieve Point of Aim (POA)/Point of Impact (POI), in accordance with MCRP 3-01A and TM 11064-OR/1. (HSS-MCCS-2008f)

1. **CHARACTERISTICS**

The TA31RCO-A4 (AN/PVQ-31A) is an Rifle Combat Optic (RCO) designed for the M16A4, M16A2 weapon systems.

The TA31RCO-M4 (AN/PVQ-31B) is an Rifle Combat Optic (RCO) designed for the M4 Carbine family.

The RCO provides the shooter with quick target acquisition at close combat ranges while providing enhanced target identification and hit probability out to 800 meters utilizing the Bullet Drop Compensator (BDC).

Both optics incorporate dual illumination technology using a combination of fiber optics and self-luminous Tritium. This allows the aiming point to be always illuminated without the use of batteries. The Tritium illuminates the aiming point in total darkness, and the fiber-optic self-adjusts reticule brightness during daylight according to ambient light conditions.

The AN/PVQ-31 (Trijicon RCO 4x32) contains radioactive material for low-light illumination. The radiation source is Hydrogen-3, commonly known as Tritium. Tritium is an odorless, tasteless, colorless gas that reacts to the human body in the same manner as natural hydrogen. The human body does not easily retain hydrogen or Tritium as a gas. However, the oxide, HTO, which is formed by the burning of Tritium, is 10,000 times more hazardous. For this reason great care should be taken to avoid flame in the presence of the AN/PVQ-31 with a Tritium lamp which is broken or suspected of leaking. If the Tritium lamp in the AN/PVQ-31 breaks, follow the procedures covered in maintenance. The AN/PVQ-31 is regulated under an EXEMPT LICENSE from the United States Nuclear Regulatory Commission (NRC) held by Trijicon, Inc. Trijicon, Inc prohibits disassembly of the scope.

Specifications

(1) Objective Lens	32mm
(2) Magnification	4 power
(3) Eye Relief	1.5 inches
(4) Field of View	36.7 ft at 100 yards
(5) Length	5.8 inches
(6) Weight	15.3 oz w/ mount
(8) Waterproof	66 feet
(9) Tritium	.1 curies (Illuminates the sight. Useful up to 15 years.)

(10) Range Up to 800m optimal

(11) Disassembly Strictly prohibited, Trijicon personnel only

2. **NOMENCLATURE** (see figure 1)

(1) Objective Lens

(2) Fiber Optic Light Collector

(3) Adjuster Cap Retention Wire and Crimp Sleeve

(4) Eye Piece

(5) MIL-STD-1913 Rail Adapter (TA51 Mount)

(6) Elevation Adjuster Cap

(7) Windage Adjuster Cap

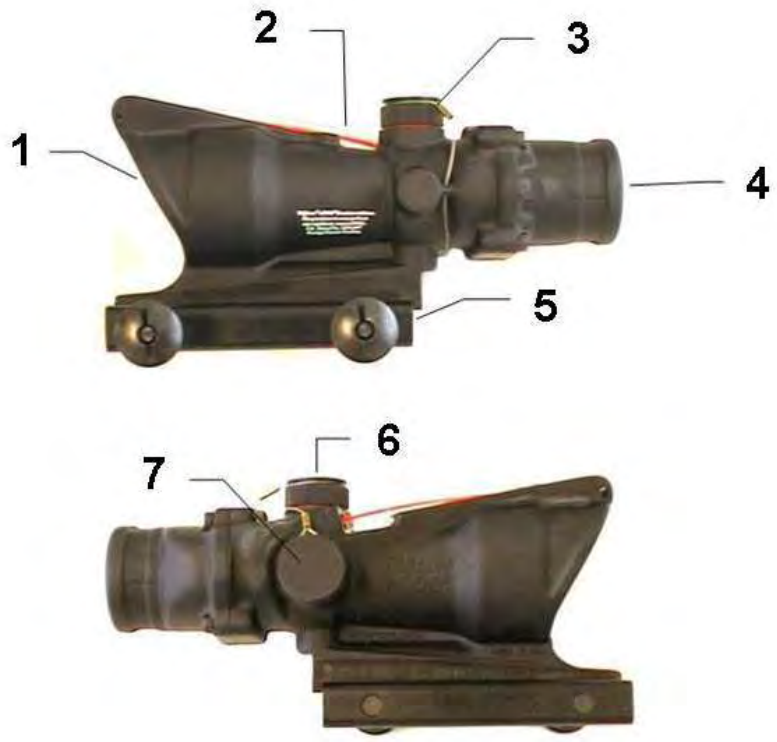


Figure 1. Rifle Combat Optic

Identification - Location of the UID, NSN and serial number:

(1) On the right side of the RCO is the model number of the AN/PVQ-31. On the left side is the National Stock Number (NSN). The UID is located above the NSN number and it contains the Cage Code, Model and Serial Number.

(2) To further assist in identification, the model type will be noted at the bottom of the Field of View when looking into the optic.

3. MAINTENANCE

It is recommended that the Tritium lamps be checked prior to deployment of the optic and every 6 months or immediately following any incident which might lead to lamp failure such as the dropping of the AN/PVQ-31 onto a hard surface. To determine that the Tritium lamp is functioning in either optic, enter a dark room and look through the optic. The Chevron should be illuminated red. The illumination provided by the Tritium lamp is very faint and will be hard to see without a dark-adapted eye. Remain in the dark room for approximately 10 minutes to adapt your eyes to the dark. The reticule is illuminated in low light or complete darkness. If the reticule does not appear to illuminate in the dark, contact your unit maintainer for confirmation. When failure is confirmed, double bag the optic, mark the bag "possible contamination warning," and contact your unit Radiological Safety Officer (RSO) for further guidance.

The fiber optic light collector may exhibit small bubbles or milky lines. This is acceptable and will not affect the performance of the AN/PVQ-31.

Trace amounts of silicone, on original models, may become visible at the point where the fiber optic light collector enters the main housing. This is considered normal and will not affect the performance of the AN/PVQ-31.

It is recommended that clean water be used to rinse foreign material from the external surfaces and lenses. If water is unavailable, the AN/PVQ-31 comes with a cleaning tool (Lens Pen) that does not require the use of water.

(1) Utilize the Lens Pen to remove all foreign material from the unit if fresh water is unavailable. All foreign material must be removed before continuing.

(2) Remove the cap to expose the Felt Lens Cleaner. Ensure there is no foreign material on the felt surface. Starting in the center of the lens, press the felt surface of the lens cleaner against the lens and in a spiral motion, work from the center to the outside edge of the lens. Repeat if necessary.

DO NOT:

(1) Use any type of solvent on the AN/PVQ-31 (RCO).

(2) Use anything other than water, soap, and/or the Lens Pen to maintain the AN/PVQ-31(RCO).

(3) DO NOT DISASSEMBLE THE AN/PVQ-31.

4. MOUNTING THE AN/PVQ-31

There are two methods for mounting the optic:

Rail. The optic can be placed in any of the slots on the top of the receiver to allow for eye relief adjustment. Once the ideal position has been determined, apply forward pressure on the optic and tighten the knobs using finger pressure only. Then, add another quarter turn utilizing a coin or bladed screwdriver. Do not tighten beyond this recommended method.

(1) Mark the Thumb Screw location with permanent marker or other means.

Carrying Handle - Align the forward mounting hole with the carrying handle mounting hole. Once properly aligned, seat the optic into the carrying handle channel ensuring the whole alignment is retained. Placing the optic into the carrying handle may require substantial pressure. Use hands only. Do not use impact.

(1) Alignment is crucial, do not force screw set into the threaded hole of the optic. This may damage the special thread. If resistance is met, check the optic and carrying handle alignment and try again.

(2) The U shape will fit under the curved surface of the carrying handle. Use maximum finger pressure only, to tighten the screw.

5. EMPLOYMENT

Bullet Drop Compensator - The entire reticule pattern is a Bullet Drop Compensator, designed to compensate for the trajectory of the 5.56mm round from 100-800 meters without making mechanical adjustments to the sight. When zeroed properly, the Point of Aim will equal Point of Impact at the designated distance.

Ranging Features - The base of the Chevron and the horizontal stadia lines below the Chevron represent 19" at the indicated range (19" is the average width of a man's shoulders). Range your target using the base of the Chevron for 300m and the width of the horizontal stadia lines for 400-800m.

(1) Beyond 300m, determine which stadia line best fits the target's shoulders and use that 'crosshair' as your Point of Aim. Because the BDC is calibrated for the correct trajectory, your Point of Aim is your Point of Impact at each distance.

(2) The AN/PVQ-31 reticule includes a horizontal mil-scale graduated in 5 mil increments. The distance from the center post to the first mil bar is 10 mils left side and 10 mils right side. Due to the design of the optic, the right side of the mil scale will become blurry. This is normal. The horizontal mil scale is primarily used for communicating target positions and other relationships to team members within the small unit.

Scope Shadow

(1) Ensure you have a FULL Field of View (FOV) and proper Sight Alignment (no shadow). Improper FOV or Sight Alignment (shadow) will result in improper shot placement. To acquire the proper FOV, move your shooting eye closer or further from the eyepiece until you have no shadow on the outer most portion of the optic's view. To acquire proper Sight Alignment, move your shooting eye vertically and horizontally until no shadow exists. Focus on the reticule to acquire the necessary precision aim.

6. ZEROING

The AN/PVQ-31 is internally adjustable. The adjuster screws need only position the internal roof prism. For this reason, a light tap on the adjusters, after an adjustment has been made, will ensure proper seating of the internal mechanism and allow for an accurate zero. If a light tap to the adjuster is not applied, the first round fired may be inaccurate. The AN/PVQ-31 is shipped with a factory-centered position for the M16A4/M4 weapons. Normally this means that only small adjustments are necessary. DO NOT adjust the optic to the extremes.

25 Meter Grouping Exercise - Firing the AN/PVQ-31 at 25 meters provides a Field Expedient Zero. To acquire the Field Expedient Zero, use the tip of the 300-meter aiming post to acquire POA/POI. This can be accomplished on any approved or field expedient target. At 25 meters, moving the adjuster twelve (12) clicks will move the POI approximately one (1) inch.

(1) This is a field expedient zero only. Conduct zero at 100 meters using that method immediately after grouping exercise.

Zeroing At 100 Meters - When zeroing the AN/PVQ-31 at 100 meters, the tip of the illuminated Chevron is used to acquire Point of Aim/Point of Impact. This method ensures maximum accuracy to 800 meters utilizing the Bullet Drop Compensator. Moving the adjuster three (3) clicks will move the point of impact one (1) inch.

Triangulation - During the zeroing process, we will conduct triangulation firing. Meaning that we will be firing five round shot groups and adjusting off the center of the impacts to achieve a zero for the weapon. This is done by the following steps:

(1) Fire a five round shot group.

(2) Locate the center of your shot group.

(3) The point in the center of the shot group will be used to adjust your shot group to the center of the target.

Adjusting The Sights - After triangulating your shot group optic adjustments are made in the following manner:

Vertical Adjustment - Determine the vertical distance from the center of your shot group to the center of the target by looking at the numbers to the left side of the graph on the RCO Zero target. This number(s) represents the number of clicks needed to adjust the shot group to the center of the target. Remove the top adjuster cap to expose the elevation adjuster. Moving the adjuster in the direction of the arrow (clockwise) will move the strike of the bullet UP as indicated on the adjuster.

(1) Adjustment increments are 1/3 inch per click at 100 meters. This means that three (3) clicks are required to move the bullet impact one (1) inch on a target at 100 meters.

(2) This can be accomplished with the use of a coin, bladed screwdriver, or the extractor rim of the 5.56mm casing. The amount of clicks can be detected through audible and physical feedback.

(3) DO NOT adjust to the extreme ends of adjustment. Tap the adjuster after each adjustment to ensure the internal mechanism is fully seated.

(4) The adjuster caps become watertight when screwed onto the scope with finger pressure. Resistance can be felt when the cap contacts the O-ring seal. One half turn beyond that point is sufficient.

Horizontal Adjustment - Determine the horizontal distance from the center of your shot group to the center of the target by looking at the numbers at the bottom of the graph on the RCO Zero target. This number(s) represents the number of clicks needed to adjust the shot group to the center of the target. Remove the side adjuster cap to expose the elevation adjuster. Moving the adjuster in the direction of the arrow (clockwise) will move the strike of the bullet RIGHT as indicated on the adjuster.

(1) Adjustment increments are 1/3 inch per click at 100 meters. This means that 3 clicks are required to move the bullet impact one inch on a target at 100 meters.

(2) This can be accomplished with the use of a coin, bladed screwdriver, or the extractor rim of the 5.56mm casing. The amount of clicks can be detected through audible and physical feedback.

(3) DO NOT adjust to the extreme ends of adjustment. Tap the adjuster after each adjustment to ensure the internal mechanism is fully seated.

REFERENCES:

MCRP 3-01A

TM 11064-OR/1

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMST WP 8

Zero the Back Up Iron Sights

TERMINAL LEARNING OBJECTIVE. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a target **BZO the Back Up Iron Sight (BUIS)** to a service rifle to achieve Point of Aim (POA) equal Point of Impact (POI) at 300 meters. (HSS-MCCS-2009)

ENABLING LEARNING OBJECTIVES.

1. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a target, **apply the elements of zeroing** the service rifle to achieve Point of Aim (POA) equal Point of Impact (POI) at 300 meters and in accordance with MCRP 3-01A. (HSS-MCCS-2009a)

2. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a target, **apply the types of zeroes** to the service rifle to achieve Point of Aim (POA)/ Point of Impact (POI) at 300 meters and in accordance with MCRP 3-01A. (HSS-MCCS-2009b)

3. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a target, **manipulate the sighting system** on the service rifle to achieve Point of Aim(POA)/ Point of Impact (POI) at 300 meters and in accordance with MCRP 3-01A. (HSS-MCCS-2009c)

4. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a target, **manipulate windage and elevation settings** on the service rifle to achieve Point of Aim (POA)/ Point of Impact (POI) at 300 meters and in accordance with MCRP 3-01A. (HSS-MCCS-2009d)

5. Given a service rifle, individual field equipment, sling, magazines, ammunition, and a target, **perform a grouping exercise** to achieve Point of Aim (POA)/ Point of Impact (POI) at 300 meters.(HSS-MCCS-2009e)

1. **ELEMENTS OF ZEROING.** To accurately engage targets, the strike of the bullet must coincide with your point of aim on the target. This must be done while compensating for the effects of weather and the range to the target. This is accomplished by adjusting the sights on your rifle to achieve point of aim/point of impact. This process is called zeroing and it is a critical element of accurate target engagement.

a. **Line Of Sight**. Line of sight is a straight line beginning at the center of the eye, passing through the center of the rear sight aperture, and then across the tip of the front sight post to the exact point of aim on the target.

b. **Point Of Aim**. The point of aim is the precise point where the tip of the front sight post is placed on the target while maintaining sight alignment.

c. **Centerline Of Bore**. Centerline of the bore is an imaginary straight line beginning at the chamber end of the barrel, proceeding out of the muzzle, and continuing on indefinitely.

d. **Trajectory**. A bullet does not follow a straight line to the target. Instead, a bullet travels in a curved path, or arc, which is called the bullet trajectory.

(1) This trajectory occurs because of the earth's gravity, which pulls the bullet down toward the ground as soon as the bullet leaves the rifle's barrel. The rate of this curvature increases as the bullet's speed decreases.

(2) To compensate for this effect so that the bullet will impact the target, the muzzle of the rifle must be elevated by applying elevation to the rifle sights.

(3) The greater the distance to the target, the higher the bullet's trajectory must be to impact the target. The greater the distance to the target, the greater the elevation that must be applied to the sights in order to impact the same spot on the target.

e. **Range**. Range is the known distance from the rifle to the target.

2. **TYPES OF ZEROS**

a. **Zero**. A zero is the elevation and windage settings required to place a single shot, or the center of a shot group, in a predesignated location on a target at a specific range, from a specific firing position, under specific weather conditions.

b. **True Zero**. A true zero is the elevation and windage settings required to place a single shot, or the center of a shot group, in a predesignated location on a target at a specific range, from a specific firing position, under ideal weather conditions (i.e., no wind).

c. **Battlesight Zero (BZO).** A BZO is the elevation and windage settings required to place a single shot, or the center of a shot group, in the center of a target at 300 yards/meters, under ideal weather conditions (i.e., no wind). A BZO is the sight settings placed on your rifle for combat. In combat, your rifle's BZO setting will enable engagement of point targets from 0 – 300 yards/meters in a no wind condition. 8/3 is the rear sight elevation setting for the M-16A2 BZO. 6/3 is the rear sight elevation knob setting for the M-16A4 & M-4 Carbine.

3. **SIGHTING SYSTEM** The sighting system of the service rifle/carbine consists of a front sight post, a rear sight apertures with windage knob, and a rear sight elevation knob. Moving each of these sights one graduation or notch is referred to as moving one "click" on the sight system.

a. **Front Sight.** The front sight consists of a square, rotating sight post with a four-position, spring-loaded detent. The front sight post is moved up or down when zeroing the rifle for elevation. Depress the detent and rotate the post to adjust for elevation up or down.

(1) Moving the Front Sight Post. To raise the strike of the bullet, rotate the post clockwise (in the direction of the arrow marked UP) or to the right. When rotated clockwise, the front sight post moves down into the front sight housing. It causes the shooter to raise the weapon's muzzle weapon to realign the tip of the front sight post in the center of the rear sight aperture. To lower the strike of the bullet, rotate the post counterclockwise or to the left. When rotated counterclockwise, the front sight post moves up and out of the front sight housing. It causes the shooter to lower the weapon's muzzle to realign the front sight post tip in the rear sight aperture's center.

b**. Rear Sight.** The rear sight consists of two sights. Rear sight elevation knob, and a rear sight windage knob.

(1) Rear Sight Elevation. The rear sight elevation knob is used to move the strike of the round up or down, and to adjust for elevation or range to the target. The knob has an index on the left side which indicates the settings for a specific range to target. To adjust for elevation or range rotate the knob so the desired setting is aligned with the index on the left side of the receiver. Each number on the knob represents a distance from the target in 100 yard increments.

(2) Rear Sight Windage. The rear sight windage knob is used to move the strike of the round left or right. To move the strike of the round right, rotate the knob clockwise (in the direction of the arrow). To move the strike of the round left, rotate the knob counterclockwise.

(3) Rear Sight Aperture. The rear sight aperture consists of two separate sights. One aperture is for normal range and the other aperture is for short range limited visibility engagement (0 to 200 yards with a larger aperture size). The normal range aperture is unmarked and is used for zeroing and in most firing situations (i.e. KD course). The limited visibility aperture is the larger aperture. It may be used for engagement of targets closer than 200 yards, and target engagement during limited visibility, or when a greater field of view is desired. This large aperture is marked '0-2' and is used only in conjunction with your established BZO.

4. **WINDAGE AND ELEVATION RULES**

a. **Definition.** The windage and elevation rules define how far the strike of the bullet will move on the target for each click of the front/rear sight elevation or rear sight windage knob for each 100 yards of range to the target. This is based off of its predetermined minute of angle set by the manufacture.

b. **Principles.** The easiest way to understand the windage and elevation rules is to first analyze where the bullet struck the target. If an adjustment needs to be made up or down to hit the center of the target, adjust the elevation on your rifle. If an adjustment needs to be made right or left to hit the center of the target, adjust the windage. As a coach you need to understand not just when to help your shooters with their adjustments, but also how much of an adjustment they need to make.

(1) Front Sight Elevation Rule. This rule applies to elevation adjustments using the front sight post. These adjustments are represented at 100 yards.

(a) M-16 A2 & M-16 A4. One click of front sight elevation adjustment will move the strike of the bullet on the target approximately 1 ¼ inches.

(b) M4 Carbine. One click of front sight elevation adjustment will move the strike of the bullet on the target approximately 2 inches.

(2) Rear Sight Elevation Rule. This rule applies to elevation adjustments using the rear sight. These adjustments are represented at 100 yards.

(a) M-16 A2. One click of rear sight elevation adjustment will move the strike of the bullet on the target approximately 1 inch.

(b) M-16 A4 & M4 Carbine. One click of rear sight elevation adjustment will move the strike of the bullet on the target approximately ½ an inch.

(3) Rear Sight Windage Rule. This rule applies to windage adjustments using the rear sight. These adjustments are represented at 100 yards.

(a) M-16 A2 & M-16 A4. One click of rear sight windage adjustment will move the strike of the bullet on the target approximately ½ an inch.

(b) M4 Carbine. One click of rear sight windage adjustment will move the strike of the bullet on the target approximately ¾ an inch.

5. **GROUPING EXERCISE**

a**. Zeroing at 300 yards.** When a rifle is zeroed at 300 yards, the bullet will cross the line of sight twice. The bullet will cross the line of sight first on its upward path of the trajectory at 36 yards, and again farther down range at 300 yards (point of aim/point of impact). When the bullet's trajectory intersects the line of sight at 36 yards and 300 yards, the rifle is considered to be zeroed to hit a target at the exact point of aim at both of these ranges. That is why there is an alternate method for zeroing the rifle at 36 yards when a 300-yard range is not available.

(1) Establishing Initial Sight Settings. To begin the zeroing process the rifle sights are placed on a known BZO previously established or on initial sight settings.

(a) Front Sight Post. To set the front sight post to initial sight setting, depress the front sight detent and rotate the front sight post until the base of the front sight post is flush with the front sight housing.

(b) Rear Sight Elevation Knob.

1 M-16 A2. Rotate the rear sight elevation knob counterclockwise until the rear sight assembly is bottomed out. Rotate the rear sight elevation knob clockwise until the number 8/3 aligns with the index mark located on the left side of the upper receiver.

2 M-16 A4 & M4 Carbine. Rotate the rear sight elevation knob counterclockwise until the rear sight assembly is bottomed out. Rotate the rear sight elevation knob clockwise until the number 6/3 aligns with the index mark located on the left side of the upper receiver.

(b) Windage Knob. To set the windage knob to initial sight setting, rotate the windage knob until the index line located on the top of the large rear sight aperture aligns with the centerline on the windage index scale located on the moveable base of the rear sight assembly.

(2) Steps to Zeroing the Rifle.

(a) Fire 5 Round Shot Group. Fire 5 shots at the center dog target from the prone position in a time limit of 60 seconds.

(b) Mark the Target. The target will be lowered to the pits and marked indicating your 5-shot group.

(c) Plot the Group. When the target is raised from the pits, plot the 5-shot group in the data book.

(d) Circle the Shot Group. Circle the 5 round shot group. Locate the center of the group and make the necessary elevation and windage adjustments.

(e) Fire 2nd 5 Shot Group. When the target appears fire a well-aimed 5-shot group in a time limit of 60 seconds.

(f) Mark the Target. The target will be lowered to the pits and marked indicating your 5-shot group.

(g) Plot the Group. When the target is raised from the pits, plot the 5-shot group in the data book.

(h) Circle the Shot Group. Circle the 5 round shot group. Locate the center of the group and make the necessary elevation and windage adjustments.

(i) Fire 3d 5 Shot Group. When the target appears fire a well-aimed 5-shot group in a time limit of one minute. This last group is to confirm the sight adjustments that were made.

(3) Final Steps. Once you confirm adjustments and sight settings, there needs to be an adjustment determined for the wind (if present) and taken off the sight settings. This setting becomes the zero setting for the rifle, and must be recorded in the data book.

REFERENCES

MCRP 3-01A

APPENDIX


FMTB-West
FIELD MEDICAL TRAINING BATTALION
CAMP PENDLETON CA

	NAVY	ARMY	AIR FORCE	MARINE CORPS	COAST GUARD
E-1	Seaman Recruit	Private	Airman Basic	Private	Seaman Recruit
E-2	 Seaman Apprentice	 Private E-2	 Airman	 Private First Class	 Seaman Apprentice
E-3	 Seaman	 Private First Class	 Airman First Class	 Lance Corporal	 Seaman
E-4	 Petty Officer Third Class	 Corporal Specialist	 Senior Airman	 Corporal	 Petty Officer Third Class
E-5	 Petty Officer Second Class	 Sergeant	 Staff Sergeant	 Sergeant	 Petty Officer Second Class
E-6	 Petty Officer First Class	 Staff Sergeant	 Technical Sergeant	 Staff Sergeant	 Petty Officer First Class
E-7	 Chief Petty Officer	 Sergeant First Class	 Master Sergeant First Sergeant	 Gunnery Sergeant	 Chief Petty Officer
E-8	 Senior Chief Petty Officer	 Master Sergeant First Sergeant	 Senior Master Sergeant First Sergeant	 Master Sergeant First Sergeant	 Senior Chief Petty Officer
E-9	 Master Chief Petty Officer	 Sergeant Major	 Chief Master Sergeant First Sergeant	 Sergeant Major	 Master Chief Petty Officer
	 Fleet/Command Master Chief Petty Officer	 Command Sergeant Major	 Command Chief Master Sergeant	 Master Gunnery Sergeant	 Command Master Chief Petty Officer
Special	 Master Chief Petty Officer of the Navy	 Sergeeant Major of the Army	 Chief Master Sergeant of the Air Force	 Sergeant Major of the Marine Corps	 Master Chief Petty Officer of the Coast Guard

WARRANT

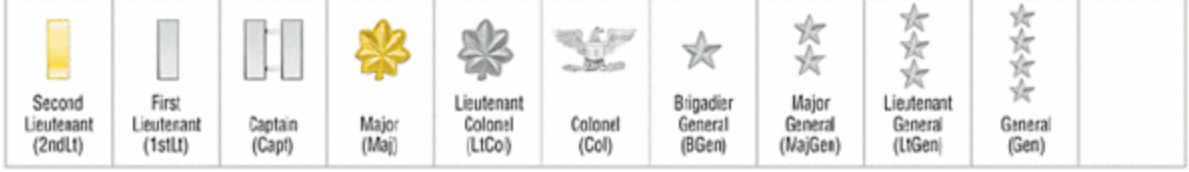
NAVY	MARINES	ARMY
W-1	 WARRANT OFFICER	 WARRANT OFFICER
W-2  CHIEF WARRANT OFFICER	 CHIEF WARRANT OFFICER	 CHIEF WARRANT OFFICER
W-3  CHIEF WARRANT OFFICER	 CHIEF WARRANT OFFICER	 CHIEF WARRANT OFFICER
W-4  CHIEF WARRANT OFFICER	 CHIEF WARRANT OFFICER	 CHIEF WARRANT OFFICER
W-5 	 CHIEF WARRANT OFFICER	 CHIEF WARRANT OFFICER

Insignia of the United States Armed Forces – Officers

ARMY

O-1	O-2	O-3	O-4	O-5	O-6	O-7	O-8	O-9	O-10	SPECIAL
Second Lieutenant (2LT)	First Lieutenant (1LT)	Captain (CPT)	Major (MAJ)	Lieutenant Colonel (LTC)	Colonel (COL)	Brigadier General (BG)	Major General (MG)	Lieutenant General (LTG)	General (GEN)	General of the Army (GA)

MARINES



Second Lieutenant (2ndLt)	First Lieutenant (1stLt)	Captain (Capt)	Major (Maj)	Lieutenant Colonel (LtCol)	Colonel (Col)	Brigadier General (BGen)	Major General (MajGen)	Lieutenant General (LtGen)	General (Gen)	

NAVY

Ensign (ENS)	Lieutenant Junior Grade (LTJG)	Lieutenant (LT)	Lieutenant Commander (LCDR)	Commander (CDR)	Captain (CAPT)	Rear Admiral Lower Half (RADM)(L)	Rear Admiral Upper Half (RADM)(U)	Vice Admiral (VADM)	Admiral (ADM)	Fleet Admiral (FADM)

AIR FORCE

Second Lieutenant (2d Lt)	First Lieutenant (1st Lt)	Captain (Capt)	Major (Maj)	Lieutenant Colonel (Lt Col)	Colonel (Col)	Brigadier General (Brig Gen)	Major General (Maj Gen)	Lieutenant General (Lt Gen)	General (Gen)	

COAST GUARD

Ensign (ENS)	Lieutenant Junior Grade (LTJG)	Lieutenant (LT)	Lieutenant Commander (LCDR)	Commander (CDR)	Captain (CAPT)	Rear Admiral Lower Half (RADM)(L)	Rear Admiral Upper Half (RADM)(U)	Vice Admiral (VADM)	Admiral (ADM)	

ACRONYMS AND GLOSSARY

A

AA BN	Assault Amphibious Battalion
AAV	Assault Amphibian Vehicle
ABCs	Airway, Breathing, Circulation
ACE	Aviation Combat Element
Acidosis	A disturbance in the acid base balance of the body in which there is an accumulation of acid; as in diabetic acidosis or renal disease
ACLS	Advanced Cardiac Life Support
Acute	Rapid onset, opposite of chronic
ADAL	Authorized Dental Allowance List
Aerobic	Requiring oxygen
Afterload	The pressure in which the heart must pump blood out with each beat
Alkalosis	Acid-base disturbance in which there is an accumulation of basic substances. pH is elevated
Alveoli	Small sacs extended from the lungs where 02 & C02 exchange takes place
AMAL	Authorized Medical Allowance List
A.M.P.L.E	A mnemonic used in taking a history meaning allergies, medications, past illnesses, last meal, & events preceding the injury
Anaerobic	Absence of oxygen
Analgesics	Pain medications
Anorexia	Loss of appetite
Antecubital	In front of elbow

Anteroposterior	Front to back
Anticoagulant	A substance which prevents blood clotting
Antiseptic	Inhibitor of bacterial growth or germ killing cleanser
Anuria	No urine output
Apathy	Without emotion, indifference or sluggish
Apex	The top, the end or the tip of a structure such as the apex of the heart
Apnea	Not breathing
Arrhythmia	Abnormal rhythm of the heart sometimes resulting in inadequate blood flow
Aseptically	Free from sepsis or infection
ASMRO	Armed Services Medical Regulating Office
ASP	Ammunition Supply Point
Asphyxia	An increase in carbon dioxide and or lack of oxygen in the blood
Aspirate	To remove or withdraw by suction
Ataxia	Muscular incoordination
ATLS	Advanced Trauma Life Support
Auscultate	Listening for sounds in body cavities
A.V.P.U.	A mnemonic meaning the patient is Alert, responds to Verbal stimuli by following simple commands i.e., patient can't talk but responds when you give a command to wiggle their fingers, Painful i.e., sternum chest rub, or totally Unresponsive
Avulsion	To pull; a wound caused by tearing away

B

BAMCIS	Begin the planning, Arrange recon, Make recon, Complete the plan, Issue the order and Supervise. 5 troop leading steps
BAS	Battalion Aid Station
BDE	Brigade
Bilateral	Pertaining to two sides of the body
Blanch	To turn white or remove color
Blunt Trauma	Trauma in which a force does not penetrate or break through the skin
BLT	Battalion Landing Team
BMU	Beach Master Unit
BN	Battalion
Bolus	A mass injection of medication given rapidly
Bradycardia	Decreased heart rate, usually less then 60 beats per minute
Bradypnea	Decreased respirations, usually less then 8 breathes per minute
BSA	Body Surface Area
Btry	Artillery Battery
BUMED	Bureau of Medicine and Surgery

C

Cardiac Tamponade	A collection of blood in the sac surrounding the heart interfering with efficient function of the heart
Cardiogenic	Originating in the heart
CASEVAC	Casualty Evacuation

CASREP	Casualty Report
CAT	Combat Action Tourniquet
CATF	Commander Amphibious Task Force
CAX	Combined Arms Exercise
CE	Command Element
CSF	Cerebral Spinal Fluid
CEB	Combat Engineer Battalion
Cerebellum	Responsible for coordinated body actions & movements such as, running and standing on your head. Plays an essential role in posture, balance & coordination. Also known as the “little brain”
Cerebral spinal fluid	Protects and cushions the brain & spinal cord. CSF also cleanses the brain and helps to fight infection
Cerebrum	The largest part of the brain, which controls consciousness, memory, sensations, emotions & voluntary movements. Also known as “Gray Matter”
CG	Commanding General
CHF	Congestive Heart Failure
Chilblains	Mild cold injury, prelude to frost bite
CINCNAVEUR	Commander in Chief, Naval Forces Europe
CINCPAC	Commander in Chief, Pacific
CINCPACFLT	Commander in Chief, U.S Pacific Fleet
CINCSOC	Commander in Chief, Special Operations Command
CINCUSNAVEUR	Commander in Chief, U.S Naval Forces Europe
CJTF	Commander, Joint Task Force
CLF	Commander, Landing Force

COMM	Communications
Comminuted	Broken into multiple pieces
COMNAVSURFLANT	Commander, Naval Surface Force, Atlantic
COMNAVSURFPAC	Commander, Naval Surface Force, Pacific
Conduction	The transfer of sound waves, heat, nervous impulses, or electricity through direct contact
Contraindication	Any condition that renders a particular treatment or medication improper
Contralateral	Opposite side
Contusion	Injury of tissue without breaking the skin
Convection	Transmission of heat in liquids or gases by a circulation carried on by the heated particles
Convulsion	Involuntary muscle movement
CP	Command Post
Crepitation	A crackling or grating sound
Cricoid	Lowermost cartilage of the larynx
Cricothyroidotomy	An incision through the cricoid and Thyroid cartilage to make an alternative airway
Crystalloid	A substance capable of forming crystals such as sodium chloride
CSSD	Combat Service Support Detachment
Cutaneous	Referring to the skin
Cyanosis	Bluish coloration of the skin resulting from lack of oxygen

D

D5W	An intravenous solution that consists of 5% dextrose in water, used for fluid replacement and caloric supplementation in patients who cannot maintain adequate oral intake. D5W is not the first fluid of choice to treat dehydration in the field
D50W	An intravenous solution of 50% dextrose in water used for adults with hypoglycemic (low blood sugar) emergencies, usually given as a 50 ml bolus
D-Day	The unnamed day on which a particular operation commences or is to commence
Debridement	The removal of foreign objects or dead tissue in a wound
Demarcated	Outlines, clearly defines
Diarrhea	Frequent passage of watery bowel movements
Diastolic Blood Pressure	The pressure remaining in the blood vessels while the heart is at rest
Dilated	Open or enlarged
Displacement	The movement of supporting weapons from one firing position to another
Dissipation	Dispersion, break up
Distal	Far away, opposite of proximal or close
Diuretic	A substance which increases the excretion of urine
DIV	Division
Dorsum	The upper portion of an appendage or part
Draw-D	Used in a defensive position. Meaning Defend, Reinforce, Attack, & withdraw
DSO	Division Surgeons Office
DTG	Date, Time, Group
Dyspnea	Difficulty breathing

Dysuria	Difficult or painful urination

E

EBL	Estimated Blood Loss
Ecchymosis	Bruising, hemorrhagic spot often due to blunt trauma
Echelon formation	One of the four types of fire team formations, similar to skirmisher right and left except that one flank is angled to the rear
Edema	Accumulation of fluid
Emphysema	Distension of tissue due to presence of gas
Enteric	Within or pertaining to the intestines
Envelopment	An attack made on one or both of the enemy's flanks or rear, usually accompanied by an attack to his front
EOD	Explosive Ordinance Disposal
Erythema	Redness of the skin caused by grouping capillaries
ESB	Engineering Support Battalion
Eschar	Mass dead tissue mostly associated with burns
Etiologic	Cause or origin
Exsanguination	Loss of blood – implying total blood loss
Exudate	Excretion of puss, fluid or matter through vessel walls into adjoining tissue

F

Fascia	Connective Tissue
FEBA	Forward Edge of the Battle Area
FEX	Field Exercise

Fistula	An abnormal tube-like passage from a normal cavity or tube to a free surface or to another cavity
Flaccid	Relaxed or absent muscle tone
Flail	Excessive mobility such as an unstable chest wall fracture
Flank	Area on the side between the ribs and pelvic bone (ileum)
Fleet Marine Force (FMF)	A balanced force of combined arms comprising of land, air, and sea service elements of the U.S Marine Corps
FO	Forward Observer
FDA	Food and Drug Administration
FOD	Foreign Object Damage
FPM	Field Protective Mask
Frag	Fragmentation
FREQ	Frequency

G

GAS	Group Aid Station
Gavage	Force feeding into the stomach with a tube
GCE	Ground Combat Element
Gingivitis	Inflammation of the gingival tissue may be surrounding one tooth or groups of teeth
Glottis	The sound producing apparatus of the larynx including vocal cords and is protected by the epiglottis
GMO	General Medical Officer
GP	General Purpose
Grimace	A painful expression

GSW	Gunshot Wound

H

Harassing Fire	Fire designed to disturb the enemy troops to curtail movement and promote threat of losses to lower morale
HE	High Explosive
Hematoma	A tumor or swelling containing blood
Hematuria	Discharge of blood in urine
Hemodynamic	Refers to circulation
Hemoptysis	Refers to coughing up blood
Hemorrhage	Bleeding from a ruptured vessel either internal or external
Hemothorax	Blood in the chest cavity
Hespan	A hypertonic plasma substitute
H-Hour	The specific hour on D-day that an operation commences
Hyper	Excessive or elevated
Hyperemic	An excess of blood in a part; engorgement
Hyperresonance	Increased resonance when an area is percussed
Hyperventilation	An increase in the rate and depth of normal respirations. Responsible for increased oxygen levels & decreased carbon dioxide levels
Hypo	Decrease
Hypoesthesia	Decreased sensation or feeling
Hyponatremia	Low sodium level in the blood

Hypothalamus	Portion of the brain that regulates the body's core temperature
Hypovolemic	Too low volume
Hypoxia	An insufficient concentration of oxygen in the tissue in spite of an adequate blood supply

I

IFAK	Individual First Aid Kit
IM	Intramuscular
Immersion	The submersion of a person in water
Incontinence	The inability to control excretory functions
Infusion	Therapeutic introduction of fluid into a vein
Interstitial Spaces	The space between organs or tissue
Intra	Within
Intubation	The insertion of a tube into a hollow space, i.e. larynx
Ischemic	Local & temporary decreased circulation
Involuntary muscle	Also known as smooth muscle, produces slow long-term contractions of which the individual is unaware. Smooth muscle occurs in hollow organs, such as the stomach, intestine, blood vessels, and bladder.
Ionizing Radiation	Radiations that has sufficient energy to remove electrons from atoms
ITA	Initial Trauma Assessment

J

JJDIDTIEBUCKLE	Acronym for the fourteen leadership traits: Justice, Judgment, Dependability, Initiative, Decisiveness, Tact, Integrity, Enthusiasm, Bearing, Unselfishness, Courage, Knowledge, Loyalty, Endurance
JVD	Jugular Vein Distention

K

Kilogram	2.2 lbs; metric weight
KOCOA	Key Terrain, Observation and Fields of Fire, Cover & Concealment, Obstacles, and Avenues of Approach
KVO	Keep Vein Open. Used when administering an I.V

L

LAR BN	Light Armored Reconnaissance Battalion
Larynx	The enlarged upper end of the trachea; the organ of voice or the “voice box”
Latent	Quite or not active
Lavage	Irrigation of an organ or cavity
LCE	Logistics Combat Element
LOC	Level of Consciousness
Lysis	Destruction or decomposition, as of a chemical or cell
Lucent	Able to readily pass through, the opposite of opaque
Lucid	Conscious

M

MACG	Marine Air Control Group
MAGTF	Marine Air Ground Task Force

MAG	Marine Air Group
Malposition	In the wrong place or alignment
Malaise	Feeling of weakness or uneasiness
Malposition	Poor positioning
Mandible	Lower jawbone
MARDIV	Marine Division
MARFOR	Marine Forces
MARFORLANT	Marine Forces-Atlantic
MARFORPAC	Marine Forces-Pacific
MARFORORES	Marine Corps Reserve
Mastoid	Process of temporal bone behind the ear
MAW	Marine Aircraft Wing
Maxilla	The upper jaw bone
MCO	Marine Corps Order
MCSF	Marine Corps Security Forces
MEB	Marine Expeditionary Brigade
Mediastinum	Midline structure that divides the thoracic cavity into two portions. It includes the trachea, esophagus, thymus, heart and great vessels. The lungs are located on either side of this midline structure
Medulla	The most inferior part of the “brain stem” which contains the center that regulates respiratory rate, blood pressure, heart rate, breathing, swallowing and vomiting
MEF	Marine Expeditionary Force

Messentery	A peritoneal fold covering the greater part of the small intestine and connecting the intestine to the posterior abdominal wall
METTAG	Medical Emergency Triage Tag (NATO Card METTAG 137), provides a quick reliable method of assessing casualties and assigning them with an appropriate triage/evacuation priority
Metatarsal	Bone located on the top of the foot
Midbrain	One of the four parts of the brain stem. The midbrain regulates muscle tone.
MEU	Marine Expeditionary Unit
MLG	Marine Logistics Group
MMART	Mobile Medical Augmentation Readiness Team
MOI	Mechanism Of Injury
MOLLE	Modular Lightweight Load-Carrying Equipment
MOPP	Mission-Oriented Protective Posture- MOPP is a flexible system of protection against chemical agents
Morbidity	The rate at which an illness or abnormality occurs in a particular area or within a population
Mortality	Death rate or condition of being deceased
Myocardium	Heart muscle
MWHS	Marine Wing Headquarters Squadron
MWSG	Marine Wing Support Group

N

NCA	National Command Authorities
NCO	Non-Commissioned Officer
NBC	Nuclear, Biological, Chemical

Necrosis	Death to areas of tissue or bone surrounded by healthy tissue
Neuralgia	Nerve pain
Neuritis	Nerve inflammation
Neurogenic	Originating in nerve tissue
Neuropathy	Any disease of the nerves
NPA	Nasopharyngeal Airway
NPO	Nothing by mouth

O

Oblique	At an angle, slanted or diagonal
Occlusive dressing	A dressing that closes or seals a wound so that it is air tight
OP	Observation Post
OPA	Oropharyngeal Airway
Open Fracture	Fracture in which the bone has pierced through the skin
Oropharynx	The portion of the pharynx between the soft palate and the epiglottis
Orthostatic	Refers to an erect position
OSMEAC	Acronym for the five-paragraph order format: Orientation, Situation, Mission, Execution, Administration and Logistics, and Command and Signal

P

Pallor	Paleness of the skin
Palpate	To examine by touching

Paradoxical Movement	Commonly seen in flail chest when one section of the ribs goes in the opposite direction of the majority with respirations
Paresis	Partial or incomplete paralysis
Paresthesia	Abnormal sensation such as numbness or tingling
Parietal	Of or pertaining to the outer wall of a cavity or organ
Patency	Refers to being open
Patrol	A detachment of ground, sea or air forces sent by a larger unit for the purpose of gathering information or carrying out a destructive, harassing, mopping-up or security mission
Percussion	Examination by tapping
Percutaneous	Through the skin
Perfusion	Supplying an organ or tissue with nutrients by fluid
Periapical Abscess	Results from infection of pulpal tissue causing pulp to become necrotic
Pericardium	The membrane sac surrounding the heart
Perineum	The external region between the anus and the scrotum (male) or vaginal opening (female)
Peritoneum	The membrane lining the abdominal cavity and covering the abdominal organs
PERRLA	Pupils Equal, Round, Reactive to Light, Accommodation
Phlebitis	Inflammation of a vein or veins
Pleural	A delicate serous membrane enclosing the lung
PMS	Pulse Motor Sensation
Pneumothorax	A collection of air or gas in the pleural space causing one or both lungs to collapse

Pons	One of the four parts of the brain stem, the sleep center and respiratory center
Preload	The volume & pressure of blood coming into the heart
Prolapse	Falling or dropping down
Proximal	Close or near, opposite of distal
Pulmonary Edema	Effusion of serous fluid around the lungs
Pulse Pressure	The difference between the systolic & diastolic blood pressure
Purpura	A small hemorrhage in the skin, mucous membrane, or serosal surface, which may be caused by various factors, including blood disorders, vascular abnormalities and trauma
Purulent	Drainage that contains pus
Pyrotechnics	Devices used to transmit command or information, such as flares and smoke grenades

R

RAD	Radiation Absorbed Dosage, the method for measuring radiation exposure dosage
RAS	Regimental Aid Station
Resilient	Bounce or spring back, durable
Reticular Activating System	One of the four parts of the brain stem, the reticular activating system is scattered throughout the brain stem and is important in arousing and maintaining consciousness
R.I.C.E.	Acronym for treatment consisting of Rest, Ice, Compression, and Elevation
Rupture	To break apart

RDD	Radioactive Dispersive Device
Radioactivity	The property possessed by some elements or isotopes of spontaneously emitting energetic particles such as alpha or beta particles, often accompanied by gamma rays, by the disintegration of their atomic nuclei
RT	Receiver-Transmitter, the common item of all SINCGARS, the actual SINCGARS radio itself
RTA	Rapid Trauma Assessment

S

Sagittal Plane	A plane dividing the body into right And left sides
SALUTE	Used as an intelligence report when calling in an enemy sighting. Meaning Size, Activity, Location, Unit, Time, and Equipment
S.A.M.P.L.E	Acronym used for obtaining medical history during emergency care, consist of: Signs and symptoms, Allergies, Medications, Pertinent past history, Last oral intake, and Events leading to problem
Saphenous veins	Two veins, one short, one long, in lower leg, which join near the knee
Scapula	Shoulder blade
Sector of Fire	An area, limited by boundaries, assigned to a unit or to a weapon to cover by fire
Septicemia	Widespread destruction of tissues due to absorption of disease-causing bacteria or their toxins from the bloodstream
Shock	An abnormality of the circulatory system that Results in inadequate organ perfusion
SINCGARS	Single Channel Ground & Airborne Radio Systems
Skin Wheals	Localized edema of the body surface
Spicule	Sharp point

Splenomegaly	Enlargement of the spleen
SPMAGTF	Special Purpose Marine Air Ground Task Force
Stenosis	A constriction or narrowing
Sternomastoid	Muscle from sternum to clavicle to mastoid bone
Stridor	A harsh or shrill repertory sound audible from a distance
Stupor	A state of dullness; mind and senses are slowed
Stylet	A slender wire used for guiding or clearing a tube Or needle
Subclavian	A large vein below the collar bone (clavicle)
Subcostal	Below the rib
Subcutaneous	Under the layers of the skin
Systemic	Refers to the whole body as opposed to a part
Systolic Blood Pressure	The force of blood against blood vessels produced by ventricular contraction.
S1	Personnel Office (Regimental / Battalion level)
S2	Intelligence section (Regimental / Battalion level)
S3	Training and Operations (Regimental / Battalion level)
S4	Supply and Logistics (Regimental / Battalion level)
S6	Communications

T

Tachycardia	Increased heart rate, usually greater then 100 beats per minute
Tachypnea	Increased respirations, usually more then 25 breaths per minute

TBSA	Total Body Surface Area
TCCC	Tactical Combat Casualty Care (broken into 3 phases: care under fire, tactical field care, and combat casualty evacuation care)
T / E	Table of Equipment
T / O	Table of Organization
Thoracentesis	Surgical perforation of the thorax
Tibia	Small bone of lower leg
Thorax	Also known as the Thoracic cage is the part of the body between the base of the neck and the diaphragm. Divided into 3 parts; the manubrium, the body & the xiphoid process
Thrombosis	Formation of a blood clot
Tibia	Large bone in lower leg
Trachea	Tube-like structure from larynx to the bronchial tubes, conveys air to the lungs
Translucent	Clear, transparent
Triage	To group or treat by order of severity
Turbidity	Cloudy or the inability to see through something such as a liquid
Turgor	The state of normal swelling and tension in living cells

U

Ulceration	The formation of a crater like lesion on the skin or mucus membranes
Unilateral	Refers to one side
Ureter	One of a pair of tubes that carry urine from the kidney to the bladder

V

Vee Formation	Squad Vee, an inverted squad wedge, facilitates movement into a squad line and provides excellent firepower to the front and to the flank
VEE	Venezuelan Equine Encephalitis – An acute viral disease transmitted from horsed to humans by a variety of mosquito vectors, has potential for use as a biological warfare agent
Vein	A vessel carrying blood to the heart.
Ventricle	A small cavity
Vertigo	A sensation of faintness or inability to maintain balance in a standing or seated position
VHF	Viral Hemorrhagic Fever, caused by several viruses typically found in animals and infecting humans, some types cause a severe, usually fatal infection characterized by fever, widespread bleeding, and organ failure (has potential for use as a biological warfare agent)
VHF (radio)	Very High Frequency (SINCGARS are VHF-FM radios that operate in the VHF range from 30.000 to 87.975 MHz)
Voluntary muscle	Also called striated muscle or skeletal muscle tissue, it is attached to the skeleton and responsible for the voluntary movement of bones

W

Wedge formation	A diamond shaped fire team formation which provides all around security and flexibility
WBGT	Wet Bulb Globe Temperature

12 CRANIAL NERVES

I	OLFACTORY	Smell
II	OPTIC	Vision
III	OCULOMOTOR	Eyelid & eyeball movement, pupil constriction
IV	TROCHLEAR	Downward & lateral eye movements
V	TRIGEMINAL	Sensations of face, scalp & teeth also chewing movements
VI	ABDUCENS	Turns eyes outward
VII	FACIAL	Facial expressions, sense of taste
VIII	ACOUSTIC	Hearing & sense of balance
IX	GLOSSOPHARYNGEAL	Sensation of throat, taste, swallowing movements and secretions of saliva.
X	VAGUS	Sensations of the throat, larynx, thoracic & abdominal organs. (gag reflex)
XI	ACCESSORY	Shoulder movements & movements of the head
XII	HYPOGLOSSAL	Tongue movements

COMMON MEDICAL PREFIXES

A, an-	Without, not, lack of, or absence of
Anti-	Against
Brady-	Slow
Cardi-	Heart
Cephalo-	Head
Cerebr-	Cerebrum

Chol-	Bile
Contra-	Against, opposed of
Cyst-	Bladder
Colo-	Colon
Derm-	Skin
Dys-	Difficult or painful
Endo-	Inner, inside
Enter-	Intestine
Epi-	upon, outside
Gastr or Gastro-	Stomach
Genito-	Reproduction organs
Glyco-	Sugar
Gyno or GYN-	Female
Hem or Hemo-	Blood
Hemi-	Half
Hepat or Hepato-	Liver
Hydro-	Water
Hyper-	Above, high
Hypo-	Below
Inter-	Between
Leuko-	White
Macro-	Large
Mal-	Bad or abnormal

Micro-	Small
Mye-	Muscle
Naso-	Nasal
Nephro-	Kidney
Oligo-	Few or small
Opthalm-	Eye
Oro-	Mouth
Oste-	Bone
Oto-	Ear
Para-	Beside
Per-	Through
Peri-	Around
Pharyng-	Throat
Phleb-	Vein
Poly-	Many
Pneumo-	Relating to the lung, breath or air
Post-	After
Pre-	Before
Procto-	Anus
Pulmo-	Lung
Pyel-	Pelvis
Retro-	Backward, behind
Rhino-	Nose

Semi-	Half
Sub-	Under
Supra or Super-	Above
Tachy-	Rapid, swift
Thorac-	Chest or thorax
Thromb-	Clot or lump
Topo-	Surface
Trans-	Across
Uro-	Urine
Vaso-	Vessels

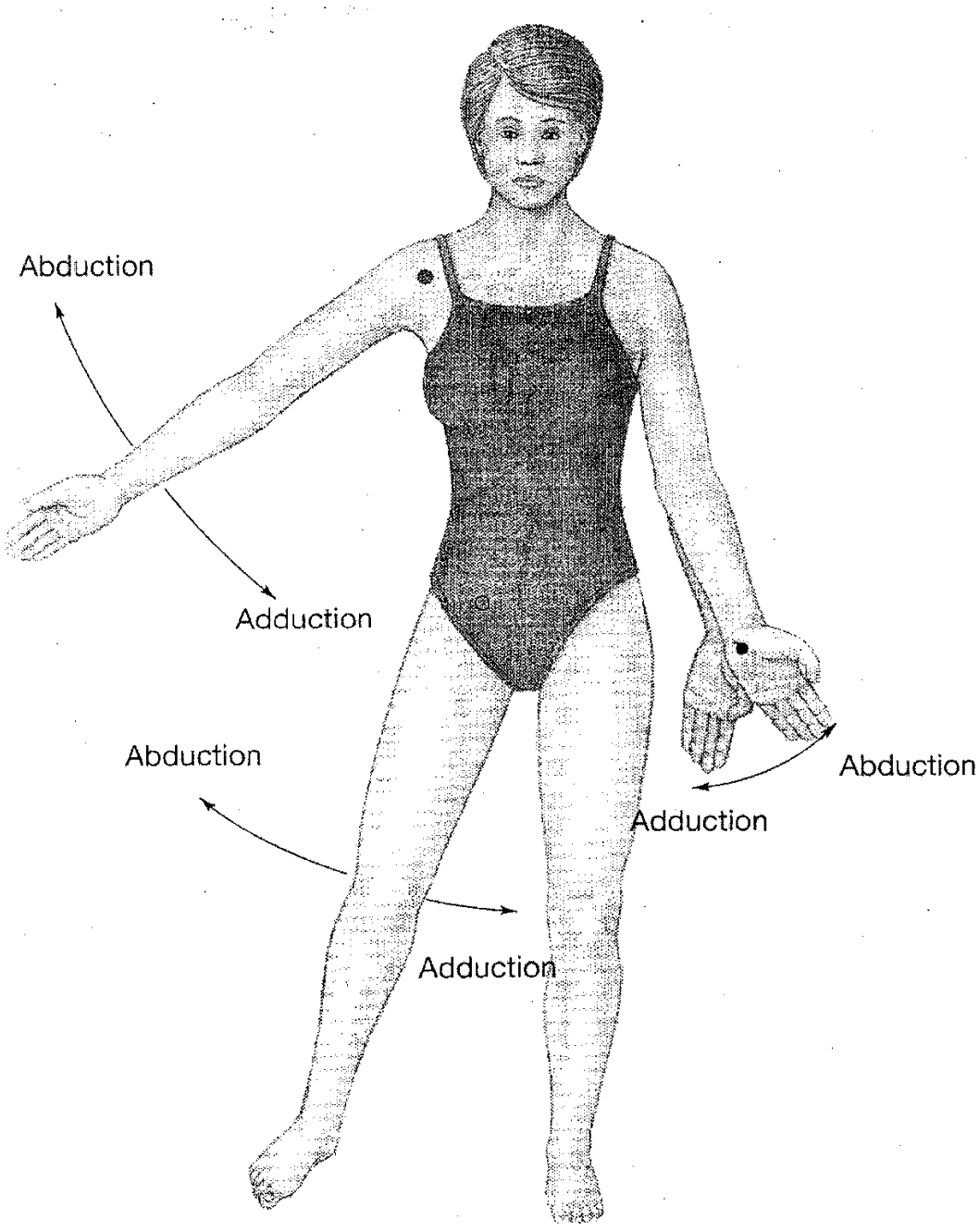
COMMON MEDICAL SUFFIXES

-algia	Pain
-astenia	Weakness
-cardia	Heart
-centesis	Puncturing
-cyte	Cell
-ectomy	Surgical removal of an organ or part
-emia	Blood
-emesis	Vomiting
-esthesia	Perceive, feel

-exia	Appetite
-genic	Causing
-graph or gram	Write or record
-iasis	A condition or process
-itis	Inflammation or swelling
-megally	Enlarge
-meter	Measure
-ology	The study of
-oma	Tumor
-osis	Disease, condition or abnormal increase
-ostio	Bone
-ostomy or stomy	Artificial opening
-paresis	Weakness
-pathy	Disease
-phasia	Speech
-phobia	Fear
-plasty	Surgical repair
-plegia	Paralysis or stroke
-pnea	Breathing
-ptosis	Falling
-rythmia	Rhythm
-rrhagia	Bursting forth
-scop	To look at or observe

-tomy	Surgical incision
-uria	Urine

Movements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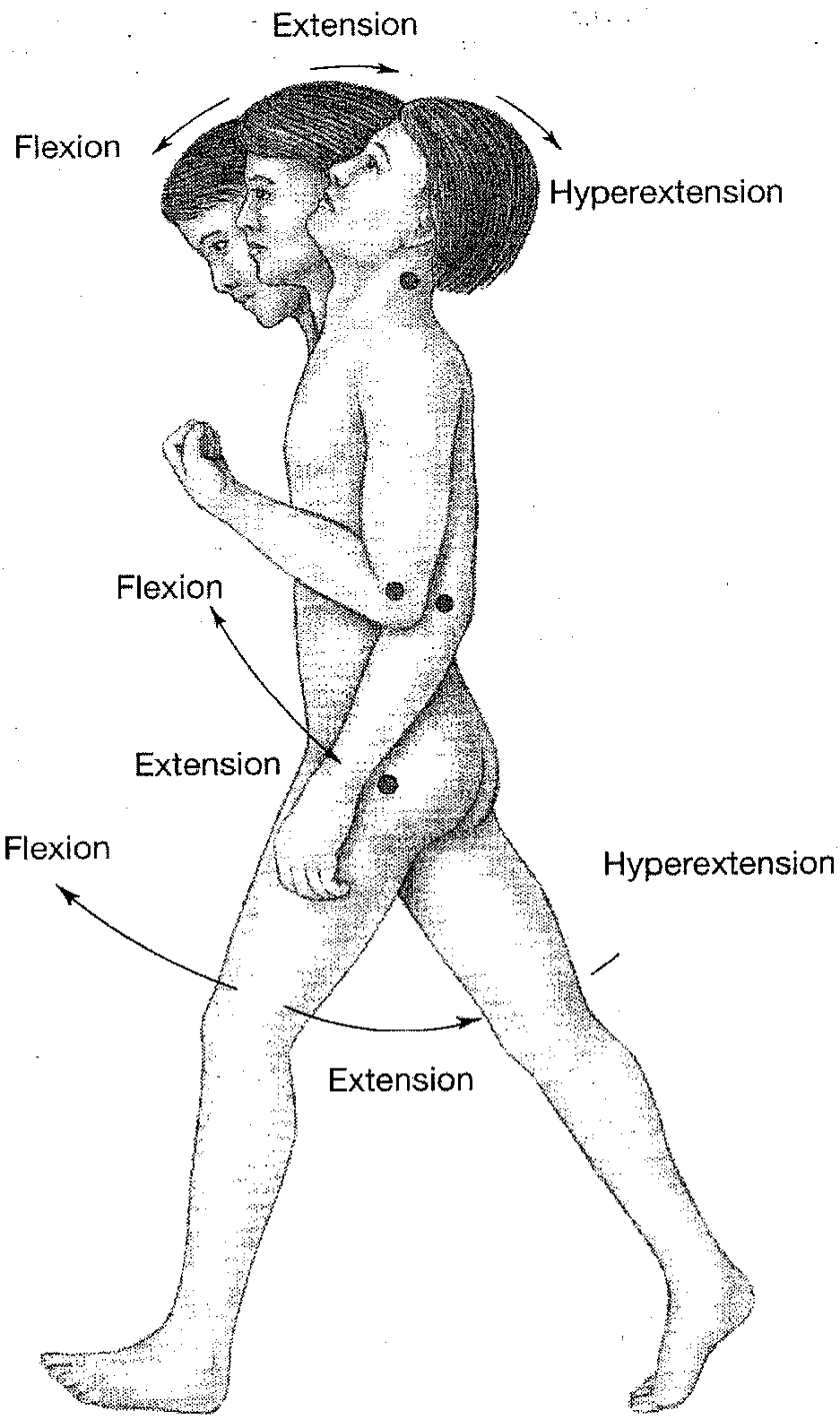
Movements


Extension
Flexion
Hyperextension
Flexion
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Flexion
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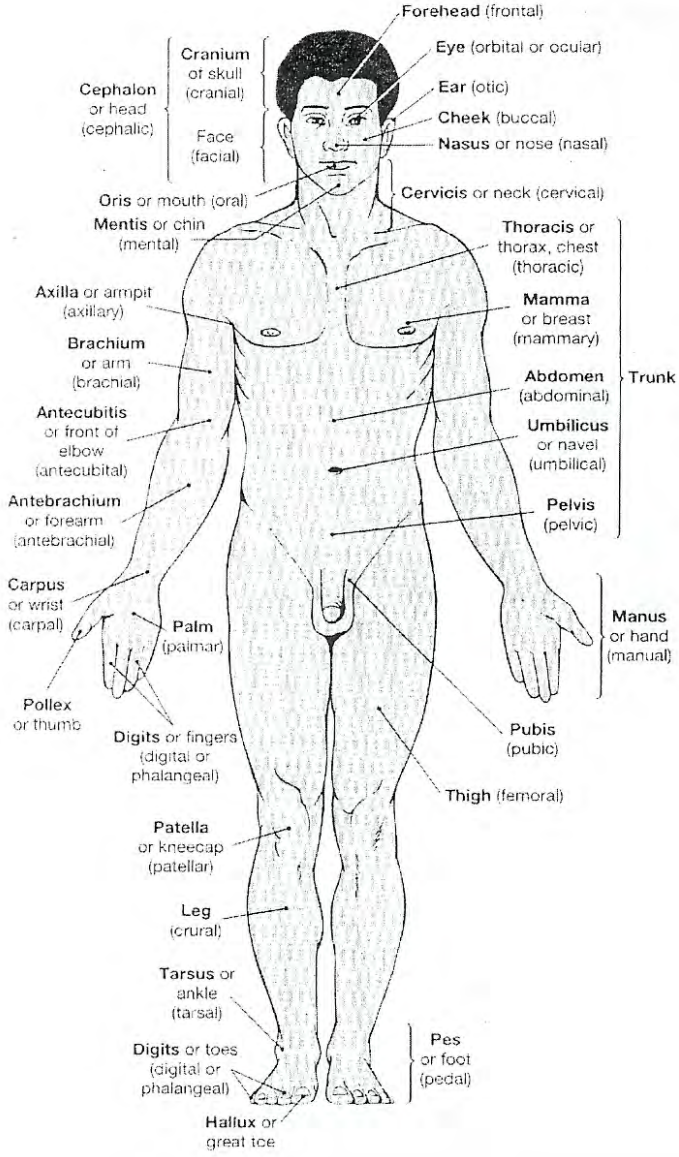
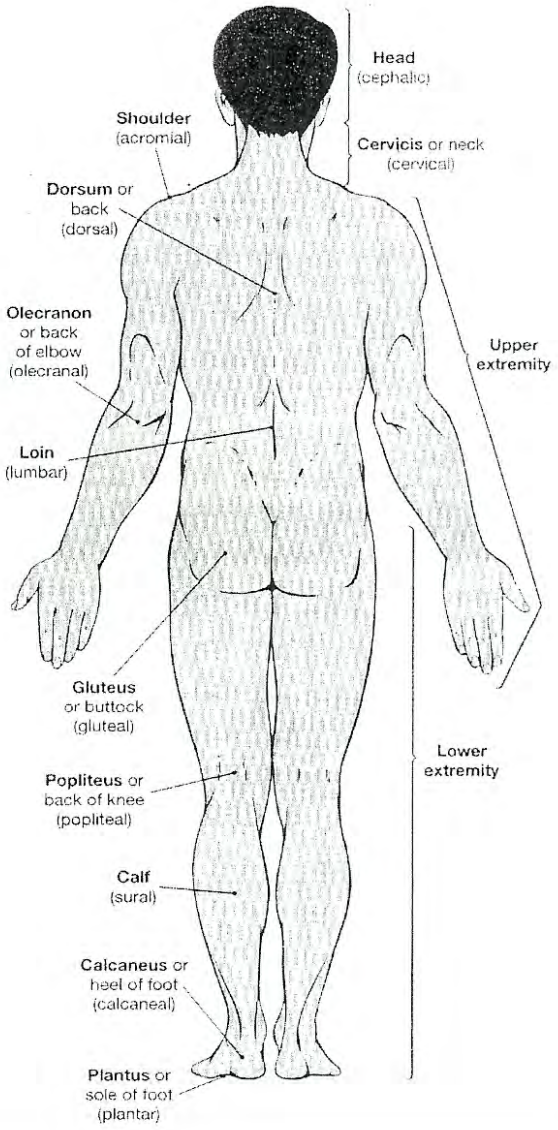
Extension

Anatomical Landmarks and Position.





Planes of the Body