

The Unofficial Joint Medical Officer's Handbook



The Unofficial Joint Medical Officers' Handbook

Kurt A. Sanftleben, Ed.D.
LTC, MS, USA (Ret)

Uniformed Services University of the Health Sciences
Second Edition, 1997

DISCLAIMER

This work was supported by the Department of Military and Emergency Medicine of the Uniformed Services University of the Health Sciences. This handbook is intended primarily for instructional use. The data are from documents that were current at the time of publication. The opinions of the author are not to be construed as official or reflecting the views of the Department of Defense or the Uniformed Services University of the Health Sciences (USUHS).

ACKNOWLEDGMENTS

The author would like to acknowledge the assistance of Colonel Johnnie S. Tillman, U.S. Army Medical Corps, as well as the staff of the USACOM Surgeon's Office and the USUHS Department of Military and Emergency Medicine in reviewing and revising the original edition of this document.

Copies of this handbook can be obtained by contacting the Chairman, Department of Military and Emergency Medicine, 4301 Jones Bridge Road, USUHS, Bethesda, MD 20814. Phone: (301) 295-9644/0223. DSN: 295-9644/0223.

The Department of Military and Emergency Medicine welcomes any comments pertaining to the content of this publication.

Copyright, 1997

Reproduction of any part or all of this document is authorized for military, governmental, academic, or noncommercial use provided the author and the Uniformed Services University of Health Sciences are appropriately cited.

Table of Contents

Preface	iii
List of Acronyms	v
Basic Joint Medical Doctrine	1
Joint Task Force Operations	
Joint HSS Relationships and Responsibilities	
JPMRC Responsibilities	
JBPO/AJBPO Responsibilities	
Medical Considerations in JTF Planning	
JTF Medical Planning Checklist	
Medical Intelligence and Preventive Medicine	10
Assessing the Medical Threat	
Distilling the Raw Data into Useable Information	
Identification of Countermeasures	
Countermeasure Training and Enforcement	
Regional Considerations	
Echelons of Care and Bed Requirements	19
First Echelon Medical Facilities	
Second Echelon Medical Facilities	
Third Echelon Hospitals	
Fourth and Fifth Echelon Hospitals	
Determining Holding and Hospital Bed Requirements	
Blood Management	27
Operational Blood Management	
Blood Planning Factors and Formulas	
Patient Movement: Medical Evacuation and Regulating	30
Evacuation Flow and Medical Regulating	
The Aeromedical Evacuation System	
Patient Preparation and Stabilization	
Evacuation Vehicle and Aircraft Capacities	
Veterinary Medicine	39
Animal Disease Issues	
Food Inspection issues	
Veterinary Considerations During NEOs	
Veterinary Supply Planning Factors	
Medical Logistics	42
Basic Concepts	
Medical Materiel Management	
Medical Materiel Management Units	

Unique Operational Considerations	48
Disaster Assistance	
Other Military Civic Actions	
NBC Defensive Operations	
Combat Search and Rescue	
Special Operations	
Geneva Conventions	55
Protection and Care of Military Casualties and EPW	
Care Provided Civilians	
Identification and Protection of Military Medical Personnel	
Identification and Protection of Medical Units, Facilities, Materiel and Transports	
Loss of Protection by Medical Units and Facilities	
Conditions that Do Not Deprive Medical Assets of Protection	
Wounded, Sick, and Shipwrecked at Sea	
Hospital Ships	
Appendices	
Appendix A. Sample Medical Input for a Joint Task Force Operation Order	A-1
Appendix B. References	B-1

Preface

As the Chairman of the Joint Chiefs of Staff in 1992, General Colin Powell wrote the following in his introduction to *The National Military Strategy of the United States*.

The community of nations has entered into an exciting and promising new era. Global war is now less likely and the US national security strategy reflects that fact. *The National Military Strategy* reflects this new world and guides US military planning

For most of the past 45 years the primary focus of our national military strategy has been containment of the Soviet Union and its communist ideology . . . [however, now] the Soviet Union has ceased to exist and communism has collapsed as an ideology and as a way of life.

[Yet,] certain realities remain-the United States is looked to for world leadership. . . . and future threats to U.S. interests are inherent in the uncertainty and instability of a rapidly changing world. We can meet the challenges of the foreseeable future with a much smaller force than we have had in recent years A Total Force - A Joint Force.

"So what?" a military medical practitioner or planner might ask. "What does this have to do with me?"

Quite a bit actually. Our new strategic landscape has broadened the continuum within which U.S. military forces are now-and will continue to be-employed. Although U.S. forces will continue to be stationed throughout the world, troops deploying from the continental United States will cool most operational hot spots.. Just a few short years ago, who would have thought that despite a drastic reduction in personnel and equipment, U.S. forces would deploy to Iraq, much less Somalia, the Balkans, or Haiti? Clearly, U.S. forces are more likely to continue to serve and become casualties in a far wider range of locales than at almost any previous time.

This increased activity with reduced forces demands that operations be conducted jointly to maximize our limited resources. It is increasingly likely that, with little notice, you and other relatively junior and inexperienced medical officers will be assigned as joint task force surgeons or as key members of joint task force medical staffs. As such your commander will expect you to understand not only the medical doctrine of your service but also those of your sister services as well. You will also be expected to understand medical regulating, casualty evacuation systems, and the overarching joint blood management program. The health and well-being of the force you deploy with will depend upon your knowledge of the joint medical system.

Many of you may find yourselves in such positions with little training and minimal experience. Where can you turn? Certainly, doctrines, policies, and procedures exist in hundreds of manuals, pamphlets, instructions, regulations, and handbooks, and the

Internet provides scores of sites that may or may not contain pertinent information. The unwieldy volume and uneven distribution of this data have resulted in a lack of readily accessible, concise, operational medical information.

What you need is a survival guide to help ensure both your personal success as a medical staff officer and, more importantly, the optimum medical support for each and every U.S. military operation. And that is the intent of this document about our military medical system. It makes no claim to be the be all and end all of military medical planning, but it does provide the basic information you need to start the medical planning process.

Acronyms

ACE	Allied Command Europe
ADAM	Authorized Dental Allowance List
ADVON	Advanced Echelon
AE	Aeromedical Evacuation
AECC	Aeromedical Evacuation Control Center
AECE	Aeromedical Evacuation Control Element
AELT	Aeromedical Evacuation Liaison Team
AFB	Air Force Base
AFMIC	Armed Forces Military Intelligence Center
AJBPO	Area Joint Blood Program Office
AMAL	Authorized Medical Allowance List
AMEDDC&S	Army Medical Department Center and School
AO	Area of Operations
AOR	Area of Responsibility
ASBPO	Armed Services Blood Program Office
ASMRO	Armed Services Medical Regulating Office
ASWBPL	Armed Services Whole Blood Processing Laboratory
ATC	Air Transportable Clinic
ATF	Amphibious Task Force
ATH	Air Transportable Hospital
AUTODIN	Automated Defense Information Network
AWOL	Absent without Leave
BAS	Battalion Aid Station
BLDREP	Blood Report
BS	Battle Stress
BLDSHIPREP	Blood Shipment Report
BSU	Blood Supply Unit
BTC	Blood Transshipment Center
CAP	Crisis Action Planning
CBG	Carrier Battle Group
CDC	Centers for Disease Control and Prevention
CDS	Cargo Delivery System
CI	Civilian Internee
CINC	Commander-in-Chief
CJTF	Commander, Joint Task Force
COA	Course of Action
CONPLAN	Operation Plan in Conceptual Form
CONUS	Continental United States
CSAR	Combat Search and Rescue
CSH	Combat Support Hospital
CV	Aircraft Carrier
CVN	Aircraft Carrier, Nuclear
DA	Direct Action
DD	Destroyer
DEAR	Disease and Environmental Alert Report
DEPMEDS	Deployable Medical Systems

DET	Division Support Command
DISCOM	Detainee
DISRAP	Disease Risk Assessment Profile
DLA	Defense Logistics Agency
DPMIAC	Defense Pest Management Information Analysis Center
DMOC	Division Medical Operations Center
DMSO	Division Medical Supply Office
DNBI	Disease or Non-Battle Injury
DOMS	Director of Military Support
DVEP	Disease Vector Ecology Profile
EEI	Essential Element of Information
ESF # 8	Emergency Support Function, Medical
EPW	Enemy Prisoner of War
FCO	Federal Coordinating Officer
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FF	Frigate
FID	Foreign Internal Defense
FM	Field Manual
FRP	Federal Response Plan
FSB	Forward Support Battalion
FSC	Federal Supply Class
FSSG	Force Service Support Group
FST	Fleet /Forward Surgical Team
GPMC	Global Patient Movement Requirements Center
G4	Logistics Staff Office(r), Division level or higher
HA	Humanitarian Assistance
HAZMAT	Hazardous Material
HCT	Hepatocrit
HGB	Hemoglobin
HIV	Human Immunodeficiency Virus
HSS	Health Service Support
ICU	Intensive Care Unit
INS	Immigration and Naturalization Service
IPB	Intelligence Preparation of the Battlefield
ISB	Intermediate Staging Base
ISO	International Standardization Organization
IV	Intravenous
JBPO	Joint Blood Program Office
JMRO	Joint Medical Regulating Office
JOA	Joint Operational Area
JPMRC	Joint Patient Movement Requirements Center
JTF	Joint Task Force
JTG	Joint Task Group
J1	Joint Staff Personnel Office(r)
J2	Joint Staff Intelligence Office(r)
J3	Joint Staff Operations Office(r)
J4	Joint Staff Logistics Officer(r)
J4-MRD	Joint Staff Medical Readiness Director(ate)
J5	Joint Staff Plans Office(r)

KIA	Killed in Action
LAPES	Low Attitude Parachute Extraction System
LAV	Light Armored Vehicle
LCAC	Landing Craft Air Cushion
LCM	Landing Craft Mechanical
LCU	Landing Craft Utility
LCVP	Landing Craft Vehicle and Personnel
LHA	General Purpose Amphibious Assault Ship
LHD	Multipurpose Amphibious Assault Ship
LPH	Helicopter amphibious Assault Ship
MAGTF	Marine Air Ground Task Force
MAP	Military Assistance Program
MASF	Mobile Aeromedical Staging Facility
MASH	Mobile Army Surgical Hospital
MCA	Military Civic Action
MEB	Marine Expeditionary Brigade
MEDCAP	Medical Capability Study
MEDCEN	Medical Center
MEDDAC	Medical Activity
MEDSTAT	Medical Status Report
MEF	Marine Expeditionary Force
MEU	Marine Expeditionary Una
MI	Myocardial Infarction
MILSTRIP	Military Standard Requisition and Issue Procedure
MIPB	Medical Intelligence Preparation of the Battlefield
MMART	Mobile Medical Augmentation Team
MMWR	Morbidity and Mortality Weekly Report
MOC	Medical Operations Center
MOOTW	Military Operations Other than War
MOPP	Military Operational Protective Posture
MPM	Military Planning Module
MRE	Meal Ready to Eat
MRO	Medical Regulating Office(r)
MSB	Main Support Battalion
MSCA	Military Support to Civil Authorities
MSD	Military Stress Diet
MTF	Medical Treatment Facility
N4	Naval Staff Logistics Office(r)
NAPMIS	Navy Preventive Medicine Management Information System
NAVHOSP	Navy Hospital
NBC	Nuclear, Biological, Chemical
NBI	Non-Battle Injury
NDMS	National Defense Medical System
NEACDS	Naval Emergency Airdrop Cargo Delivery System
NEHC	Navy Environmental Health Center
NEO	Non-combatant Evacuation Operation
NEPMU	Naval Environmental and Preventive Medicine Una
NG	Nasogastric
NGO	Non-Governmental Organization
NSN	National Stock Number

OEP	Office of Emergency Preparedness
OFDA	Office for Foreign Disaster Assistance
OPCON	Operational Control
OPORD	Operation Order
OPLAN	Operation Plan
OPSEC	Operation Security
OR	Operating Room
PAHO	Pan American Health Organization
PCRTS	Primary Casualty Receiving and Treatment Ship
PE	Polyethylene
PLAD	Plain Language Address Directory
PMI	Patient Movement Items
POL	Petroleum, Oils, Lubricants
RBC	Red Blood Cell
RFI	Request for Information
S4	Logistics Office(r), Regiment, Brigade, or Battalion level
SA	Security Assistance
SOF	Special Operations Force(s)
SPRINT	Special Psychiatric Rapid Intervention Team
SR	Special Reconnaissance
SYSOP	System Operation
TAES	Theater Aeromedical Evacuation System
TAH	Hospital Ship
TAMMIS	Theater Army Medical Management Information System
TBTC	Theater Blood Transshipment Center
TEMPER	Temperature Controlled (Tent)
TPFDD	Time-Phased Force Deployment Data
TPFDL	Time-Phased Force Deployment List
TPMRC	Theater Patient Movement Requirements Center
USAID	U.S. Agency for International Development
USCOM	U.S. Chief of Mission
VA	Veterans' Administration
VECTRAP	Vector Risk Assessment Profile
WER	Weekly Epidemiological Record
WIA	Wounded in Action
WHO	World Health Organization
WRAIR	Walter Reed Army Institute of Research
WWMCCS	World Wide Military Command and Control System

Basic Joint Medical Doctrine*

Joint Publication (Joint Pub) 1, *Joint Warfare of the US Armed Forces*, notes that the "nature of modern warfare demands that we fight as a team. This does not mean that all forces will be equally represented in each operation. Joint force commanders choose the capabilities they need from the air, land, sea, space, and special operation forces (SOF) at their disposal." Traditionally, joint operations have been directed by the Commanders-in-Chief (CINC) of the unified commands and executed by their subunified commands and service components.

Joint Task Force Operations

More recently, CINCs are conducting operations within their areas of responsibility (AOR) by activating joint task forces (JTF). JTFs are established to accomplish specific, limited objectives that require the significant and closely integrated efforts of forces from two or more services. The JTF commander (CJTF) is appointed by the CINC and exercises operational control (OPCON) over assigned and attached forces. The CJTF may wear an additional hat as the commander of a JTF service component. Joint Pub 5-00.2, *Joint Task Force Planning Guidance and Procedures*, provides detailed guidance and procedures for forming, staffing, deploying, employing, and redeploying a JTF for short-notice contingency operations.

A variety of scenarios exist that lend themselves to designating an Army corps, a Marine Expeditionary Force (MEF), or a numbered fleet or air force as the basis upon which a JTF is built. When this occurs, the command or fleet surgeon frequently becomes the JTF Surgeon, and the corps, MEF, fleet, or air force medical staff forms the core of the JTF Surgeon's Office to be augmented by medical planners, operations officer and specialists from other services and commands.

Joint HSS Relationships and Responsibilities

Joint Pub 4-02, *Doctrine for Health Service Support in Joint Operations*, provides operational and organizational guidelines to meet the health service support (HSS) requirements of combatant commands, JTFs, and service components. The JTF Surgeon is the principal advisor to the CJTF for these medical matters and assumes responsibility for planning, coordinating, and controlling joint HSS within the CJTF's joint operational area (JOA);. The JTF Surgeon can expect to receive broad guidance and a general concept of medical operations from the Unified Command Surgeon.

The staff of JTF Surgeon's Office should be large enough to effectively facilitate joint planning and coordination of JOA HSS, medical standardization and interoperability, and integration of medical activities within the overall joint operation. Specifically, the JTF Surgeon must be prepared to accomplish the following tasks

*This section was originally written for inclusion in FM 8-55, *Planning for Health Service Support*.

Maintain liaison with component command surgeons and resolve medical staff conflicts surfaced by JTF components.

Provide detailed medical guidance, assign medical tasks, and develop the joint medical concept of operations. In the interest of maximizing the use of potentially limited resources, the JTF Surgeon may direct joint use of medical assets. For example, the JTF Surgeon may determine that the Navy component will provide all third echelon hospitalization or that the Army component will provide all rotary-wing aeromedical evacuation for the JTF. In these instances, joint staffing of units is not usually considered a prerequisite for their joint use.

Consolidate component patient estimates, assess the sufficiency of the theater evacuation policy, and recommend changes to the Unified Command Surgeon if warranted.

Advise the CJTF on HSS aspects of combat operations; rest, rotation, and reconstitution policies; preventive medicine; and other medical factors that could affect joint operations.

Monitor JTF medical readiness status to include status of component patient beds, blood products, medical logistics, and staffing.

Report JTF medical readiness status to the CINC in accordance with the unified command operation order (OPORD).

Coordinate HSS provided to and received from allies or friendly nations.

Coordinate medical intelligence support and identify medical essential elements of information (EEI) and requests for information (RFI).

Prepare Annex Q (Medical Services) for all JTF plans and orders. (See Appendix A)

Advise the CJTF of HSS aspects of the Geneva and other Conventions.

Supervise the activities of a Joint (or the Theater) Patient Movement Requirements Center (TPMRC) and the Joint (or Area Joint) Blood Program Office (JBPO/AJBPO).

JPMRC Responsibilities

The JPMRC functions as part of the JTF Surgeon's Office and integrates aeromedical evacuation with patient regulating requirements. Additionally, it coordinates all related activities that support or affect patient movement. If it is the only Patient Movement Requirements Center within the unified command, it will probably be

designated as a TRMRC and coordinate directly with the Global Patient Movement Requirements Center (GPMRC). If the Unified Command Surgeon is already operating a TPMRC, the JTF center will be designated as a JPMRC and coordinate patient movements with both the TPMRC and the GPMRC. Specifically, the JPMRC should perform the following functions:

Develop and disseminate JOA patient movement policies, procedures, and guidance.

Manage the JOA patient movement system.

Receive and validate JTF patient movement requests.

Direct within-JOA patient movement to joint-use third echelon facilities and coordinate with the TPMRC/GPMRC to establish the appropriate out-of-JOA destination treatment facility and mode of travel.

Match patient movement requirements with appropriate transportation assets and forward patient movement requirements to the appropriate agency for mission execution.

Establish, in conjunction with the TPMRC/GPMRC, patient movement reporting and tracking procedures and provide in-transit visibility for JTF patients.

JBPO/AJBPO Responsibilities

The JBPO/AJBPO also functions as part of the JTF Surgeon's Office and manages the theater blood program. If the JTF is the only Blood Program Office operating within the unified command, it will probably be designated as the JBPO. If the Unified Command Surgeon is already operating a JBPO, it will be designated as an AJBPO. Specifically the JBPO/AJBPO should take the following actions.

Develop and disseminate JOA blood management policies, procedures, and guidance.

Coordinate and monitor component blood programs, blood product requirements, and capabilities within the JOA.

Manage the blood distribution system within the JOA.

Maintain direct liaison with the Armed Services Blood Program Office (ASBPO), component blood program offices, component blood supply units, and the Unified Command Surgeon's office.

Medical Considerations in JTF Planning

Operations that require the activation of a JTF are usually crisis or emergency situations for which there may or may not be an existing operation plan (OPLAN). Joint crisis action planning (CAP) for these situations progresses through a logical sequence of six phases from problem recognition to the execution of an OPORD. The six phases are situation development, crisis assessment, course-of-action (COA) development, COA selection, execution planning, and execution. Time constraints may force the phases to be compressed.

The unified command usually identifies and activates the JTF during the COA development phase. Upon JTF activation, the JTF Surgeon should begin operational planning. Specifically, the JTF Surgeon should accomplish the following actions:

- Review all unified command standing operating procedures and applicable OPORDs.

- Update and standardize HSS planning factors as required.

- Determine the extent of and initiate planning to support noncombatant evacuation operations (NEO).

- Obtain and review medical threat and preventive medicine information pertinent to the operations. Identify additionally required medical EEI and RFI to the JTF intelligence section.

- Develop JTF medical policies and procedures.

- Coordinate with JTF operational planners during concept development and assess medical risks associated with alternate courses of action.

- Assess host nation medical support availability.

- Develop and coordinate the JTF medical support concept with component and unified command surgeons. Plan for joint use of assets to ensure minimum essential hospitalization and evacuation support is identified for deployment.

- Evaluate projected force deployment flow and ensure that timely and responsive medical support, including the Theater Aeromedical Evacuation System (TAES), is available throughout the operation.

- Activate the JPMRC/TPMRC and JBPO/AJBPO and disseminate patient movement and blood management procedures.

During the operation, the JTF Surgeon may be directed to begin planning HSS for follow-on military civic actions (MCA). Joint HSS considerations for these operations

are discussed in Joint Pub 3-00.1, *Joint Doctrine for Contingency Operations*; Joint Pub 3-07, *Joint Doctrine for Military Operations Other than War*, Joint Pub 3-07.3, *JTTP for Peacekeeping Operations*; and Joint Pub 3-57, *Doctrine for Joint Civil Affairs*: as well as Joint Pub 4-02.

As the operation nears completion, the JTF Surgeon should begin planning medical support for the redeployment of the JTF and/or transfer of medical responsibilities to a follow-on subunified command.

Joint Task Force Medical Planning Checklist

The following checklist can be used to help manage the JTF medical planning process.

CAP Phase I Situation Development. Often the JTF has not been activated at this stage of the CAP process. However, if it has, the JTF Surgeon should consider the following:

What type of military forces might be used to resolve the crisis or conflict, and how might they best be supported medically?

Are any in-place medical treatment facilities available for use including: U.S. military assets, host nation support, allied assets, contracts with civilian organization (e.g. the International Red Cross)?

If combined action is possible, what type of medical support could be required or provided by other nations?

Have intelligence offices been tasked to provide appropriate medical information?

How should medical requirements be entered into the consolidated intelligence collection plan?

What steps can be taken to collect additional medical information about the threat, crisis, conflict, or region?

Have augmentation packages for the JTF Surgeon's Office been identified and submitted?

Has a JPMRC/TPMRC been established?

Has a supportable evacuation policy been established?

If authority to coordinate with in-place and out-of-JOA medical treatment facilities has been granted, has coordination already begun?

Has aeromedical evacuation support been properly requested and coordinated, and does the proposed aeromedical evacuation support include sufficient crews, equipment sets, staging facilities, and medical supplies?

Has a JBPO/AJBPO been established?

Has the handling, storage, and distribution of whole blood within the JTF been planned and coordinated with the JTF service component surgeons?

Have in-place blood and blood products been inventoried?

Have all JTF service component blood and blood product requirements been consolidated and coordinated with the JBPO/AJBPO?

Who are the JTF service component surgeons?

Have medical task, functions, and responsibilities been delineated and assigned to the JTF service component medical units?

Have preventive medicine procedures and countermeasures been established and have sufficient personnel been identified to ensure protection of the health of the JTF?

Have provisions been made within the AOR/JOA to provide support to U.S. national, enemy prisoners of war (EPW), civilian internees (CI), and other detained persons (DET)?

Has the medical supply and resupply status of each service component been reported?

Have provisions for emergency resupply been established?

Are there any medical communications systems that are already available in the AOR and JOA? If so, what are their capabilities and how are they accessed?

Have communications requirements been identified to include nonsecure and secure channels, frequencies for medical personnel, and any medically dedicated or unique communications nets, operating procedures, or requirements?

How will the communications system support the passing of medical information, reports, and requests?

CAP II, Crisis Assessment.

If a NEO is anticipated, the JTF Surgeon should consider the following:

How many of the noncombatants are known to require medical care?

Where are these noncombatants and is there a published plan addressing their collection prior to evacuation?

Is a permissive or non-permissive NEO anticipated, and how best can it be medically supported?

Are there any civilian casualty projections for the NEO?

What is the medical evacuation policy for NEO casualties?

Has the Department of State authorized pets to accompany NEO evacuees? Are any animals prohibited from entry into the United States by the Food and Drug Administration (FDA) or other agency?

What will be done with pets brought to evacuation control points?

If any humanitarian, civil, or security assistance (SA) medical requests have been made by foreign governments, how can they be supported?

Are there any medically significant treaties, or legal, host nation, or status-of-forces agreements between the United States and involved foreign governments?

Are there any OPLANs or conceptual OPLANs (CONPLAN) for the area or situation?

What type of foreign military or civilian medical infrastructure is established within the JOA? What and where are its key elements?

CAP Phase III COA Development.

What specific medical factors affect the actions under consideration?

What medical assets are provided for in the OPLAN or draft OPORD?

Is available HSS adequate to support planned operations? If not, what additional assets are required and how will the JTF request them?

Are all medical units-to include Aeromedical Evacuation Liaison Teams (AELT) and air crews-on the Time-Phased Force and Deployment List (TPFDL) and scheduled for timely arrival?

If an intermediate staging base (ISB) is required, what medical units should be positioned there?

What airfields are available for intratheater and intertheater aeromedical evacuation?

Have JTF service components identified and requested medical personnel augmentation for the medical units and treatment facilities?

CAP Phase IV. COA Selection. No medical actions.

CAP Phase V, Execution Planning.

Is the selected COA medically supportable with currently available medical assets?

If not, will required medical assets be available before mission execution?

If not, has the CJTF been made aware of the risks?

What is the status of communications? Have any dedicated or medially unique nets, procedures, or requirements be properly identified and requested?

Has sufficient medical coordination with allies and the host nation been conducted?

Have medical sustainability and resupply requirements been identified?

Have Class VIII responsibilities and channels be established?

Is the medical portion of the OPORD ready to be published and does it address assistance to U.S. nationals, CIs, DETs, displaced persons, and EPW?

Is the JPMRC/TPMRC fully functional?

Is the JBPO/AJPBO fully functional?

Is the TAES planning complete?

Are sufficient TAES assets in-place or programmed for early arrival?

Have primary and secondary aeromedical airfields been identified?

Are AELTs ready to locate at key locations within each JTF service component medical system?

Do JTF service components understand that they are required to move patients to supporting aeromedical staging facilities, and will they be able to do so?

Are sufficient litters, straps, blankets, etc. available?

CAP Phase VI. Execution. During this phase, some members of the JTF Surgeon's staff will be monitoring and controlling the execution of the medical plan, while others will be preparing medical support plans for follow-on operations, transition of responsibilities, and/or redeployment.

Medical Intelligence and Preventive Medicine

One of the first joint operations that involved American forces was the almost forgotten War of Jenkins' Ear. In the early part of the 18th Century, after Spanish privateers sliced off the ear of a British naval officer and bid him to present it to the Prime Minister, Parliament decided to rid the Caribbean of As Spanish presence once and for all. The plan was to deploy British naval and army forces to Jamaica where they would rendezvous with a colonial contingent from North America. This combined joint force would assault the city of Cartagena and drive the Spanish from their Caribbean stronghold. Unfortunately, for the British, the operation ended in complete disaster.

It was not, however, Spanish combat prowess that defeated the British and Americans. Rather, it was the latter's own inattentiveness to the health of the command. Only 10 percent of the 9,000 man combined force were wounded or killed in action; the majority of the casualties, well over 6,000 men, occurred because of spoiled food, a lack of potable water, intense heat, and indigenous disease. Today we refer to this type of casualty as a Disease and Non-Battle Injury (DNBI).

Of course, one might protest, this debacle happened over 300 years ago, and military medicine has come a long way since then. While this is undeniably true, we still frequently forget that the greatest threat to our forces is not enemy guns.

50% of the marines deployed to Lebanon in 1958 were incapacitated with severe diarrhea.

80% of the sailors deployed in the Suez in 1975 were stricken with dysentery

30% of the soldiers deployed to the Sinai in 1982 became dehydration casualties.

In his Civil War memoir, then Major Jonathan Letterman-father of modern U.S. military operational medicine-wrote the following passage:

A corps of medical officers was not established solely for the purpose of attending the wounded and sick The *leading idea*, which should be constantly kept in view, is to strengthen the hands of the Commanding General by keeping his army in the most vigorous health, thus rendering it, in the highest degree, efficient for enduring fatigue and privation and for fighting.

Clearly, Major Letterman understood that one of the keys to a successful military campaign is the implementation of preventive procedures to reduce DNBI rates. More recently, two widely recognized authorities in military preventive medicine-Llewellyn Legters and Craig Llewellyn of the Uniformed Services University of the Health Sciences (USUHS)-highlighted the four main objectives of a successful preventive medicine program.

To determine the nature and magnitude of the disease and injury threats in the planned area of operations before deployment.

To identify the principal countermeasures that must be emphasized to reduce the threats to acceptable levels.

To train individuals in the use of these countermeasures.

And, to rigorously enforce these countermeasures in the operational area.

Assessing the Medical Threat

Prior to any deployment, a line commander desires an intelligence preparation of the battlefield (IPB). The command surgeon should, just as strongly, desire a medical IPB (MIPB). Too often, however, the medical officer asks, "I wonder where I can get pertinent and timely medical intelligence information?" In fact, there are many sources.

The first place to search for information is in the office of the Unified Command Surgeon with geographic responsibility for the area into which the joint task force is being deployed. The surgeon's preventive medicine officer should be intimately familiar with the region's medical threats. If the preventive medicine officer does not have specific information right at her or his finger tips, he or she probably has access to a library of applicable medical threat data. One text that is easily obtainable is FM 8-33, *Control of Communicable Diseases in Man*.

The second and, probably, best single source of medical intelligence is the Armed Forces Medical Intelligence Center (AFMIC), Ft. Detrick, Maryland. The center produces a wide range of publications that can assist the in developing an MIPB. Five important publications that a JTF Surgeon will find very useful are the Disease and Environmental Alert Reports (DEAR), the Medical Capabilities Studies (MEDCAP), the World-Wide Medical Facilities Handbook, the Special Series documents, and the Weekly wire (a periodic message update of worldwide medical concerns). Additionally, AFMIC has published much of its unclassified information on a mufti-platform CD titled Medical Environmental Disease Intelligence and Countermeasures (MEDIC). For information on how to obtain these publications contact AFMIC, Building 1607, Fort Detrick, MD 21701-5004; telephone: (301) 619-3837; DSN: 343-3837. Some of AFMIC's information can also be retrieved by using its Bulletin Board System (AFMIC BBS). You can get more information about accessing the AFMIC BBS by contacting the System Operator (SYSOP) at (301) 619-2686 or DSN 343-2686.

A third source is the Defense Pest Management Information Analysis Center (DPMIAC) of the Armed Forces Pest Management Board (AFPMB). This organization publishes an excellent series of Disease Vector Ecology Profiles (DVEP) on many foreign countries. The profiles include information regarding disease risks, infectious agents, modes of transmission, geographic and seasonal incidence, and prevention and control recommendations. The center can be contacted at DPMIAC, Armed Forces Pest Management Board, Forest Glen Annex, Walter Reed Army Medical Center, Washington, DC 20307-5001. Some of its publications are available on-line at <http://www-afpmb.acq.osd.mil>.

A fourth resource is the Navy Preventive Medicine Information System (NAPMIS). NAPMIS maintains up-to-date information like Disease Risk Assessment

Profiles (DISRAP) and Disease Vector Risk Assessment Profiles (VECTRAP). Surgeons and planners can tap into NAPMIS by contacting the Navy Environmental Health Center, Norfolk, Virginia 23511; telephone (757) 444-7575 ext 456 or DSN 564-7575 ext 456. The Navy also operates regional Naval Environmental and Preventive Medicine Units (NEPMU) that publish periodic Fleet Public Health Bulletins and provide assistance throughout the world (NEPMU 2, Norfolk; NEPMU 5, San Diego; NEPMU 6, Pearl Harbor; and NEPMU 7, Sigonella, Italy). Current Fleet Public Health Bulletins are available on-line from NEHC at <http://ech40.med.navy.mil>.

A fifth publication of value is the quarterly *Communicable Disease Report* published by the Walter Reed Army Institute of Research (WRAIR). It identifies disease outbreaks worldwide. Additionally, WRAIR quickly responds to ad hoc queries and provides timely regional medical assessments. Information can be requested from the Division of Preventive Medicine, WRAIR, Washington, DC 20307; telephone (202) 782-1352.

A final military source is the U.S. Army Research Institute of Environmental Medicine (USARIEM). USARIEM publishes an excellent series of "deployment manuals" which address soldier health and performance in a wide variety of environments. These manuals are available on-line at <http://www-sscom.army.mil/usariem/htm>. For additional information contact USARIEM at Bldg 42, Kansas St., Natick MA 01760-5007.

Still other sources of medical intelligence are available from agencies external to DOD. The State Department publishes *Background Notes*, a series of publications on selected countries and regions. The series can be obtained through the Government Printing Office, telephone (202) 783-3288, and is usually current within one or two years.

The Center for Disease Control and Prevention (CDC) publishes *Health Information for International Travel*, a document often referred to as the Yellow Handbook, which identifies current vaccination requirements, immunization and prophylaxis recommendations, and regional health hazards. This document, too, can be ordered from the Government Printing Office. CDC also publishes the Morbidity and Mortality Weekly Report (MMWR) which can be requested from Editor, MMWR Series, Mailstop C8, Center for Disease Control and Prevention, Atlanta, GA 30333, or accessed on-line at <http://ANww.odc.gov/epo/mmwr/mmwr.html>.

The World Health Organization (WHO), publishes *Vaccination Certificate Requirements and Health Advice for International Travel*, a document that is similar to the Yellow Handbook and can be obtained from the WHO Washington office; telephone (202) 8613396. WHO also publishes the Weekly Epidemiological Record (WER) which is available online at <http://www.who.chtwerlissues.htm>. Hard copy subscriptions to WER are available from WHO, Distribution and Sales, 20 Avenue Appia, CH-1211 Geneva 21, Switzerland.

And finally, don't neglect looking through the world-wide travel sections at local libraries and bookstores. Frequently, they have books with surprisingly extensive medical sections.

Distilling the Raw Data into Useable Information

Once data have been accumulated, as second question normally strikes the surgeon or medical planner, "How can I distill and organize the data into something that is usable to me and my commander'?"

First, determine whether or there are any endemic or epidemic diseases within the planned JOA. This examination includes not only identifying any communicable, to include sexually transmitted, diseases present in the area, but also determining the level of endemicity and known resistance to chemoprophylactic medications.

It is also important to identify the locations of any specific diseases, strains of bacteria, insects, harmful vegetation, snakes, fungi, spores, and other harmful organisms. This, in turn, should trigger inquiries into arthropod resistance to available pesticides and the availability of antivenins. Current and potential animal and plant diseases, especially those transmissible to humans, must be noted. Crops and livestock in the region should be evaluated for potential problems; and any spec FDA plant and animal importation restrictions for the area should be determined.

The region's public health standards and local health problems must be assessed. This assessment includes the area's water quality and its distribution system as well as risks associated with the consumption of local food and the method and quality of the public waste disposal system.

The potential impact of foreign weapon systems as they relate to casualty production must be considered. This includes identification of any possible use of laser weapons, laser range finders, chemical munitions, or biological agents. This information may be readily available from the JTF Intelligence Officer (J2).

All commanders appreciate knowing the enemy force's state of health and fitness as it relates to its ability to conduct combat operations. The JTF Surgeon should be able to describe the enemy's ability to medically support its combat forces and any unique characteristics of the civilian medical infrastructure. Unique characteristics include information about medical supply status, the range and availability of medical services, the location and capabilities of medical facilities, and the number and specialties of trained HSS personnel.

During NEOs, medical units must be aware of the number of noncombatants known to require medical care, their locations, and the embassy's plan for their collection. Knowledge of the State Department and FDA policies regarding evacuation and quarantine of animals may expedite NEO planning should an ambassador decide that evacuees will be allowed to take their pets with them.

Finally, physical data, such as altitude, temperatures, terrain, and road/transportation networks, should be evaluated to assess how they may affect the health of the command and HSS operations, especially treatment facility location and patient evacuation.

Identification of Countermeasures

Drs. Legters and Llewellyn, in *Public Health & Preventive Medicine*, noted two distinct approaches to countering a threat-individual prophylactic measures and environmental controls. They consider the effectiveness of individual prophylactic measures (e.g. immunizations, chemoprophylaxis, insect repellents, protective clothing, and safety equipment) as generally ". . . inversely proportional to the effort demanded of the individual . . . Nevertheless, in the highly mobile tactical operations characteristic of modern warfare, it is frequently necessary to place virtually total reliance for disease and injury prevention on the use of individual prophylactic methods applied under the supervision of leaders of small tactical units."

Up-to-date immunizations prior to deployment are crucial. The quadriservice document *Immunizations and Chemoprophylaxis* (AR 40-562, NAVMEDCOMINST 6230.3/AFR 16113/CG COMDTINST M6230.4D) provides detailed guidance, as shown in the following table.

Table 1. Immunization Requirements

Immunizing Agent	Armor	Navy	Air Force	Marines	Coast GD
Adenovirus 4 & 7	B	B	B	B	H
Cholera	F	F	F	F	F
Hepatitis B	E,G,H	E,G,H	E,G,H	E,G,H	G,H
Influenza	A,B,X	A,B,R	A,B,R	A,B,R	B,C,H
Measles	B,G	B,G	B,G	B,G	B,G
Meningococcal	B,H	B,H	B,H	B,H	B,H
Mumps	G,H	G,H	G,H	G,H	G
Plague	C,D,E,G	D,G	E	A,G	E
Polio	A,R	A,R	A,R	A,R	A
Rabies	D,G,H	D,G,H	D,G,H	D,G,H	H
Rubella	B,G	B,G	B,G	B,G	B
Smallpox	B,H	B,H	B,H	B,H	B,H
Tetanus Diphtheria	A,B,R	A,B,R	A,B,R	A,B,R	A,B
Typhoid	C,E,H	H	C,E,H	H	E
Yellow Fever	C,D,E	AR,	C,E	A,R	B,E

A = all active duty personnel, B = recruits, C = alert forces, D = special operating forces, E = when deploying or traveling to high-risk areas, F = only when required by host country for entry G = high-risk occupational groups, H = as directed by the service Surgeon General, R = reserves

X = reserves on active duty for more than 30 days during influenza season

Other immunizations and/or vaccinations may be required, depending upon the JOA. Command surgeons should specify to subordinate units any additional immunizations required prior to deployment. While the place to do this is Annex Q, Medical Services, of the OPOD, a separate message may be used to expedite the dissemination of the information. Annex Q should also identify any other individual protective methods to be employed like chemoprophylactic regimens, insecticide product use, correct uniform wear, and proper use of equipment (e.g. bed nets).

Additionally, JTF Surgeons should use Annex Q to identify any environmental controls to be exercised by individual units for their own protection or by combat service support units on an area-wide basis. The focus of these controls should be in areas where a relatively small number of trained specialists can concentrate their effort (e.g. water and food supplies, vector control, and waste disposal). Because much of this work will be done by non-medical personnel or non-medical units, the JTF Surgeon should clearly identify which medical units, activities, or personnel will provide technical supervision. Also remember that as special staff officers, JTF Surgeons do not have tasking authority. Specific environmental control tasks for specific units that are not identified in Annex Q must be published by commanders or their operations officers.

Training in and Enforcement of Countermeasures

Although training of personnel in preventive medicine countermeasures is a service responsibility, JTF Surgeons must understand that standards differ between services. Therefore, it may be appropriate to identify and disseminate specific procedures to the CJTF and recommend that he direct that training will be conducted to ensure compliance.

This brings up another key point. It is important that surgeons at all levels convince commanders of the importance of countering the medical threat because, without command support and enforcement, medical threat assessment and preventive medicine countermeasures efforts will be wasted.

Some Regional Considerations

Military units must operate in varied climates and geographical regions. The contrasting characteristics of these regions present a unique set of medical considerations.

Jungle Operations

Extremes of heat and humidity can result in dehydration, exhaustion, cramps, and heatstroke. Drops in temperature, especially at night, can cause extreme discomfort. Mosquitoes (to include malaria vectors), wasps, bees, centipedes, scorpions, and poisonous snakes are common. Leeches may be found in swampy areas and streams; while nonpoisonous, their bites may easily become infected and result in ulcers or sores. Wild animals and "domesticated" wild animals, like water buffalo and elephants, may be encountered. All large animals can be dangerous if cornered or startled at close quarters. Poisonous plants are prevalent. While these are all significant concerns, an aggressive preventive medicine program can negate most of the medical threat.

Insects and malaria. Enforce prevention measures to include the use of insect repellent and mosquito nets, the wearing of clothes that cover as much of the

body as possible, the avoidance of known infestations, and the administration of malaria chemoprophylaxis. Boots, blankets, sleeping bags, and clothing should be shaken before they are used. Special consideration must be given to immobilized casualties and patients; they are easy prey for ants and other insects.

Leeches. Problems can be prevented by brushing leeches from skin or clothing before they attach. Trousers should be securely tucked into boots, and straps should be wrapped around the pants just above the boot top. These leech straps will help prevent leeches from crawling up the legs and into the crotch area.

Snakebites. Medics and corpsmen should carry snakebite kits, and antivenin for indigenous species of poisonous snakes should be maintained at treatment facilities.

General health and hygiene. Immunizations should be current before deployment. Personnel should be in top physical condition and have received hygiene instructions. Time should be allocated to allow personnel to acclimate. Water use policies stressing the drinking, but not rationing, of water must be enforced. Every individual should understand the sources of endemic disease.

Waterborne diseases. Drinking water must be purified and plentiful at approved water points. Collection of rainwater is not recommended as impurities from the jungle canopy may have washed into collection containers. Swimming and bathing in untreated water should be prohibited, and the body should be kept fully clothed when crossing water obstacles.

Fungal diseases, immersion foot, and chafing. Personnel should bathe and air dry the body as often as possible. Quick drying jungle fatigues and boots should be issued. Clothing should be kept dry, clean, and loose. Never allow personnel to sleep in wet, dirty clothing. Underwear should not be worn in consistently wet weather. Boots should be removed and feet should be massaged frequently. Socks require frequent changing and, along with feet and boots, should be dusted often. Hair should be kept short.

Heat injuries. Require personnel to consume adequate amounts of water. Ensure salt is being consumed with meals. Advise the CJTF to slow down operations if necessary.

Mountain Operations

Many personnel who are rapidly transported from sea level to elevations above 2,500 meters and subjected to heavy work become ill and ineffective. Unacclimated personnel may also experience decreased ability to concentrate, increased errors in performing logical or mathematical functions, loss of memory, increased irritability, and decreased vigilance. Errors in judgment are frequent. Sunburn and snow blindness frequently occur. Frostbite and wind-chill are considerable health threats. As in a jungle

environment, an aggressive preventive medicine program can do much to prevent problems.

Acclimatization. An acclimatization program that gradually increases physical exercise, to include marches and rock climbs, should be mandatory. After a month of training, military personnel should be able to perform at about 70% of their sea level capacity at an altitude of 4,200 meters.

Sunburn and snow blindness. Personnel should be issued and required to use sunscreen. Snow blindness can be prevented by wearing goggles. Sunglasses that do not block light from below and from the sides are inadequate.

Frostbite. The potential for frostbite injuries increases with altitude as blood flow to the extremities is reduced. Personnel must be kept in proper uniform. Face and hands must be protected, especially when subjected to high winds or propeller/rotor blast. Clothing and bodies should be kept dry. Outer clothing layers should be removed during heavy work to minimize perspiration. A buddy system can significantly reduce the frequency of frostbite injuries.

Nutrition and dehydration. Loss of appetite is frequent at high altitudes. Personnel must be supervised to ensure that they are eating properly. At least one hot meal should be served daily. Heat tablets should be issued, if possible, with combat rations. As in any environment, water to be consumed must be potable. Snow, streams, and lakes may appear pure, but must be treated anyway. Fruits, fruit juices, and soups should be used to supplement water intake.

Hygiene. Daily shaving requirements should be enforced. Beards add little in the way of insulation and may conceal frostbite or lice. Weekly bathing is recommended, and armpits, crotch, and feet should be washed daily. Feet should be massaged and powdered when socks are changed daily. Underwear should be changed at least twice each week. Sleeping bags must be shaken out and aired regularly as should clothing if changes are not available.

Sanitation. Although it may be impossible to dig in rocky or frozen ground, latrines should still be established. Excreta will freeze and can be covered with snow or pushed into a crevasse. In rocky areas, waste can be covered with stones.

Desert Operations

Sunburn, windburn, and sand irritation can be severe. Air temperature, humidity, air movement, and radiant heat can cause climatic stress and result in increased casualties. Cold night temperatures may cause discomfort or injury. The potential for dehydration is great, and water is scarce. Diseases like plague, typhus, malaria, dengue fever, dysentery, cholera, and typhoid can be endemic. Poisonous snakes may be present.

Acclimatization. At least two weeks are needed for the body to develop efficiency in its cooling process. During this time, personnel should gradually increase their exposure and exertion. If it is not possible to fully acclimatize personnel before engaging in heavy work, labor should be limited to cooler hours. Frequent rest periods should be taken.

Radiant light. Personnel should attempt to gradually acquire a suntan to gain some protections against sunburn. Sunscreen must be issued and its use enforced. Personnel should remain fully clothed in light, loose-fitting clothing. Sunbathing should be prohibited. Remember, the sun is just as dangerous on a cloudy day; sunscreen does not provide complete protection; and sunbathing or sleeping in direct sunlight can be fatal.

Wind and sandstorms. Lip balm as well as skin and eye ointments can help prevent wind and sand irritation of mucous membranes, lips, and other exposed surfaces. Goggles should be worn when needed and always when riding in vehicles. This can help prevent irritative conjunctivitis.

Water, dehydration, and heat injuries. A plentiful, potable water supply is essential to successful desert operations. Personnel cannot be trained to adjust to reduced water intake. Personnel should be encouraged to drink small quantities of water frequently as opposed to large quantities of water on an irregular basis. As much as one pint per hour may be needed to replace fluid lost through perspiration. Lister bags should be used to cool water. If possible, drinking water should be maintained between 50 and 60 degrees Fahrenheit. While water consumption must be encouraged, personnel must be trained not to be wasteful. Care must be taken not to pollute water sources. If rationing is in effect, it must be closely supervised. Clothing may be moistened to help cool the body; water that is too salty to drink, but not otherwise dangerous, can be used for this purpose. A buddy system can reduce the frequency, quantity, and severity of heat injuries.

Diseases and infections. A predeployment immunization program will negate most of the threat from endemic diseases. Clothes should be frequently changed to prevent prickly heat and fungal infections. Personnel should be frequently checked for minor injuries as desert dirt and insects can cause serious infections.

Snakebites. Medics and corpsmen should have many snakebite kits, and antivenin for indigenous species should be available at medical facilities.

Hygiene and sanitation. Daily shaving and bathing should be required if water is available. If not, electric razors should be used. Body areas that sweat heavily should be cleaned daily, and underwear should be changed often. If sufficient water for showers is not available, personnel should take sponge baths, use solution-impregnated pads, or wipe themselves with clean dry cloth. Latrines should be deep as shifting sands can expose shallow diggings.

Echelons of Care and Bed Requirements

Just as important as conserving a command's fighting strength by reducing its DNBIs is the ability to return patients to duty as quickly and as far forward as possible. This is done in the U.S. military by employing an echeloned system of medical care first developed by Major Letterman during the Civil War.

Today's military medical system incorporates five echelons of care that begin with the wounding, injury or illness and extend through the eventual evacuation and treatment in the continental United States (CONUS). Each succeeding echelon builds upon the abilities of forward levels by adding a new increment of treatment capability. Within a theater of operations, the first four echelons of medical support are characterized not only by increasing levels of medical sophistication but also by distance and access to aeromedical evacuation assets.

First echelon care begins at the non-medical unit level and incorporates self-aid, buddy-aid, on-site medic or corpsman assistance; physician care is routinely available at within the unit at an aid station. Care focuses upon casualty examination, lifesaving measures (airway, bleeding, shock), and preparation for further evacuation. Treatment examples include surgical airway restoration, intravenous (IV) administration of fluids, use of antibiotics, and application of bandages and splints. A typical first echelon medical facility would be an Army or Marine Corps battalion aid station (BAS).

Second echelon care is provided at a medical facility by a team of physicians and supporting technical staff. It always includes the ability to perform resuscitation and stabilization and may include surgery, basic laboratory, pharmacy, radiology, and dental capabilities as well. Often, second echelon units are able to hold patients for up to 72 hours and may be able to administer group O blood transfusions. Care focuses upon emergency procedures to prevent probable death or loss of limb or body functions; however, treatment does not exceed measures dictated by immediate need. Typical second echelon facilities are Army and Marine Corps medical companies and Navy primary casualty receiving and treatment ships (PCRTS).

Third echelon care facilities are the first places capable of providing in-patient medical care. Third echelon care includes the ability to hold patients for extended periods of time. These facilities provide the first step toward restoration of and functional health and always include the ability to perform preoperative diagnostic procedures, intensive surgical preparation, general anesthesia, and postoperative care. A relatively wide range of blood products is available including fresh frozen plasma, platelets, and O, A, and B liquid cells. Typical third echelon facilities are the deployable medical system (DEPMEDS) hospitals used by all services and the Navy's hospital ships.

Fourth echelon care is usually provided at a fixed medical treatment facility located outside the JOA, but probably within the theater of operations. Fourth echelon hospitals are staffed and equipped to provide definitive, rehabilitative care to return casualties to duty. These medical treatment facilities are the final in-theater hospitals.

Fifth echelon care is also provided by fixed medical treatment facilities. Fifth echelon hospitals are located within CONUS and are staffed and equipped to provide convalescent, restorative, and rehabilitative services in addition to definitive and specialized medical care.

First Echelon Medical Facilities

Both the Army and the Marine Corps employ BASS, usually as part of a medical platoon or section that includes additional medics or corpsmen who serve with line companies. These units often include several tracked or wheeled ambulances to evacuate casualties from the company aid post to the BAS. A BAS, which is simply a defined area for medical triage and stabilization, may be set up in a van, truck, ambulance tent, building, or even under the sky.

Afloat first echelon care is performed within sick bay spaces. Medical care on smaller vessels is usually limited to independent duty corpsmen.

First echelon care provided to operational Air Force units is limited to self- or buddy-aid. Sometimes casualty collection points may be designated to assist in the care of wounded personnel.

Second Echelon Medical Facilities

Each of the military services has developed its own form of second echelon care based upon its roles and missions.

Army

The Army provides second echelon medical care at medical companies. Army medical companies are found within main or forward support battalions (FSBIMSB) that support combat divisions, regiments, or separate brigades. They are also found within corps level medical brigades, medical groups, or area support medical battalions that care for rear area combat service support troops.

FSB medical companies are placed in direct support of brigade size combat forces and are composed of a company headquarters, and evacuation platoon, and a treatment platoon. The evacuation platoon usually contains a mix of tracked and wheeled ambulances that evacuate patients from a BAS. The treatment platoon is designed to set up a clearing station that can receive patients, perform triage, provide dental care, and treat medical patients. Surgery is limited to that which can be performed under local anesthesia, unless the medical company is augmented by a forward surgical team (FST) from a third echelon facility.

An MSB medical company is assigned to each division to provide direct support to units operating in the division rear area and backup support to the forward medical companies. Compared with an FSB medical company, each MSB medical company has a larger ambulance platoon, larger treatment and dental sections, multiple patient holding

sections (each with a forty cot capacity), a preventive medicine section, an optometry section, a mental health section, and a Division Medical Supply Office (DMSO) that manages all medical materiel for the division. Like the forward medical companies, these units can only perform limited surgical procedures. The operation employment of divisional main and forward medical companies is coordinated by the Division Medical Operations Center (DMOC) assigned to the Division Support Command (DISCOM). Comparable MOCs coordinate medical company employment within combat regiments and separate brigades.

Corps-level medical companies perform similar functions although they take on a variety of configurations and sizes. Often these units have either a pure evacuation or pure treatment mission. For example, a corps level medical holding company consists of five platoons, each with 240 cots for a total holding capacity of 1,200 patients.

Marine Corps

Second echelon care to combat Marine Corps units is provided by medical and dental battalions assigned to force service support groups (FSSG). These units are composed of collecting and clearing companies, surgical support companies, and dental companies. They are structured to provide support either to an entire marine expeditionary force (MEF), or marine air ground task forces (MAGTF).

Although collecting and clearing companies provide services similar to Army forward and main medical companies, they have a much greater surgical capability. Each contains two operating rooms and a 60cot holding section.

Surgical support companies are much larger than collecting and clearing companies and, in fact, are designed to be divided into two sections, each about the size of a collecting and clearing company, should this be required during task organization. Each surgical support company contains five operating rooms and a holding area for about 150 casualties.

Navy

Second echelon afloat care is performed on either amphibious transport ships or aircraft carriers.

The medical section of an aircraft carrier, though small when compared with Army or Marine Corps medical companies, is sufficient to provide HSS to a carrier battle group (CBG). Carriers have two operatories and can provide holding for about 50 patients. Several physicians and dentists are assigned in addition to about 30 corpsmen and 15 dental technicians

In each amphibious task force (ATF) usually at least one amphib (amphibious transport ship) designated as a PCRTS. This vessel provides second echelon care to the ATF and to ground forces during the initial phase of an amphibious assault. Medical capabilities of amphibs vary considerably by class. Larger ships, like general purpose

amphibious assault ships (LHA), helicopter amphibious assault ships (LPH), or multipurpose amphibious assault ships (LHD) each have up to six operating rooms and can hold between 200 and 600 patients. It should be remembered that PCRTS holding capacity consists mostly of bunks that are to be occupied by marines in the assault force. Therefore, PCRTS holding capacity is usually not available until after an assault force has left the ship.

Should additional medical assistance be required, the Navy can deploy fleet surgical teams (FST) or mobile medical augmentation readiness teams (MMART). There are five types of MMARTs: surgical teams, specialist teams, special psychiatric rapid intervention teams (SPRINT), preventive medicine teams, and disaster support teams.

Air Force

Air Force second echelon care to operational units is provided by rapidly deployable air transportable clinics (ATC) or air transportable hospitals (ATH).

Each ATC is designed to support between 300 and 500 personnel and is staffed by a physician and three medical technicians. Although it has no surgical capability, it can hold six patients in cots for up to three days.

Although designed primarily as a third echelon facility, a 14-bed ATH variant called Coronet Bandage may be deployed to provide second echelon support. It can care for limited acute trauma, perform minor surgery, and provide minimal inpatient care.

Third Echelon Hospitals

Although each service configures its third echelon hospitals differently, each hospital is composed of the same basic DEPMEDS equipment building blocks. DEPMEDS facilities are self-contained in relatively rapidly deployable International Standardization Organization (ISO) containers that expand to provide the key functional departments (e.g. surgery and radiology). Wards, administrative areas, and other hospital departments are housed in temperature controlled (TEMPER) tents that are connected by a series of passageways to each other as well as the expanded ISO containers.

Army

The mobile Army surgical hospital (MASH) is employed relatively far forward, possibly even collocated with a division's MSB medical company, and is designed to provide early surgical intervention and stabilization. It has four operating tables and 32 hospital beds. Typically, two MASH units are deployed to support a five-division corps. Each MASH requires six acres to completely lay out all facilities.

The combat support hospital (CSH) typically contains 316 hospital beds and is configured with the following bed allocations: 96 intensive care, 160 intermediate care, 20 neuropsychiatric, and 40 minimal care. It has four operating rooms with eight operating tables and can provide more advanced dental care than can a second echelon medical

company. It provides stabilization for further patient evacuation. Depending upon the military mission, up to three CSHs may be deployed in support of a division.

The Field Hospital can be used as either a third or fourth echelon facility. It typically contains 524 hospital bed; 24 intensive care, 160 intermediate care, 20 neuropsychiatric, and 320 minimal care. With one operating room of 2 operating tables, it is designed to provide in-theater treatment for patients not requiring further evacuation (e.g. during Desert Shield/Desert Storm) one field hospital had the primary mission of holding psychiatric patients. It is well suited to providing care for EPW.

Navy

The Navy provides third echelon care to Marine Corps and Navy forces using both afloat and ashore hospitals.

There are two hospital ships (TAH), the USNS COMFORT and USNS MERCY. Each has twelve operating rooms and a capacity of 500 hospital bed (80 intensive care, 20 recovery, 280 intermediate care, 120 light care) and 500 "overflow" or holding spaces.

The Navy can also deploy 100, 200, or 500 bed Fleet Hospitals as third echelon facilities. the 100-bed hospital has one operating room with two tables, on 12-bed postoperative care ward, and four 20-bed intermediate care wards. The 250-bed hospital has two operating rooms, 36 intensive care beds, and 220 acute care beds. The 500-bed hospital has three operating rooms, 84 intensive care beds, and 420 acute care beds.

Air Force

The Air Force provides its deploying forces with third echelon medical facilities using ATHs. In addition to the Coronet Bandage configuration described previously, ATHs can be configured as either 25 or 50 bed hospitals. Each provides full surgical stabilization capabilities. The 50-bed facility maintains the same hospital base as the smaller 25-bed unit, but it deploys with an additional 25-bed ward.

Fourth and Fifth Echelon Hospitals

Fourth echelon hospitals are located within the theater of operations. Usually they are in-place fixed facilities that operate as Army, Navy, or Air Force community hospitals or medical centers during peacetime. The unified commander may augment these facilities with DEPMEDS hospitals as well. Fifth echelon hospitals are only found in CONUS.

The primary Army fourth echelon deployable hospital is a general hospital. It has eight operating tables and 476 beds: 96 intensive care, 20 neuropsychiatric, 320 intermediate, and 40 minimal. Like the CSH, it provides stabilization for further patient evacuation and is well suited to serving as a primary conduit into an intertheater evacuation system. The Army's Field Hospitals can also be employed as fourth echelon facilities.

The Navy fourth echelon deployable hospital is a variation of the 500-bed Fleet

Hospital. Although it has three operating rooms like the third echelon 500-bed hospital, it has a different bed mix: 40 intensive care, 300 acute care, and 160 minimal care.

Table 2 summarizes the military system of echeloned care. Remember that, as capability to provide care increases, the mobility of the medical unit usually decreases.

Table 2. Echelon of Care Capabilities

Service	Echelon	Facility	Holding	Beds	OR Tables	Dental	
Army	I	BAS	-	-	-	-	
	II	FSB Med Co				Yes	
		MSB Med Co	120	-	-	Yes	
		Clearing Co	1200	-	-	Yes	
	III	MASH	-	32	4	-	
		CSH	-	316	8	Yes	
		Field	-	524	2	Yes	
	IV	General	-	426	8	Yes	
	Marine Corps	I	<u>BAS</u>	-	-	-	-
		II	C&C Co	60	-	2	(Dnt Bn)
Surg Spt Co			120	-	5	(Dnt Bn)	
Navy	I	DDs, FFs, etc	0-30	-	-	-	
	II	CVICVN	50	-	-	Yes	
		LHA	300	-	-	Yes	
		LHD	600	-	-	Yes	
		LPH	1200	-	-	Yes	
		Other Amphibs	4-22	-	-	Yes	
	III	Fleet Hosp	-	100-500	12	Yes	
		TAH	500	500	4-6	Yes	
	IV	Fleet Hosp	-	500	6	Yes	
	Air Force	I	None				
II		ATCIATH	6-14	-	-	Yes	
III-IV		ATH	-	14-50	-	Yes	

Determining Bed Requirements

There are several automated programs that can be used to determine how many hospital beds will be needed to support an operation. Most-like the Military Planning Module (MPM)-are quite technical, usually classified, and require specialized, sophisticated computer hardware. Such programs provide estimates based upon a mix of parameters including combat intensity, type of combat, service component, and type of unit. Often, these requirement computations are done by a medical planner at the unified command; however, in short-fused operations they might not be completed before a JTF is activated.

As might be expected, a recently assigned JTF Surgeon will often have neither the time, expertise, equipment, nor background information to effectively use these programs. Should a surgeon be required to compute maximum bed requirements without the use of these systems, a relatively easythough-generic way to do so is described in the Allied Command Europe (ACE) Directive 85-8, *Ace Medical Support Principles, Policies, and Planning Parameters*.

Estimating Medically Significant Casualties

Begin with casualty estimates provided by the JTF personnel officer (J1). These estimates will include multiple categories, such as killed in action (KIA), absent without leave (AWOL), and captured, that have no bearing upon medical holding and hospitalization requirements. Ignore these categories, and concentrate on those that do apply: wounded in action (WIA), battle stress (BS), and DNBI.

If the J1 has only aggregate casualty estimates, you can determine the medical casualty estimate by using the standard ACE percentage factors in Table 3.

Table 3. ACE Worst Case Casualty Estimates

	Applicable Casualty Categories			
	WIA	BS	D	NBI
% of Total Casualties	58%	17%	1.35%	0.05%
Returned to Duty Factor*	10%	90%	90%	40%
Hospitalized Factor	90%	10%	10%	60%

*Returned to Duty from Echelon I and II Facilities within 72 Hours

In each casualty category, the sum of the percentage returned to duty plus the percentage admitted to the hospital must equal 100% of the total number of casualties in that category. For example, if the aggregate casualty estimate for one day is 100, 58 of them will be wounded in action. Of those 58, 90% (or 52.2) will require admission to a hospital and 10% (or 5.8) will be returned to duty within 72 hours.

Estimating Echelon 111 Hospital Bed Requirements

Hospital bed requirements are directly related to the operational evacuation policy. The evacuation policy is primarily determined by the unified command in charge of the operation and limits the number of days casualties may remain in theater hospital beds before being evacuated. Note that the evacuation policy does not require casualties to remain in theater a certain number of days before evacuation, it sets a limit on the maximum time they may remain in theater hospital beds. For example, if the evacuation policy is set at seven days, patients whose anticipated hospitalization is greater than seven days should be evacuated as soon as possible; patients whose hospitalization is anticipated to be less than seven days should remain in theater and be returned to duty from third echelon facilities.

While evacuation policies differ between operations, an evacuation policy of seven days is typical for many limited operations that would require the activation of a JTF.

Table 4 can be used to estimate hospital bed requirements for an operation with a seven-day evacuation policy.

Table 4. ACE Bed Requirements Planning Factors

Medical Casualty Category	Evacuation Policy: 7 Days				
	Hospitalized Factor	RTD Factor	RTD Avg Stay (in days)	Non-RTD Multiplier	Non-RTD Av(in days)g Stay
WIA	.90	.01	4	.89	2
BS	.10	.00	0	.10	2
D	.10	.04	5	.06	2
NBI	.10	.01	4	.59	2

The following formulas are used to estimate total bed requirements.

Pre-Hostilities Bed Requirement*=
 $(D \times .04 \times 5) + (D \times .06 \times 2) + (NBI \times .01 \times 4) + (NBI \times .59 \times 2)$

During Hostilities Bed Requirement**=
 $(\text{Pre-Hostilities Bed Requirement}) + (WIA \times .01 \times 4) + (WIA \times .89 \times 2) + (BS \times .10 \times 2)$

*D = Total Number of D casualties, NBI = Total Number of NBI casualties

**BS = Total Number of BS casualties, WIA = Total Number of WIA casualties

Blood Management

No single medical function is more often misunderstood-by both line and medical officers-than that of blood and blood product management. Yet, the system is relatively simple. The ASBPO has the ultimate technical responsibility for managing the military's blood supply. Each service has its own blood management system to manage its own peacetime blood supply and mobilization requirements.

Operational Blood Management

Wartime, conflict, and joint operational blood management, however, are the responsibility of the unified CINC who is conducting operations. Generally, the Unified Command Surgeon establishes a JBPO to control the process. If needed to support multiple operations or regions, the surgeon also creates one or more AJBPOs. As part of the planning process, the surgeon's staff decides where the JBPO/AJBPOs will locate. Additionally, the surgeon's staff determines how many Blood Transshipment Centers (BTC) and Blood Supply Units (BSU) will be needed to ensure adequate stocks in theater. The command's Air Force component controls BTC operations, while BSUs may be provided by any service. The Unified Command Surgeon may direct one service's BSU(s) to provide theater or area support on a joint basis. This is especially likely when an established BSU is already within the JOA.

Blood requests generally originate at using activities. Although each service may handle the requests differently, the general rules of thumb are as follows:

No blood is available at echelon I units or facilities.

Only type O blood is available at echelon II units or facilities.

Multiple blood types are available at echelon III, IV, and V facilities.

Medical units that use blood, submit requests for replenishment to their supporting BSU. The BSU then issues the blood and, in turn, consolidates resupply requirements and forwards them to the JBPO/AJBPO. The JBPO relays these requirements to the ASBPO, and the ASBPO directs one of two of the Armed Services Whole Blood Processing Laboratories (ASWBPL) to ship the blood. Blood is transported by the most immediate means available-usually strategic aircraft-into theater. There, the blood is off-loaded at the theater BTC (TBTC), re-iced, and loaded on theater aircraft or other transport vehicles for shipment to the ordering BSU.

Blood Planning Factors and Formulas

Product Availability and Storage

The guidelines in Table 5 are based on Joint Pub 4-02, Doctrine for Health Service Support in Joint Operations.

Table 5. Product Availability and Storage

Echelon	Products	AB & Rh	Storage	Resupply From
I	None	Not Applicable	Not Applicable	Not Applicable
II	Red Blood Cells (RBC)	O +/-	50 units/refrigerator	Theater BSU
III	RBC	O,A,B +/-	480 units liquid 475 units frozen	Theater BSU
	Frozen Plasma Platelets	A,B,AB +/- O,A +/-	20 units	
IV	Same as above	Same as above	Same as above	External BSU

Transportation capacities and planning factors

Insulated blood shipping container (NSN 8115-00-935-9761)

- Empty weight: 9 lb.
- Cubic feet: 3.5
- Exterior dimensions: 19"x18"x16"
- Capacity
 - Non-frozen (weights include 14 lb. of ice)
 - 20 units whole blood: 44 lb.
 - 30 units packed cells: 41 lb.
 - 12 units whole blood + 12 delivery sets: 38 lb.
 - 20 units packed cells + 24 delivery sets: 40 lb.
 - 24 units fresh frozen plasma + 20 lb. of dry ice: 39 lb.
 - 56 recipient sets: 24 lb.

463L pallet (air pallet)

- Size: 108"x88"x4"
- Maximum loaded height: 96"
- Maximum loaded weight: 8,000 lb.
- Maximum blood shipment: 120 boxes (4' wide x 5' long x 6' high)
 - Whole blood: 2,400 units: 5,634 lb.
 - Packed cells: 3,600 units: 5,394 lb.
 - Frozen plasma: 2,880 units: 4,680 lb.

Intratheater aircraft delivery capacities

- UH-1 helicopter
 - Sling load: 1,200 blood units
 - Internal: 900 blood unit

- UH-60 helicopter
 - Sling load: 4,800 blood units
 - Internal: 1,500 blood units

- Parachute
 - Low-Altitude Parachute Extraction System (LAPES): 4,800 blood units
 - Cargo Delivery System (CDS): 1,440 blood units
 - Naval Emergency Airdrop CDS (NEACDS): 1,440 blood units

Consumption

Expect that 4 units of packed red blood cells, 0.08 units of fresh frozen plasma, and 0.04 units of platelets will be required for each WIA or DNBI hospital admission. For planning purposes, count each WIA/DNBI only once, not each time an individual would be seen as he/she moves through the medical echelons.

As Table 6 shows, blood types are not distributed equally throughout the population;

Table 6. Expected Blood Type Distribution in a Random U.S. Force Distribution

Blood Type	% of Population
O+	37%
A+	36%
B+	8%
AB+	3%
O-	7%
A-	6%
B-	2%
AB-	1%

Therefore, if in planning an operation you project 100 patients will be admitted to JTF hospitals (echelon 111) facilities, whole-blood requirements would be as shown in Table 7.

Table 7. Estimation of Whole-Blood Requirements per 100 admissions

Admissions	x	Type Occurrence	x	Units	=	Requirement
100	x	0.37 (O+)	x	4	=	148 O+
100	x	0.36 (A+)	x	4	=	144 A+
100	x	0.08 (B+)	x	4	=	32 B+
100	x	0.03 (AB+)	x	4	=	12 AB+
100	x	0.07 (O-)	x	4	=	28 O-
100	x	0.06 (A-)	x	4	=	24 A-
100	x	0.02 (B-)	x	4	=	8 B-
100	x	0.01 (AB-)	x	4	=	4 AB-
						Total 400 units

Patient Movement: Medical Evacuation and Regulating

Evacuation of casualties is one of the most critical tasks facing any JTF, and planning to ensure its systematic execution is a major priority for the JTF Surgeon. Certainly the evacuation effort will be keyed to the level and availability of treatment and hospitalization assets located within theater. Traditionally, somewhat medical evacuation has been planned within and around the respective roles and missions of the individual military services. However in today's world of small JTFs, it is likely that Marine Corps casualties may find themselves in an Army CSH, that Army casualties may receive second echelon care aboard a PCRTS, or that Air Force medical evacuators will transport barely stable patients from in-theater second echelon facilities directly to CONUS military medical centers. A thorough description of the military evacuation system is found in Joint Pub 4-02.2, Joint Tactics, Techniques, and Procedures for Patient Movement in Joint Operations.

Evacuation Flow and Medical Regulating

As a general rule, casualties are evacuated rearward, using assets of the next higher medical echelon. For example, casualty evacuation from point of injury to an echelon I treatment facility (e.g., BAS) is usually accomplished using battalion vehicles. Casualties are then typically evacuated from the BAS to a second echelon medical company or PCRTS by division ambulances or ship vessels/aircraft. Before this movement, or any subsequent evacuation, the originating facility must ensure that patients are stabilized within the limits of its ability. As a minimum, an open airway must be established, bleeding must be controlled, shock must be treated, and fractures must be splinted. For the most part, evacuation from the point of injury through echelon 11 flows automatically using established service channels. It is the responsibility of the component surgeons to ensure that a mechanism exists to exchange or replenish medical equipment (litters, litter straps, blankets, etc.) lost in the evacuation process. This is can be readily accomplished using property exchange points and ambulance backhaul.

The movement of patients from echelon 11 facilities to echelon III hospitals requires additional coordination. This coordination is accomplished for a service component surgeon by the component's Medical Regulating Office (MRO). MROs may set up a prearranged flow from specific echelon II facilities to specific echelon III hospitals; however, they must also monitor bed status to ensure that no hospital becomes overcrowded or underused. To preclude this, the service component surgeons may direct their MROs to coordinate all evacuations between echelon II facilities to echelon I11 hospitals. MROs must coordinate with the JPMRC/TPMRC if their hospitals are overcrowded or have patients who require treatment in another component's facilities. Evacuation from echelon II facilities to echelon III is usually provided by ground, rotary-wing, or fixed-wing assets assigned within the third echelon. Again, the JTF Surgeon must ensure service component surgeons have effective medical equipment exchange or replenishment systems.

To coordinate the evacuation of patients out of theater, MROs must coordinate with the JPMRC/TPMRC, which, in turn, coordinates evacuations out of theater. Although, patients traditionally are only evacuated out of theater after admission and treatment in an echelon III hospital, it may be necessary in Military Operations Other Than War (MOOTW) or

low-intensity conflict operations to evacuate wounded from an Echelon II facility directly to an echelon IV or V hospital after only minimal stabilization. If this is planned, it does not relieve regulating officers at all levels or their responsibilities. Unregulated patient movement is to be avoided.

The Aeromedical Evacuation System

Whenever possible, patients are evacuated rearward from echelon III hospitals using fixed-wing aircraft. When regulating and evacuation coordination is completed, echelon III hospitals are instructed to move their evacuees to a specific Mobile Aeromedical Staging Facilities (MASF), usually collocated at a theater airfield. It is the responsibility of the losing facility to ensure that patients arrive at the specified time since the MASF is not staffed, equipped, or supplied to care for patients for longer than several hours. Casualties are expected to have with them sufficient meals-ready-to-eat (MIRE), medications, and dressings to last the duration of their stay in the aeromedical evacuation system. Additionally they must be provided with Patient Movement Items (PMI) to include litters, blankets, and specialized medical equipment. The Air Force has been tasked to develop a PMI exchange system that will ensure replenishment of the property lost by medical facilities when they turn patients over to the aeromedical evacuation system.

Unless otherwise specified, the expected stay for patients in the intratheater aeromedical evacuation system is three days and five days for intertheater moves. Nursing services are provided in-flight, however if physician supervision is needed, it must be provided by the losing medical treatment facility. Generally, flights from echelon III facilities take no more than four hours and use C-9, C-130, C-141, or C-17 aircraft. If mission duration exceeds four hours, crew augmentation will likely be required and aircraft will be limited to C-141 or C-17.

The Theater Aeromedical Evacuation System (TAES) requires a mix of components to operate successfully. The bare essentials required for low-intensity conflict are as follows:

Aeromedical advance echelon (ADVON). The ADVON provides a cadre of about eight people to arrange initial support, begin establishing the theater aeromedical evacuation system, and provide planning advice to the supported commander

Support cell. The support cell augments the ADVON with about five more staff members to sustain operations.

Aeromedical evacuation control center/element (AECC/AECE). The AECC/AECE consists of up to 19 personnel and provides overall control of the aeromedical evacuation process. Whenever possible it makes maximum use of the on-scene airlift command and control system and equipment.

AELT. AELTs, consisting of six personnel, are located at key service component medical facilities and pass patient airlift requirements to the AECE/AECC at the same time that regulating information is passed by the MRO to the JPMRC.

MASF. A MASF is staffed with 39 personnel and provides patient holding capability at forward airfields. The facility is designed to hold up to 50 litter patients for short periods and can manage surges of up to 150 patients per day.

Aeromedical evacuation crews and a crew management cell. Sufficient crews and a crew management cell are assigned and located or staged at the AECC/AECE, MASF, forward operating base, or aircraft hangars.

As previously mentioned, aeromedical evacuation in MOOTW or low intensity conflict may be required directly from echelon II facilities. This may occur if there are limited medical treatment facilities in the JOA or if the evacuation policy is very short. Regardless, the basic tenants of the casualty regulating process remaining the same. Regulating of patients remains the responsibility of the MROs, JPMRC/TPMRC, and GPMRC. In these limited operations, the JPMRC/TPMRC may coordinate with the GPMRC to implement a planned medical regulation and evacuation flow to one or more specified destinations. Should aeromedical evacuation be required from a second echelon facility, prior stabilization is, of course, required. Again, as a minimum this includes airway, hemorrhage, shock, and fracture management. Sophisticated medical equipment will rarely accompany patients on such moves, and in-flight nursing will focus on minimizing the stress of the flight. If possible, mission duration should not exceed two hours.

Patient Preparation and Stabilization

In addition to requiring that support materials and PMI accompany patients during evacuation, the JTF Surgeon should ensure that components receive current Air Force guidelines and requirements. Excerpts from the 1st Aeromedical Evacuation Squadron Primer published in 1992 follow. (This information also may be found in the 23rd Aeromedical Evacuation Squadron's 1993 guide, *Aeromedical Evacuation: Contingency Operations Training*)

When entering the aeromedical evacuation (AE) system, patients should be stable enough to tolerate a trip of 1 to 24 hours with a high probability of not incurring complications. Degree of stabilization is dependent upon the operational situation. Theater missions are normally short; intertheater missions often last up to fourteen hours.

Abdominal injuries. Patients with abdominal injuries should be carefully evaluated by a general surgeon prior to flight. Use of nasogastric (NG) and/or rectal tubes should be considered in order to avoid distention frequently encountered with a nonfunctioning bowel.

Airway management. Endotracheal tubes should be used if the patient requires assisted ventilation. Balloon cuffs should be filled with normal saline instead of air, since gas expansion at altitude may cause tracheal damage.

Cardiac patients. Patients with severe cardiovascular disease usually have reduced tolerance to hypoxia, but they generally do well during flight if provided supplemental oxygen. Patients with recent myocardial infarctions (MI) can usually be moved by airlift with appropriate preparation and monitoring. Unstable patients

requiring cardiac monitoring in flight will be moved with a medical attendant, and the referring hospital must provide an AE-approved monitor. Note that patients should be at least ten days post MI and pain-free for five days before movement. If monitored, patients must be accompanied by a physician.

- Chest tubes. Chest tubes should be left in place. However, they will require a Heimlich valve and an underwater drainage system approved for AE use.
- Circular casts. Ideally, casts on recent fractures should be at least 48 hours old. All casts should be bivalved unless that would jeopardize the stability of the fracture.
- Colostomy patients. Extra colostomy bags should accompany the patient. Drainage is more profuse in flight because of gas expansion.
- Crutches. Patients using crutches should travel by litter because of safety factors involved in moving about on unstable aircraft. Crutches should accompany the patient and will be stowed aboard the aircraft.
- Dressing changes. As a rule, dressings will be reinforced but not changed during flight due to the relatively unclean inflight environment. Serious complications such as bleeding, increased pain, or swelling may require wound inspection. Routine dressings will be provided by the AE crews, however unique dressings or dressings for patients with excessively draining wounds should be provided by the losing hospital.
- Drug or alcohol abuse patients. These patients should undergo three to five days of detoxification before they are airlifted. An AE mission is not equipped to deal with acute withdrawal symptoms.
- Eye injuries. Penetrating eye wounds and/or surgery can sometimes introduce air into the globe of the eye, making it susceptible to oxygen deficiency and decreased barometric pressure. An altitude restriction is recommended for such cases except for patients with retinal detachments.
- Hematologic problems. Ideally, patients should have a preflight hemoglobin (HGB) of 10 grams and a hematocrit (HCT) of 25 percent. However, severely traumatized patients may have readings below those levels, and supplemental oxygen may be required. Note that HGB can be below 8.5 grams if the condition is chronic and stable and not due to bleeding.
- Intravenous (IV) fluids. Some patients not requiring IV fluids on the ground may require them during the flight due to the excessively dry aircraft environment. Catheter function should be assessed prior to transport to ensure the catheter is securely in place. Patients requiring antibiotics without fluid replacement should be switched to a heparin lock with heparin flushes provided. A three-day supply of IV fluids should accompany patients.

- Maxillofacial injuries. Due to the increased potential for nausea and vomiting, patients with wired, immobilized upper and lower jaws must have quick release mechanisms applied or have easy access to wire cutters. Premedication with an antiemetic should be considered, especially if the patient is prone to motion sickness.
- NG Tubes. NG tube insertion is recommended for patients with abdominal wounds, abscesses or obstructions, paraplegia or quadriplegia, or the potential for paralytic ileus. Limited suction capabilities are available, however the distal end of the tube may be left to gravity drain into a glove or bag.
- Neurological patients. The decreased partial pressure of oxygen in flight can cause increased intracranial pressure in head-injury patients. Low-flow oxygen and an altitude restriction should be considered. Noise, vibration, and thermal stresses can precipitate seizures, so adequate antiseizure medication levels should be established before flight. Patients should not perform the Valsalva maneuver if at risk for increased intracranial pressure. Preflight decongestants and polyethylene (PE) tube insertion should be considered, especially for comatose patients. Craniotomy patients should be at least 48 hours post surgery, awake, and alert. Subtle changes in neurological status, normally discovered during routine checks, are difficult to detect during flight; patients requiring close observation are poor candidates for aeromedical evacuation. Stable, comatose patients can be transported. Decreased humidity in flight dictates that patients with a loss of corneal blink reflex be provided with bilateral eye patches and eye ointment or liquid tears. Intraventricular monitoring cannot be accomplished during flights.
- Oxygen requirements. Supplemental (humidified) and emergency therapeutic oxygen are available on all AE missions.
- Psychiatric patients. Each severe psychiatric patient requires a litter, leather wrist and ankle restraints, and sedation. Each intermediate severity psychiatric patient requires a litter and sedation and must have wrist restraints available. All litter psychiatric patients must be searched, and all sharp objects, such as razor blades and pocket knives, must be removed.
- Stryker frames. These frames are generally indicated for paraplegia, quadriplegia, cervical fractures, severe burns, and those patients require total assistance. Patients having cervical injuries and wearing halo traction may be transported on a regular litter or they may be transported as ambulatory patients if stabilized. All components of the Stryker frame must be present to allow continuity of patient care and turning of patients throughout the evacuation.
- Thermal injuries. Thermal injuries should be covered with occlusive dressings. Escharotomies are required for full-thickness circumferential burns. Extra bum dressings for in-flight reinforcement should be provided. Limited infusion pumps and poor in-flight refrigeration capabilities preclude the use of total parenteral nutrition. MOW with necessary electrolytes should be ordered as a short-term substitute. Phosphorous injuries should be covered with saline-soaked dressings.

Large vesicles and bullae should be protected through use of large, bulky dressings.

- Tracheostomy patients. Tracheotomy tubes should be changed before flight and an extra tube should be sent with the patient.
- Traction patients. Free-swinging weights for traction are unacceptable for flight. Cervical traction is available via a Collins traction device, however a physician must be present when the device is applied.
- Urinary catheters. Indwelling catheters and drainage bags in use before transport should be left in place during evacuation or inserted preflight if urinary retention is a problem. The internal balloon should be filled with sterile, normal saline instead of air to avoid gas expansion during flight.
- Vascular Injuries. Vascular repairs should be clearly recorded. If casts are applied and they are less than 48 hours old, they should be bivalved and windowed over the injured area in case excessive swelling occurs during flight.
- Ventilators. Ventilator-dependent patients will be accompanied by a respiratory therapist or other appropriate medical attendant from the losing facility.

Evacuation vehicle and aircraft capacities

Table 8. Some Evacuation Vehicle and Aircraft Capacities

Vehicle or Aircraft	Litter Patients	Ambulatory Patients	Medical Crew
LAV 25 Lt armored vehicle			None
All ambulatory	4		Can cant' attendants
LAV L Lt armored vehicle			1 corpsman
All litter	4		
All ambulatory		7	
Mixed	2	4	
M113 ambulance			1 medic/driver
All litter	4		1 medic/Track Commander (TC)
All ambulatory		10	1 medic
Mixed	2	5	
M886/893 ambulance			1 medic/driver
All litter	4		1 medic
All ambulatory		8	
Mixed	2	4	

M996 ambulance				1 medic/driver
All litter	2			1 medic
All ambulatory			6	
Mixed	1		3	
M997 ambulance				1 medic/driver
All litter	4			1 medic
All ambulatory			8	
Mixed	2		4	
M1010 ambulance				1 medic/driver
All litter	4			1 medic
All ambulatory			8	
Mixed	2		4	
M880 series pickups				None
All litter	5			Can carry attendants
All ambulatory			8	
Mixed	2		2	
HUMMWV pickups				None
All litter	5			Can carry attendants
All ambulatory			8	
Mixed	2		2	
2.5 & 5 ton trucks				None
All litter	12			Can cant' attendants
All ambulatory			12	
Mixed	4		6	
44 passenger bus	12	or	37	None
				Can cant' attendants
Pullman railcar	32	or	48	Varies
NATO sleeping car	32	or	32	Varies
NATO ambulance car	24	or	30	Varies
NATO personnel car	21	or	21	Varies
German railbus	40	and	16	Varies
UH-1 Huey/Iroquois				1 medic on air ambulance
All litter	6			Otherwise, none
All ambulatory			9	Can carry attendants
Mixed	3		4	

UH-21 Ute				None
All litter	3			Can cant' attendants
All ambulatory			10	
Mixed	3		3	
UH-60 Blackhawk				1 medic on air ambulance
All litter	6			Otherwise none
All ambulatory			7	Can carry attendants
Mixed	6		1	
CH-46 Sea Knight				None
All litter	15			Can carry attendants
All Ambulatory			25	
Mixed	Varies		Varies	
CH-47 Chinook				None
All litter	24			Can cant' attendants
All ambulatory			36	
Mixed	Varies		Varies	
CH-53D Sea Stallion				None
All litter	24			Can cant' attendants
All ambulatory			SS	
Mixed	Varies		Varies	
V-22 Osprey				None
All litter	12			Can carry attendants
All ambulatory			24	
Mixed	Varies		Varies	
C-5 Galaxy				None
All ambulatory			70	Can cant' attendants
C-9A Nightingale				2 nurses
All litter	40			3 medical technicians
All ambulatory			40	
Mixed	15		24	
C-12 Huron				None
All litter	2			Can carry attendants
All ambulatory			8	
Mixed	2		4	
C-17A Globemaster	48	and	44	None
				Can carry attendants

C-130 Hercules				On medical flights
All litter	70			2 nurses
All ambulatory			85	3 medical technicians
Mixed	50		27	
C-141 Starlifter				On medical flights:
All litter	103			2 nurses
All ambulatory			147	3 medical technicians
Mixed	Varies		Varies	
AAV amphib aslt veh				1 corpsman
All litter	6			
All ambulatory			21	
Mixed	Varies		Varies	
LCAC landing craft	3	or	12	None Can cant' attendants
LCM-6 landing craft				2 corpsmen
All litter	30			
All ambulatory			80	
Mixed	Varies		Varies	
LCM-8 landing craft				3 corpsmen
All litter	50			
All ambulatory			200	
Mixed	Varies		Varies	
LCU landing craft				3 corpsmen
All litter	100			
All ambulatory			400	
Mixed	Varies		Varies	
LCVP landing craft				2 corpsmen
All litter	17			
All ambulatory			36	
Mixed	Varies		Varies	

Veterinary Medicine

Most military medical officers know that the Army is tasked with providing veterinary support to all the services. Most also know that the preponderance of veterinary work is focused upon the important task of maintaining the quality of food, and most remember that Army veterinary detachments provide health and dental care for all military working dogs. Unfortunately, in the heat of a deployment, few people remember the important role veterinarians can play in helping plan and execute a military operation.

Animal Disease Issues

In any operation, there are a variety of animal issues that must be addressed to protect the health of the command. These include the identification and control of zoonotic diseases, the management of stray animals, rabies surveillance and immunization, and the implementation of animal quarantine.

Food Inspection Issues

Even more important is the establishment and management of an effective food inspection program. There must be sufficient numbers of food inspectors at ration storage and breakdown points. The JTF Surgeon must not assume that only U.S. or NATO rations will be consumed. Despite medical recommendations to the contrary, the logistics staff officers (J4s, G4s, S4s, N4s, and C4s) at all levels have been known to order supplemental rations from regional vendors with disastrous results. Be prepared to hunt down, inspect, approve, and monitor the local sources if this occurs. Military veterinarians and veterinary technicians are trained to do this.

Veterinary Considerations During NEOs

Veterinary assistance is especially valuable when planning or conducting NEOs. Although the State Department generally prohibits NEO evacuees from taking their pets, this is not always the case. In 1991, during the evacuation of the Philippines, 10-20% of all evacuees were accompanied by their household pets, and approximately 2,400 animals were evacuated from the islands. Regardless of State Department guidance, the following are important considerations.

The CJTF determines whether pets remain with or are separated from their owners while evacuees await transportation. Both options have advantages and disadvantages.

When pets remain with their owners, pet and owner anxiety is reduced, less military manpower is expended on pet care, and the spread of disease can be minimized if pets are kept in carriers. On the other hand, this option requires increased sanitation inspections by preventive medicine teams and, if pets are not kept in carriers, can result in bites and scratches to evacuees.

When pets are separated from their owners, the animals are more easily controlled, and there is less chance of evacuees being bitten or scratched. However, additional manpower is required for pet care (estimated at one person for each 50 pets). In addition, anxiety among pets and owners increases, animals can become extremely noisy, and epidemics of diseases like kennel cough and canine distemper may occur in kennels. If animals are separated from their owners, they should be further separated (by 20 to 30 feet) by species and size. Additionally, animals must be given daily exercise and prescribed by the Animal Welfare Act.

Regardless of which option is chosen, each animal must be identified by its name and its owner's name. A patient bracelet can be fastened around the animal's neck; a large animal may require joining two bracelets. Additionally, all dogs should be collared, leashed, and muzzled. Short-nosed dogs and other animals should be confined to pet carriers. An animal defecation and urination area should be established downwind, downslope, and out of sight of evacuee waiting areas. A quarantine area should be established for animals showing signs of contagious or dangerous diseases. Animals that show signs of rabies should be euthanized regardless of owner consent. Owner consent should be obtained before euthanizing animals with other terminal diseases.

The CJTF also determines whether pets will be allowed to accompany evacuees out of the country. If pets will not be allowed to depart, consider asking owners if they would like their pets euthanized. If owners agree, or if they request their pets be euthanized, get their consent in writing. If pets that are abandoned or prohibited from evacuation pose a medical threat to the command, advise the CJTF. The JTF Surgeon should recommend that these animals be euthanized.

Veterinary Supply Planning Factors

Unique veterinary supplies and equipment must be brought into theater to support a NEO. The JTF Surgeon should consult a military veterinarian for detailed information, but until this happens consider the following information.

- For every 1,000 evacuees, 120 pets will be brought to the evacuation assembly area.
- 20 pets will consume approximately 70 pounds (9 cubic feet) of food daily. If commercial food is not available, military stress diet (MSD) food for military working dogs is available within the supply system and comes packaged for field use. However, MSD contains a heartworm prevention additive and may cause untoward effects in heartworm positive animals. There is no standard issue cat food. If commercial and supply system pet food is not available, tray rations may be substituted on a short-term basis.
- One cardboard pet carrier will be required per cat. 5% of those carriers will be destroyed each day, and all carriers will need to be replaced every four days.
- One collar and one leash will be needed for each dog. 3% of these collars and leashes will be destroyed daily. Muzzles will be required for 85% of the dogs; 15% of the dogs will not be able to be muzzled and will require pet carriers.

- Each pet will require a bowl to be used for both food and water.
- Assume the non-food supplies for 120 pets will weigh approximately 20 pounds and take up 9 cubic feet of space.

Medical Logistics

A common claim is that if military medical officers do not control medical supplies, the medical system will collapse. Just as potentially damaging is the neglect of medical logistics issues by surgeons and medical planners. Too often, a surgeon does not check on the medical supply status of the command until the system has broken down and a crisis has developed. While surgeons need not understand the technical intricacies of Military Standard Requisitioning and Issue Procedures (MILSTRIP), they must require that their staff distill raw supply data into useful management information that can help them determine how to best allocate potentially critical medical materiel.

Basic Concepts

A JTF Surgeon's ability to monitor and affect the workings of the medical logistics system will increase several fold if he/she understands basic terms and considerations.

Supply Classes

All medical officers should know the classes of supply.

Class I	Rations and food supplies
Class II	General supplies
Class III	Petroleum, oils, lubricants (POL)
Class IV	Engineer and constructions supplies
Class V	Ammunition
Class VI	Personal items
Class VII	Major end items (tanks, trucks, etc.)
Class VIII	Medical supplies
Class IX	Repair parts
Class X	Supplies for civil-military support

Occasionally, medical logisticians may refer to Class VIIIA and Class VIIIB. Class VIIIA is medical materiel. Class VIIIB is blood and blood products.

National Stock Numbers (NSN)

Most military medical material used during deployments is supplied through the Defense Logistics Agency (DLA). These items are often referred to as standard items, and each is identified by a 13-digit NSN (XXXX-XX-XXX-XXXX). The first four digits represent an item's federal supply class (FSC), a group of like items. The major medical FSCs are:

- 6505 - Drugs, biologicals, and reagents
- 6510 - Bandages
- 6515 - Medical supplies and equipment
- 6520 - Dental supplies and equipment

- 6525 - Radiological supplies and equipment
- 6530 - Surgical supplies and equipment
- 6532 - Medical clothing and linen
- 6540 - Ophthalmic supplies and equipment
- 6545 - Medical sets, kits, and outfits
- 6550/6600 - Laboratory supplies and equipment

The next two digits identify an item's country of origin. Each NATO country has been assigned at least one two-digit number. U.S. items are identified by the digits 00 or 01.

The last seven digit number is a unique serial number.

Critical Items

Surgeons should tell their Class VIII manager which items are critical to the success of the medical mission. It is appropriate to require that these supplies receive additional attention, intensive management, and continuous monitoring. While surgeons should not hesitate to insist upon daily updates of their supply status, they should also remember that when everything is a number one priority, nothing is a number one priority. When developing a list of critical supply items, the following candidates should be considered.

Anesthetics and oxygen

- General anesthetics, inhalational
- General anesthetics, injectable
- Local, regional, segmental anesthetics
- Oxygen and/or cylinders

Antibiotics and sulfa drugs

- Broad spectrum antibiotics, injectable
- Broad spectrum antibiotics, oral
- Penicillin Sulfonamides

Biologicals Anticoagulants

- Corticosteroids
- Hemostyptics
- Hyperimmunoglobulin
- Insulin
- Tetanus antitoxin
- Vaccines

Blood substitutes and infusion materiel

- Dextrose solutions and electrolytes
- Infusion sets
- Plasma expanders

Gastrointestinal remedies

- Antacids
- Antidiarrheal drugs
- Antidysenteric drugs
- Antiemetics

Hypnotics, sedatives, and tranquilizers

- Muscle relaxants

Narcotics, analgesics, and antispasmodics

- Analgesics, injectable
- Analgesics, oral
- Antispasmodics
- Morphine, injectable
- Morphine, substitutes

Nuclear, biological, and chemical (NBC) defense agents and drugs that affect the nervous system

- Analeptics
- Antihistamines
- Atropine
- Cardiotonics
- Nerve agent antidote
- Oximes
- Pyridostigmine bromine
- Vasoconstrictors

Surgical dressing materiel

- Bandage, gauze roller
- Burn dressings
- Casting materiel
- Cotton wool, absorbent
- First aid dressings
- Gauze, absorbent
- Splinting materiel

Surgical materiel, other

- Antiseptics
- Detergents
- Disinfectants
- Suture and ligature materiel

Syringes and needles

Often, an OPORD may specify that the JTF Surgeon has been given directive authority over JTF medical resources. This means that the surgeon may direct that priority of support be given to a particular medical activity or that medical resources be reallocated between activities. If this is the case, the JTF Surgeon must make any priorities known to the medical materiel manager. If this is not done, supplies will likely be issued on a first-come

first-served basis. If the JTF Surgeon has not been given directive authority and there is a need to direct the priority of the Class VIII effort toward certain units, the CJTF must do so.

Inventory Management

As a general rule, logisticians are reluctant to tie up warehouse space to store materiel unless there is a strong likelihood that the supplies will be requested and eventually used. There are a variety of models used to calculate stockage levels. All consider the time it takes to order and transport supplies, the amount of supplies that can be consumed in a given period, and the importance of maintaining a safety level in case the transportation or production system breaks down.

Consumption Rates

All logisticians are interested in estimated consumption rates of the commodities that they manage. They are interested in these rates, not to manage stock levels and ensure supplies are on hand (inventory management models do that), but rather to estimate transportation and storage space requirements.

As explained in FM 101-10-1, *Staff Officer's Field Manual: Organizational, Technical, and Logistical Data*, the generally accepted consumption rate for medical materiel (medical dental, veterinary, repair parts, and equipment) in ground operations is 1.22 pounds per person per day. However, this rate should be used with caution and only if current real data are not available since combat intensity, climate conditions, local sanitation, and other factors significantly influence consumption.

Consumption rates are also important when planning the support requirements of medical facilities. The Army Medical Department Center and School (AMEDDC&S) has developed the rates and formulas shown in Tables 9 and 10 for Army DEPMEDS hospitals. This information should be somewhat relevant for other service DEPMEDS facilities as well.

Table 9. Army DEPMEDS Facility Fuel Consumption Rates

Fuel (in gallons/day)		
Hospital Type	Gas	Diesel
MASH	197	471
CSH	754	1,605
Field	737	1,139
General	1,156	1,818

Table 10. Army DEPMEDS Facility Water Consumption Rates

	Rate (in gallons of water)
Patient Care and Consumption	17.25/patient/day
Surgery	13/case
Staff Hygiene and Consumption	10.25/staff member/day
Laundry	22/inpatient/day 10/outpatient/day 9.4/staff member/day
Decontamination	7/individual/event 380/major end item/event
Vehicles	0.5/vehicle/day (temperate climate) 1 /vehicle/day (hot climate)
Waste	10% of total water requirement

Medical Materiel Distribution

There are two distinct methods used to manage medical materiel replenishment. One way of providing replenishment stocks is to "push" a previously prepared block of Class VIII supplies, based upon estimated usage requirements, forward to a treatment facility. While all services use this distribution method, it is most frequently employed by the Navy and Marine Corps. These services refer to the prepackaged supply or equipment blocks as authorized medical allowance lists (AMAL) or authorized dental allowance lists (ADAL). Advantages to this method are that the requester spends little time generating paperwork and that prepackaged supplies can be rapidly shipped with minimal handling. Unfortunately, often entire packages of supplies are requested when only several components are actually needed. This can create a situation within a command where one facility has far more of an item than it can ever hope to use, while another unit may have none since warehouse stocks are depleted. Additionally, the relatively long time required to pack these blocks and the amount of warehouse storage space that they require often limit the number that are available and ready to ship.

The other method of managing medical materiel is line item accounting. In line item accounting, medical facilities and units use standard MILSTRIP procedures to request individual items of supply or equipment from the supply source. Advantages of this method, which is usually automated, are that it delivers critically needed supplies to users who actually need them. Additionally, it rapidly identifies trends of supply consumption and makes the medical materiel status of the command readily visible to surgeons and medical materiel managers. On the negative side, line item accounting requires more consumer expertise and attention. If medical facility staff members are inattentive or ignorant of MILSTRIP procedures, the system will bog down.

For many scenarios, the unified command will have tasked one of its service components to provide Single Integrated Medical Logistics Management (SIMLM). This means that that service's supply organizations are responsible for managing the Class VIII distribution system during the operation. If this is done, most likely the Army will be identified as the single medical logistics manager. The Army uses, almost exclusively, the automated line item accounting system called the Theater Army Medical Management Information System (TAMMIS) to manage medical supplies. If JTF service components expect to request and receive medical supplies and equipment from an Army Class VIII supply source, their medical facilities, units, and hospital ships need to understand MILSTRIP, line item accounting, and be familiar with TAMMIS or an automated inventory management system that is easily converted or modified to send requests in MILSTRIP format.

Medical Materiel Management Units

Only the Army and Marine Corps have Class VIII management units that deploy in support of military operations.

One medical logistics company is found in the supply battalion of each Marine Corps FSSG. These units also provide medical maintenance support.

The Army uses medical logistics battalions to provide medical supplies, medical maintenance, blood storage and distribution, and optical fabrication. Some of these battalions are tailored to provide forward corps level support. Each forward battalion can support a force of up to 160,000 and is capable of processing almost 150 short tons of medical materiel daily.

Unique Operational Considerations

It is incumbent upon military physicians and medical planners to be completely familiar with the operational employment (both doctrinal and de facto) of their services before being assigned to a JTF. Some special operational missions and considerations, especially MOOTW, are not necessarily intuitive.

Disaster Response

The military is often called on assist in civilian authorities in disaster relief operations both within the United States and in foreign countries. While the players in international and national disaster relief operations differ, medical considerations remain relatively constant. Rapid assessment of the medical needs created by the disaster is critical. Often, this task will have already been accomplished by local, state, or national agencies. Generally, military medicine can best support disaster relief efforts with preventive medicine detachments and environmental sanitation and vector control assistance. Treatment and surgical teams may be required primarily to support other non-medical JTF units, although care of the civilian population may be directed. If the operation is conducted in a foreign country, interpreters attached to medical units are valuable.

Myths and Erroneous Assumptions About Disasters

There are a considerable number of assumptions we often make about disasters that are far off the mark. For example:

- Local authorities and agencies are clueless; they drastically need military assistance in planning, coordinating, and supervising the disaster response effort. Not true. In the United States and other developed countries, local emergency management authorities know what they are doing, have plans, are more familiar with disaster response, and are more aware of what is required than any newly deployed military unit.
- The local population will be shocked into a helpless stupor or in a state of panic. Not true. Local agencies and the local population will most likely have recovery operations well underway by the time the first military assistance unit ever arrives.
- Lawlessness and looting will be prevalent. Not necessarily true. Don't confuse a disaster with a riot. Often times, physical destruction is such that there is no property left worth looting. More importantly, populations behave similarly before and after a disaster. If a population is law abiding before a disaster, it will be law abiding after a disaster. If a population is violent and lawless before a disaster, there is no reason to suspect that a disaster will reform the citizenry.
- The magnitude of the disaster is directly related to the magnitude of the incident. Not true. The 1989 Loma Prieta earthquake in San Francisco killed 62, injured 3,800, and left about 12,000 homeless. A much less violent earthquake in

Armenia the year before killed over 25,000, injured over 31,000, and left 514,000 homeless.

- Unusual disaster conditions, like floods, will create unusual medical problems, like snake bites. Not true. Epidemiological studies show no evidence of snake bite increases during floods (except in one region of India).
- All assistance- especially medical personnel, military hospitals, and medical supplies-is valuable. Not true- Assistance is only valuable if it is needed, timely, and competent.
- Dead bodies constitute an immediate threat to public health and require mass burials or cremation. Not true. Corpses resulting from a natural or terrorist disaster pose no great immediate public health risk.
- Death from exposure is a grave threat to victims trapped in rubble. Not true. Trapped victims may die from other injuries or suffocation, but exposure is not usually life threatening unless accompanied by wet and cold weather.
- Mass immunization campaigns are needed as epidemics, especially typhoid and cholera, will pose a serious threat to public health. Not true. Mass immunization campaigns are not needed and only divert medical resources from more immediate environmental and sanitation efforts.
- Military medical treatment facilities are urgently needed to treat casualties from the disaster. Possibly true, but emergency medical treatment units are needed most within four hours of the disaster and augmentation hospitals are needed most within seventy-two hours. It is unlikely many military medical units can be deployed in those time frames. Military medical treatment units are most valuable in caring for non-medical members of a JTF involved in disaster recovery efforts.

Disaster Morbidity and Mortality Information

Floods. By far, the major cause of death in floods is drowning. Other causes include combinations of drowning, trauma, and hypothermia. Less than 2% of survivors require medical care. Injuries are generally minor lacerations, rashes, and ulcers. Wounds are frequently contaminated, and there are a surprising number of bum injuries resulting from fires started when rushing water disrupts gas lines or fuel tanks.

Cyclones, typhoons, and hurricanes. 90% of all cyclonic fatalities are storm surge drownings. Other causes of death are housing collapse, mud slides, electrocution, penetrating trauma, and blunt trauma. Most fatalities occur among those less than 4 or over 70 years old. Most survivors are relatively unharmed. Injuries are generally minor and include lacerations, closed fractures, penetration wounds, and cyclone syndrome. Wounds are potentially highly contaminated. Most severe injuries are suffered by trailer park residents or occur during clean-up operations.

Tornadoes. Only 3% of tornadoes cause casualties, and only 4% of all tornado injuries are fatal. Fatalities are, however, 40 times higher among occupants of mobile homes. Causes of death are most frequently craniocerebral trauma and crushing wounds, but fewer than .2% of casualties suffer severe injuries. Most common injuries are lacerations and penetrating wounds. Wounds are usually highly contaminated, and sepsis is common even after surgical debridement.

Volcanoes. Almost 90% of fatalities are from the pyroclastic flow: suffocation from ash, steam scalding, and lethal gasses. 10% are from suffocation, drowning, and/or scalding in lahars or mud flows. Common injuries include eye and mucus membrane damage, respiratory system damage or disease exacerbation, trauma from collapsed buildings, severe burns, and dehydration. Major wound complications like gangrene, sepsis, and osteomyelitis are common.

Earthquakes. The primary causes of earthquake deaths are crushing injuries, exsanguination, and asphyxia from building collapses as well as drownings from tsunamis. 93% of all victims extricated from rubble within 24 hours survive. 95% of all deaths occur before extraction. Approximately 5% of casualties suffer critical injuries to include multiple fractures, head or internal injuries, hypothermia, organ failure, myocardial infarction. Most injuries, however, are minor: closed fractures and superficial trauma. Exacerbation of preexisting diseases (diabetes, hypertension, respiratory conditions) and mental health problems is common.

Manmade disasters may also cause significant casualties, though not in the same magnitude as natural disasters. The most potentially serious manmade disasters include hazardous materials spills or leaks, radiation accidents, terrorist bombings, and terrorist biological or chemical attacks.

Other Military Civic Actions

Today, more than ever before, U.S. forces may participate in military civic actions (MCA) to include international security assistance (SA), international humanitarian assistance (HA), foreign internal defense (FID), international internal development, international peacekeeping operations, or national military support to civil authorities (MSCA). While some of these operations (like FID and SA) have been performed by SOFs for years, others are relatively recent additions to the military's mission list.

The State Department is responsible for all international assistance. This includes the Military Assistance Program (MAP), which is administered by the Department of Defense, and internal development, which is the responsibility of the U.S. Agency for International Development (USAID). Any unified command may be tasked to support international MCA, and JTFs may be activated to accomplish these missions.

The Federal Emergency Management Agency (FEMA) is the executive agency responsible for coordinating responses to previously described national disasters and emergencies. If military assistance is needed, FEMA requests military help through the Department of Defense. The Army is the Defense Department's executive agent for MSCA. USACOM is the unified command responsible for executing national MSCA operations. The Army passes MSCA operational guidance and direction to USACOM

through the Chairman of the Joint Chiefs of Staff. USACOM will likely activate a JTF to accomplish any assigned MSCA missions.

All MCA, to include medical actions, require extensive coordination. Ideally, a CJTF coordinates any anticipated defense or development actions through the unified command. Ideally, but not necessarily, the unified CINC grants the CJTF direct liaison authority to accomplish his mission. From a medical perspective, for an international MCA operation to be effective, coordination must be conducted with the ambassador and country team (they have the lead), host nation cabinet officers, host nation medical agencies, USAID, SA forces, civil affairs offices, SOFs, and non-governmental organizations (NGO) in the region. Similarly, for national MSCA operations, coordination must be conducted with FEMA, state agencies, local municipalities, and volunteer organizations.

There are a number of potential MCA missions and operations in addition to disaster response. Some of them are:

Peacekeeping operations. Coordinating medical support of peacekeeping operations is difficult for several reasons. Peacekeeping forces are often an amalgam of units from multiple nations. Additionally, few of these deployed units may have any on-site medical support. Units assigned to peacekeeping operations are frequently rotated, and peacekeeping forces are often located in remote locations with minimal lines of communication. As a result, evacuation, hospitalization, and medical resupply are difficult at best. HSS to peacekeeping operations should focus on providing care to the peacekeeping force and not the local populace.

Refugee and migrant management. Recent decisions by the Department of Justice and the Immigration and Naturalization Service (INS) caused Cuban and Haitian refugees to be detained at military bases in the Caribbean and Latin America for over two years. Additionally, it is possible that, if a massive influx of refugees or migrants into the United States occurs, the military may be ordered to establish camps within CONUS. In these situations, camp health care is of immediate concern. Internees must be examined, immunized, and treated. Some will require quarantine. Hygiene and sanitation programs must be implemented. A medical supply system must be established, and coordination must be effected to permit patient transfer to medical facilities if the need arises. A JTF Surgeon cannot depend on promises from NGOs; many offer assistance and, while some offers are legitimate, others are looking for free publicity or an opportunity to advance a political agenda. JTF Surgeons must also be prepared to answer charges from immigrant rights groups that inadequate medical care is being provided. These are often made in attempts to force the INS to admit or parole internees into the United States. A JTF Surgeon who finds her or himself involved in migrant and refugee care should expect to keep the mission for a long time as court procedures between immigrant rights groups and the Justice Department may result in a long-term judicial stalemate.

Internal defense and development. Historically, most other medical FID, SA, and internal development missions have been nebulous. JTF Surgeons and medical commanders have often been given considerable latitude in developing

and executing their own missions. The temptation to set up sidewalk clinics and dispense pills should be avoided. Such an operation is a good photo opportunity, but does little to help the populace. These type of actions unrealistically increase expectations of local citizens and result in long-term resentment and hostility. It is far better to conduct an environmental sanitation or health education program that may be less visible but has long-term value. A good assessment of the health care status of the country or locality is the key to success. FM 8-42, *Health Service Support in Lowintensity Conflict*, has an excellent checklist. Assessments should include an examination of the general health of the population, especially nutrition, sanitation, endemic diseases, local primary care capabilities, infant mortality, the health care system, health care facilities, and medical staff competency. Operations should be tailored to the results of the assessment, and the host nation should be deeply involved as U.S. forces will probably not be around to follow up. If possible, medical actions should be integrated into broader programs. For example, training of medical practitioners can be combined with the renovation of a local clinic, or sanitation problems can be corrected in conjunction with road building projects. These types of medical MCA, while not highly visible, provide long-term benefits to both the local population and the local health care provider.

NBC Defensive Operations

In planning to conduct NBC defensive operations, the JTF Surgeon should make good use of the numerous publications each service produces and consider potential defensive measures. These defensive measures should include targeting key areas for surveillance, employing personal protective measures to help prevent exposure, and instituting detection strategies.

Casualty management. NBC operations can create large numbers of casualties who have been exposed to agents, toxins, radiation, or infections. That the exposure was deliberate does not alter the basic principles of treatment. Medical facilities should, however, be prepared to respond rapidly as casualty workload will likely peak quickly with little advance warning. As biological agents are transmissible between humans, they may cause problems for some time after any initial attack.

Preventive medicine. Preventive medicine specialists play an important role in assessing the medical threat posed by an NBC attack. They can identify potential health hazards and determine when to use immunizations, prophylaxis, and other prevention measures. Following any NBC attack, special emphasis should be placed upon food and water sanitation, hygiene, and common prevention measures that reduce the spread of disease. All food, except canned goods, must be thoroughly inspected before consumption. Insect and rodent control becomes more important following an NBC attack because vectors can serve as continuing sources of infection. Rigid enforcement of water sanitation and personal hygiene measures may reduce the attack's effects.

Patient evacuation. One of the first considerations following an NBC attack is to determine to what extent evacuation assets will be committed to contaminated areas. If uncontaminated personnel are to be sent into contaminated areas to evacuate casualties, some type of exposure guide must be established and followed. Every effort

should be made to limit the number of assets and people that become contaminated. The decontamination of patients before evacuation will help limit the spread of contaminants.

Patient decontamination and triage. Decontamination of patients serves two purposes. It reduces the amount of contaminant that is absorbed by the patient, and it protects the medical staff. Decontamination and triage of NBC casualties will obviously vary with the situation and the contaminant. Therefore, medical units should have a basic NBC mass casualty plan that can be modified to meet varying situations. . Decontamination should be decentralized to avoid a backup of casualties awaiting cleanup at a central location. Each medical facility must be able to establish its own decontamination area. As in any mass casualty situation, arriving casualties should be examined at a triage point and directed to the proper area. An additional triage decision in NBC mass casualty situations is whether patients have medical conditions that take priority over decontamination. Ninety percent of all decontamination can be performed without interfering with medical treatment, simply by removing a casualty's outer clothing and shoes.

Impact on HSS. Even if an NBC attack produces few fatalities, it may likely result in numerous casualties who require extensive treatment. Medical staffs will be taxed. Additionally, medical personnel may need to work in military operational protective posture (MOPP) gear which will reduce their effectiveness. Decontamination efforts may reduce staff available to perform medical functions. As a result, the unit will be considerably less effective.

Combat Search and Rescue (CSAR)

Although CSAR is not a medical mission, JTF Surgeons have an advisory role in ensuring adequate emergency medical services are provided during CSAR operations. A CSAR operations cell will be established, usually as part of the operations office (J3). It is important to remember that the primary role of Army air ambulances is to evacuate casualties or transport patients, not to conduct CSAR. CSAR is only a secondary mission for these valuable medical assets, and even then they must only conduct rescue missions after downed personnel have been accurately identified, located, and a medical need is established.

Special Operations

Special operations medicine is unique and presents multiple problems. Whenever possible, SOFs assigned to a JTF should be supported by the conventional medical system. Unfortunately, secrecy involved in planning special missions may preclude full coordination. Additionally, the nature of such missions may require a number of special considerations.

Direct Action (DA). DA missions are usually conducted considerable distances from friendly treatment facilities. SOF medics provide on-site emergency treatment. Dedicated medical evacuation aircraft are often not available to support these operations, so operational and logistical assets must be used to transport casualties.

Special Reconnaissance (SR). Medical support for SR missions may be even more austere. As aerial evacuation of casualties could compromise a mission, treatment is limited to self-aid, buddy-aid, or SOF medic support until the mission is completed and the team extracted. A thorough medical threat assessment should be conducted prior to inserting SOF on an SR mission.

Unconventional warfare. Unconventional warfare usually results in fewer battle casualties and a greater incidence of disease and malnutrition than does conventional fighting. Medical elements supporting resistance forces must be mobile and effective in both preventing disease and restoring casualties to duty. During combat operations, medical personnel may need to establish casualty collection points. Casualties may later be evacuated to a guerrilla base for further treatment. If the situation does not permit aeromedical evacuation, a clandestine evacuation system may need to be established to transport casualties to conventional medical facilities.

Foreign internal defense. FID operations focus on developing friendly relationships between indigenous populations, their government, and the United States. Providing medical services has historically proven to be one of the best methods to generate local support of a host nation government. Medical operations might include providing education in sanitary procedures, hygiene, preventive medicine, waste disposal, or improving the potable water supply. All medical operations should emphasize improving basic standards of living and health, involving the local population, and enhancing the abilities of local authorities.

Equipment. Equipment used in providing medical support in SOF operations is kept to the minimum needed to support emergencies and treat routine illnesses. Supplies and equipment may require special packing to make essential items immediately accessible, and pre-mission training should concentrate on emergency medical treatment, advanced trauma management, and treatment of mass casualties.

Geneva Conventions

There is no single Geneva Convention. Rather there are multiple conventions, treaties, and protocols that have come to be known as the Geneva conventions. The most recent articles from the Geneva convention of 1977 have not been signed by the United States. However, the United States subscribes to these conventions, and many have implications pertinent to the conduct of military medicine.

Protections and Care of Military Casualties and EPW

Wounded or sick members of any armed force must be respected and protected at all times. It is unlawful to attack or mistreat any friendly or enemy casualty. Wounded or sick enemy personnel must receive medical attention equal to that given friendly casualties. The only method of assigning treatment priority among friendly and enemy casualties is medical urgency. If casualties must be abandoned, they must be left, as far as military conditions permit, with medical personnel and supplies to provide for their care.

EPW casualties are entitled to equal protection and care. It is incumbent upon medical personnel to plan for the medical support of large numbers of EPW. An Army field hospital is an excellent type of unit to be used to provide for their care.

Combatants are required to search for and collect casualties from the battlefield. The extent of this effort is left to the discretion of the tactical commander. Combatants may ask civilians to collect and care for casualties, however this does not relieve military authorities of the responsibility to provide care.

Care Provided Civilians

Civilian casualties are not entitled to the same degree of care and protection as are combatants. Civilian casualty care is the responsibility of civilian authorities. However, if a military force begins providing treatment to civilians, it is then required to provide them with the same degree of care and protection it is required to provide military casualties.

An occupying force must cooperate with the civilian authorities to ensure a civilian medical system is maintained. Civilian medical facilities may not be used by an occupying force unless the needs of the civilian population have been met.

Medical supplies may not be taken from civilian sources unless the civilian requirements have already been met. If civilians in an occupied territory require medical supplies, the occupying force must provide them.

An occupying force must provide medical care to detained and interned persons.

Identification and Protection of Military Medical Personnel

Medical personnel who are exclusively engaged in medical duties or medical administration are entitled to special protection. While it is not a violation of the conventions for medical personnel to perform non-medical duties, they lose their protection by doing so. Once protected status has been lost, it cannot be regained. Medical personnel are provided the following protection.

- Medical personnel are protected from intentional attack, provided they are readily recognizable as medical personnel by the enemy while in a combat environment. This condition is met by the wearing of a white brassard bearing a red cross or red crescent.
- Medical personnel will receive the designation of "retained person" should they fall under enemy control. Although they are entitled to the same protections as EPW, retained persons "shall be retained only in so far as the state of health . . . and the number of prisoners of war require." However, the convention continues to state that retained persons may be required to perform nonmedical labor and may be held until a general repatriation of EPW is conducted.

Medical personnel who are exclusively engaged in medical duties may wear the white and red brassard described earlier and carry a medical personnel identification card. U.S. medical personnel carry DD Form 1934, Geneva Conventions Identity Card. Medical personnel not exclusively engaged in medical duties are not allowed to carry a medical identification card and may wear the brassard only when engaged in medical duties.

Identification and Protections of Medical Units, Facilities, Materiel, and Transports

Medical units, facilities, materiel, and transport are protected from intentional attack if they are clearly identifiable by the enemy in a combat environment. This can be accomplished by using large white and red flags, emblems, or panels. To be afforded this protection, medical units may not be positioned so that attacks against military objectives imperil their safety. Medical evacuation vehicles that also carry unwounded, non-medical personnel are not entitled to protection. Medical evacuation aircraft are only entitled to protection while flying on prearranged routes at prearranged times and heights. If there are no prearrangements, medical evacuation aircraft fly at their own risk.

Should medical materiel be captured by the enemy, it is to be used first to treat patients of the captured force. If there are no patients of the captured force, it may be used to treat other sick or wounded persons. Therefore, medical materiel is not to be destroyed to prevent it from being captured by the enemy. Captured medical facilities should continue to be used as medical facilities. Captured medical transports may be used for non-medical purposes if their distinctive markings are removed. A medical aircraft must obey an enemy summons to land; if examination reveals it is not engaged in harmful acts, it will be released to continue its medical mission.

Guidelines from the Geneva conventions grant medical units protected status, however to maintain protection they must identify themselves with very distinct and obvious markings. There are three symbols used to identify medical units: a red cross, a red crescent, or a red lion. These red emblems must be displayed on a white background to qualify as an obvious marking. Although the red Star of David is not officially recognized as a distinct medical symbol, it has been afforded protection in past conflicts.

Although the articles of the Geneva conventions state that the medical emblems "shall be displayed on the flags, armlets, and on all equipment employed in the Medical Service," it is generally accepted that there is no obligation for belligerents to mark units with the emblems. A commander, usually no lower than the grade of O6 in the U.S. forces, may order medical units and transports to be camouflaged to conceal the presence or strength of a force. Camouflaging a medical asset does not automatically result in its losing protected status. Protection is only lost if camouflaging the unit or transport prevents the enemy for recognizing its medical function. There is no such thing as a camouflaged red cross. When medical units and transports are camouflaged, their red cross emblems should be covered up or taken down. A black cross on an olive drab background is meaningless.

Loss of Protection by Medical Units and Facilities

Medical assets may lose their protection by engaging in acts harmful to the enemy. If a force suspects its enemy is using medical units to commit harmful acts, it must first warn the enemy to stop within a given period time period. Only after the time period has expired and the harmful acts have not ceased may the force open fire or attack. Examples of harmful acts include using a hospital to shelter combatants, siting a medical unit to impede an enemy attack, or mounting a crew-served weapon on an ambulance. Use of smoke and obscurants, like camouflage, is not considered a harmful act.

Conditions that Do Not Deprive Medical Assets of Protection

Medical personnel may be armed and may use arms in self-defense or in defense of their patients.

Medical personnel may perform guard duties for their own unit if non-medical personnel are not available.

Small arms and ammunition taken from casualties may be stored in medical facilities until they can be turned in to proper authorities.

Veterinary personnel and materiel may be collocated with medical personnel and materiel.

Medical personnel may care for civilian casualties.

Wounded, Sick, and Shipwrecked at Sea

Military personnel who are at sea and are wounded, sick, or shipwrecked, by whatever cause, are entitled to respect and protection. Should fighting occur on board a warship, the sick bay shall be respected and spared from fighting if possible. Sick bays lose their protected status if they are used to commit acts harmful to the enemy.

Hospital Ships

Hospital ships may not be attacked or captured, provided their names and descriptions have been provided to the enemy at least ten days before they are deployed. Hospital ships lose protection if they are used for any military purpose or commit acts harmful to the enemy. Possession of secret codes for radios or other means of communication by a hospital ship is considered an act harmful to the enemy.

Appendix A

Sample Annex Q, Medical Services, to a JTF OPORD

A JTF OPORD, developed using CAP, expands upon the orders, guidance, and directions provided by a unified command's OPORD. It is not however as comprehensive or detailed as an OPLAN developed in the deliberate planning process. Nevertheless, the standard medical Annex Q (described in detail in Joint Pub 5-03.2, *JOPES, Joint Operation Planning and Execution System, Volume II, Planning and Execution Formats and Guidance*) is an appropriate framework for an abbreviated JTF annex.

The JTF basic OPORD provides little more than general medical guidance and the theater evacuation policy. It further notes that detailed medical guidance will follow in a separately published Annex Q. To ensure rapid dissemination of these documents, they are usually published via a World Wide Military Command and Control System (WWMCCS) teleconference established for the operation.

This appendix contains a sample fictitious JTF OPORD with medical regulating and blood management appendices.

ANNEX Q TO CJTF 140 OPORD ????
MEDICAL SERVICES (U)

- (U) REFERENCES:
- a. The Geneva Conventions of 12 August 1949
 - b. DOD Directive 6480.4, 5 August 1996, ASBPO Operational Procedures
 - c. DOD Directive 6480.5, June 1972, Military Blood Program
 - d. Joint Pub 4-02, 26 April 1995, Doctrine for Health Service Support in Joint Operations
 - e. Joint Pub 4-02.2, 30 December 1996, Joint Tactics, Techniques, and Procedures for Patient Movement in Joint Operations
 - f. Joint Pub 6-04.1, October 1990, U.S. Message Text Format
 - g. CJCS Manual 6120.25, Tactical Command and Control Procedures for Joint Operations-Joint Operational Procedures
 - h. AR 40-3501BUMEDINST 6320.1 E/AFR 168-11, March 1990, Patient Regulating to and within the Continental United States
 - i. AR 40-562/NAVMEDCOMINST 6230.3/AFR 161-131CG COMDTINST M6320.4D, October 1988, Immunizations and Chemoprophylaxis
 - j. AFMIC DST-1810H-001-82, undated, Handbook of Diseases of Military Importance
 - k. AFMIC DST-?????_??_??, June 1990, ?????????? Area I
 - l. USCINCLANTINST 6320.3, 6 February 1990, U.S. Atlantic Command Contingency Joint Medical Regulating Program
 - m. USCINCLANTINST 6530.2, 23 July 1990, U.S. Atlantic Command Joint Blood Program
 - n. USCINCLANT OPORD 2000-YR, Basic Operation Order
 - o. USCINCLANT OPORD ???? , (Draft)
 - p. USCINCLANT CONPLAN 2730-YR, Integrated CONUS Medical Operations Plan

1. (U) SITUATION

a. (U) General

- (1) (U) Purpose. To provide a concept of medical operations, assign tasks, and provide guidance to ensure an effective health care system is established in support of the basic CJTF OPORD.
- (2) (U) Applicability. This annex is applicable to the following components of CJTF 140.

UNCLASSIFIED

- (a) (U) CTF 141 (Army Task Force)
 - (b) (U) CTF 145 (Navy Task Force)
 - (c) (U) CTF 146 (Air Force Task Force)
 - (d) (U) CTF 147 (Marine Task Force)
 - (e) (U) CJTF 148 (Special Operations Task Force)
 - (f) (U) CJTG 140.1 (Civil Affairs Task Group)
 - (g) (U) CJTG 140.2 (PSYOP Task Group)
- b. (U) Enemy Forces. Per annex B, reference o
- c. (U) Friendly Forces.
- (1) (U) Per annex A, reference o
 - (2) (U) In-place medical units and facilities
 - (a) (U) U.S. Naval Hospital, (USNAVHOSP) Roosevelt Roads
 - (b) (U) USNAVHOSP Guantanamo
- d. (U) Assumptions
- (1) (U) Sufficient medical personnel and units are available or will become available through service component augmentation and mobilization.
 - (2) (U) Adequate aeromedical evacuation support will be available throughout the operation.
 - (3) (U) Adequate Class VIII materiel is available and methods of resupply are adequate and maintained.
- e. (U) Limitations. None identified. *(If limitations are identified, this section will be classified.*
2. (U) MISSION. To provide health service support to units employed in accordance with the basic CJTF OPOD.

UNCLASSIFIED

3. (U) EXECUTIONa. (U) Concept of Medical Operations

- (1) (U) Transition. Concurrent with the activation of CJTF 140, CINCLANT has directed the U.S. Atlantic Fleet (LANTFLT) to expand USNAVHOSP Roosevelt Roads to mobilization contingency capacity if not precluded by enemy action. Services will begin deployment of additional units and augmentation of the CJTF 140 staff to include the JTF Surgeon's Office.
- (2) (U) Responsibilities. Medical service is a national and service responsibility. Allied forces operating in concert with this plan will be provided health care in accordance with existing or proposed agreements and evacuated to or returned to control of their appropriate national medical channels as soon as possible. Under the overall coordination of CJTF 140, medical support will be provided by subordinate commanders. U.S. military personnel will not be hospitalized in civilian medical facilities except in emergencies or as authorized by CJTF 140.
- (3) (U) Treatment and Hospitalization. CTF 141 ,CTF 145, and CTF 147 will provide echelon I and echelon 11 medical care to assigned personnel. CTF 141 and CTF 147 will provide echelon I and echelon II medical care to CTF 146, CJTF 148, CJTG 140.1, and CJTG 140.2 personnel within the combat zone on an area support basis. CTF 145 will provide afloat echelon II care to all CJTF 140 components during initial amphibious, airborne, or air assault operations. In-theater echelon III care will be provided to all CJTF 140 personnel by CTF 145 at USNAVHOSP Roosevelt Roads. Joint use of echelon III facilities is directed.
- (4) (U) Patient Movement. Casualty evacuation between echelon I and echelon II facilities is a task force responsibility. Rotary-wing transport is the preferred means of evacuation. CTF 146 will establish the Theater Aeromedical Evacuation System (TAES). Intratheater, fixed wing aeromedical evacuation between echelon II and echelon III facilities will be required. CTF 146 will coordinate intertheater evacuation of patients to CONUS with Transportation Command (TRANSCOM) and the Theater Patient Movement Requirements Center (TPMRC). Coordination of transport of evacuees to/from CTF 146 mobile aeromedical staging facilities (MASF) is the responsibility of the losing/gaining medical facility. Casualties will be stabilized in accordance with references d and e.

UNCLASSIFIED

(5) (U) Host Nation Support. There are no host nation medical support agreements.

(6) (U) Adjunct Medical Support

(a) (U) EPW, CIs, DETs. EPW casualties, civilian internees(CI), and detained persons (DET) will be treated and cared for per reference a. CTF 141 will provide echelon III medical care. Civilian casualties will be transferred to civilian facilities as soon as their conditions permit. Local civilian medical treatment facilities, described in detail in reference k, are as follows:

Medical Center, QQQQQQ. Group of five specialized hospitals with full range of services.

TTTTTT District Hospital. General surgery, orthopedics, internal and emergency medicine.

VVVVVV City Hospital. Acute care center with limited surgery.

(b) (U) Formerly Captured U.S. Military Personnel. CTF141 will provide echelon I and echelon II care at processing centers for formerly captured U.S. military personnel if such centers are established. Regulation and movement of formerly captured U.S. military personnel requiring echelon III care will be coordinated by the TPMRC on a case-by-case basis.

(c) (U) Search and Rescue. CJTF 140 subordinate commanders will ensure search and rescue operations are supported medically. If not engaged in patient evacuation or movement, rotary-wing aeromedical aircraft may be used to rescue casualties in low or medium threat environments, provided location and casualty status are known.

(d) (U) Noncombatant Evacuation Operations. CJTF 140 subordinate commanders will provide medical care to noncombatant evacuees as required. Assume three percent of noncombatant evacuees will require some type of medical care.

(e) (U) Civil Affairs. All medical units must be prepared to care for civilian refugees in accordance with the provisions of reference a. Independent medical civic action programs are prohibited.

UNCLASSIFIED

UNCLASSIFIED

- (7) (U) Joint Blood Program. Blood management will be in accordance with references b, c, d, m, and n. Per reference o, CJTF 140 will establish a Joint Blood Program Office (JBPO) and coordinate blood management with the Armed Services Blood Program Office (ASBPO). CTF 145 will establish a blood supply unit capable of supporting all CJTF 140 medical units. The JBPO will disseminate additional blood management policies and procedures when available.
- (8) (U) Preventive Medicine. CJTF 140 subordinate commanders will maintain vigorous preventive medicine programs. Programs will be conducted in accordance with pertinent service and component directives and regulations. Deploying personnel should be immunized in accordance with reference i. Immune serum globulin immunizations are required for personnel operating in the vicinity of St. Alexander.
- (a) (U) The following is a brief summary of medical threat information found in references j and k.
- (i) (U) The greatest threat is from water and foodborne gastroenteric infections such as diarrhea, acute viral hepatitis, and typhoid fever. Local food is considered contaminated and should not be consumed. Local water is not potable and should be treated before drinking. Risk of ciguatera fish toxin poisoning exists. Consumption of large reef fish like grouper, snapper, dolphin, and barracuda is prohibited.
- (ii) (U) Risk of influenza and other acute respiratory infections is highest from October through January. Dengue virus has occurred within the region. Malaria is not endemic. Leptospirosis is present in low-lying flood zones with large rat populations; risk can be minimized by avoiding prolonged contact with stagnant water or wet soil in these areas. Trichuriasis, ascariasis, and ancylostomiasis have been reported.
- (iii) (U) Sexually transmitted diseases, including syphilis and gonorrhea are moderately endemic. Human immunodeficiency virus (HIV) appears low. Sexual contact with local civilians is prohibited.

UNCLASSIFIED

UNCLASSIFIED

- (b) (U) All unusual incidence of disease will be reported to the JTF 140 Surgeon. The JTF Surgeon will forward requests for special assistance in handling actual or potential preventive medicine problems to the U.S. Atlantic Command (USACOM) Surgeon
- (9) () Theater Evacuation Policy. The evacuation policy is A days for noncombatant evacuation operation (NEO) patients and B days for military personnel. CJTF 140 subordinate commanders may recommend changes to the evacuation policy. (Theater evacuation policies are normally classified.)
- (10)(U) Medical Regulating. Medical regulating will be in accordance with references e, g, h, 1, and p. CJTF 140 will establish a TPMRC to coordinate patient movement with subordinate command MROs and the Global Patient Movement Requirements Center (GPMRC). The TPMRC will coordinate the pre-regulation of patients directly to a single military facility in the vicinity of Pope Air Force Base (AFB), North Carolina. The TPMRC will disseminate additional regulating policy and procedures when available.
- (11)(U) Ancillary support
- (a) (U) Dental Services. Dental support is a service component responsibility. CTF 141 and CTF 147 will provide dental care to CTF 146, CJTF 148, CJTG 140.1, and CJTG 140.2 personnel within the combat zone on an area support basis. Care provided will be limited to treatment necessary to relieve suffering and allow continued mission performance.
- (b) (U) Veterinary Services
- (i) (U) Limited veterinary services will be provided by CTF 141. CJTF140 subordinate commanders should address specific veterinary support requests to the JTF140 Surgeon for coordination.
- (ii) Pets will not be allowed to accompany NEO evacuees. Additionally, the following animals are associated with the indicated diseases and are prohibited from entry into CONUS.

UNCLASSIFIED

UNCLASSIFIED

<u>Animal</u>	<u>Associated Diseases</u>
Cattle	Brucellosis, tuberculosis, toxoplasmosis
Sheep	Brucellosis, toxoplasmosis
Goats	Brucellosis, toxoplasmosis
Swine	Toxoplasmosis, trichinosis
Chickens	Toxoplasmosis, salmonellosis
Cats	Toxoplasmosis, rabies
Dogs	Rabies
Raccoons	Rabies
Parrots	Psittacosis
Sea Turtles	Salmonellosis

(12)(U) Other Requirements

- (a) (U) Subordinate task forces without assigned medical staffs will request augmentation through service channels. Medical planning will be provided by service component headquarters until augmentation is accomplished.
- (b) (U) Health service support will be provided to indigenous civilians engaged in CJTF 148 special or unconventional operations.
- (c) (U) Mortuary affairs are not a medical function. However, task force surgeons will assign responsibility for death certificate completion and identification of remains consistent with guidance to be published in Annex D of this OPORD.

b. (U) Tasks

(1) (U) Multiple Task Force Responsibilities. CTF 141, CTF 145, CTF 147

- (a) (U) Provide treatment to allied and indigenous personnel in U.S. facilities and return them to national control at the earliest possible time.
- (b) (U) Promptly notify the JTF 140 Surgeon of the initial location and subsequent displacements of echelon 11 and echelon III medical units and facilities.
- (c) (U) Provide guards for EPW patients from non-medical personnel assigned to nonmedical units.
- (d) (U) If required, provide medical support and processing for NEO evacuees.

UNCLASSIFIED

UNCLASSIFIED

(2) (U) Task Force and Task Group Specific Responsibilities

(a) (U) CTF 141

- (i) (U) Provide echelon I and echelon II medical support to Army units and CTF 146, CJTF 148. CJTG 140.1, and CJTG 140.2 personnel on an area support basis.
- (ii) (U) Provide veterinary service support to all CJTF 140 components.
- (iii) (U) Provide logistics support to TAES elements on an area support basis.
- (iv) (U) If directed, provide aeromedical ambulance support to other CJTF 140 components.
- (v) (U) Plan for and, if directed, provide medical support to formerly captured U.S. military personnel.
- (vi) (U) Plan for and, if directed, deploy echelon III medical units in support of Army forces and EPW.
- (vii) (U) Plan for and, if directed, establish a blood supply unit capable of supporting all CJTF 140 medical units.

(b) (U) CTF 145

- (i) (U) Provide internal echelon I and echelon II medical support to Navy forces.
- (ii) Provide augmented echelon II medical support for CJTF 140 subordinate components as designated casualty receiving and treatment ships during initial amphibious, airborne, and/or air assaults.
- (iii) (U) Provide echelon III medical support for CJTF 140 subordinate components at USNAVHOSP Roosevelt Roads.
- (iv) (U) Establish a blood supply unit capable of supporting all CJTF 140 medical units.
- (v) (U) Provide logistics support to TAES elements on an area support basis.

UNCLASSIFIED

UNCLASSIFIED

(vi) (U) If directed, coordinate sea evacuation of medical casualties.

(c) (U) CTF 146

- (i) (U) Coordinate Air Force combat zone medical requirements with CTF 141 and CTF 147.
- (ii) (U) Establish and operate the TAES. Identify logistics support requirements to CTF 141, CTF 145, CTF 147.
- (iii) (U) Coordinate intertheater aeromedical evacuation with TRANSCOM.

(d) (U) CTF 147

- (i) (U) Provide echelon I and echelon II medical support to Marine units and CTF 146, CJTF 148, CJTG 140.1, and CJTG 140.2 personnel on an area support basis.
- (ii) (U) Provide logistics support to TAES elements on and area support basis.

(e) (U) CJTF 148. Coordinate echelon I and II medical support requirements with CTF 141 and CTF 147.

(f) (U) CJTG 140.1. Coordinate echelon I and II medical support requirements with CTF 141 and CTF 147.

(g) (U) CJTG 140.2. Coordinate echelon I and II medical support requirements with CTF 141 and CTF 147.

c. (U) Coordination Instructions

- (1) (U) Coordination between component surgeon's staffs is directed.
- (2) (U) Coordination between component surgeon's staffs and supporting commands or agencies is directed as specified within this annex.

4. (U) ADMINISTRATION AND LOGISTICS

a. (U) Medical Logistics

UNCLASSIFIED

UNCLASSIFIED

- (1) (U) Medical logistics, to include medical supply management, materiel accountability, optical fabrication, and biomedical maintenance, is a service responsibility.
 - (2) (U) Resupply will be through normal service channels using previously established procedures.
 - (3) (U) Per reference o, the JTF 140 Surgeon may identify critical medical supplies and direct cross task force leveling.
- b. (U) Reports. Medical reports will be formatted and submitted in accordance with references f, g, and n. CTF 141, CTF 145, and CTF 147 will submit medical status (MEDSTAT) reports to reach the JTF 140 Surgeon by 1200Z with cutoff times of 0600Z.

5. (U) COMMAND AND CONTROL

a. (U) Command

- (1) (U) Command of medical units rests within normal operational channels. Surgeons are the principal medical advisors to their commanders.
- (2) (U) Per reference o, the JTF 140 Surgeon exercises directive authority for CJTF 140 over assigned medical resources and will ensure their effective use to meet the JTF's health care mission.

b. (U) Medical Communications

- (1) (U) Routine coordinating communications between the JTF 140 Surgeon and subordinate component surgeons will be by secure telephone whenever possible. Alternate means of communication are World Wide Military Command and Control System (WWMCCS) teleconference and Automated Defense Information Network (AUTODIN) message.
- (2) (U) Official plans, orders, reports, and requests (except for blood management messages) will be passed by both WWMCCS teleconference and AUTODIN message. As the ASBPO does not have WWMCCS access, blood management messages will be passed telephonically and by AUTODIN message.
- (3) (U) CJTF 140 subordinate component surgeons will coordinate medical communications internal to their commands.

UNCLASSIFIED

Appendices:

- 1 - Joint Medical Regulating System
- 2 - Joint Blood Program
- 3 - Hospitalization (not used)
- 4 - Patient Evacuation (not used)
- 5 - Returns to Duty (not used)
- 6 - Population at Risk (not used)
- 7 - Medical Logistics (not used)
- 8 - Preventive Medicine (not used)
- 9 - Command, Control and communication (not used)
- 10 - Host Nation Support (not used)
- 11 - Medical Sustainability Assessment (not used)

APPENDIX 1 TO ANNEX Q TO CJTF 140 OPORD XXXX

JOINT MEDICAL REGULATING SYSTEM (U)

(U) REFERENCES:

- a. Joint Pub 4-02, 26 April 1995, Doctrine for Health Service Support in Joint Operations
- b. Joint Pub 4-02.2, 30 December 1996, Joint Tactics, Techniques, and Procedures for Patient Movement in Joint Operations
- c. Joint Pub 6-04.1, October 1990, U.S. Message Text Format
- d. CJCS Manual 6120.25, Tactical Command and Control Procedures for Joint Operations-Joint Operational Procedures
- e. AR 40-3501BUMEDINST 6320.1 E/AFR 168-11, March 1990, Patient Regulating to and within the Continental United States
- f. USCINCLANTINST 6320.3, 6 February 1990, U.S. Atlantic Command Contingency Joint Medical Regulating Program
- g. USCINCLANT OPORD 2000-YR, Basic Operation Order
- h. USCINCLANT OPORD ?????, (Draft)
- i. USCINCLANT CONPLAN 2730-YR, Integrated CONUS Medical Operations Plan

1. (U) PURPOSE. To provide the concept of operations, assign tasks, and provide guidance for medical regulating activities in support of the basic JTF OPORD.

2. (U) CONCEPT OF OPERATIONS

- a. (U) The Joint Task Force (JTF) 140 Surgeon has established the Theater Patient Movement Requirements Center (TPMRC) on board the USS MOUNT WHITNEY. The TPMRC will coordinate and communicate regulating requirements directly with CJTF 140 subordinate component Medical Regulating Officers (MRO) and the Global Patient Movement Requirements Center (GPMRC). Information copies of all TPMRC messages, reports, and requests will be provided the U.S. Atlantic Command (USACOM) Surgeon.
- b. (U) The TPMRC will operate in accordance with references a, b, e, f, g, h, and i.
- c. (U) Noncombat evacuation operation (NEO) patients have been preregulated to Womac Army Medical Center, Fort Bragg, North Carolina.

UNCLASSIFIED

- e. (U) Military patients have been pre-regulated to Womac Army Medical Center, Fort Bragg, North Carolina, provided
 - (1) (U) The patient's prognosis for return to duty exceeds B days.
 - (2) (U) The patient's condition is stable enough to survive up to eight hours of flying time until final destination.
- f. (U) All other patients will be regulated to USNAVHOSP Roosevelt Roads.
- g. (U) As a minimum, bleeding and shock must be controlled, an airway must be established, and fractures must be splinted before a patient is transferred to a Mobile Aeromedical Staging Facility.
- h. (U) Enemy prisoners of war (EPW), civilian internees (CI), and detained persons (DET) will not be regulated to CONUS without prior approval of the USACOM Surgeon.
- i. (U) Patients arriving at Womac Army Medical Center will be reassessed and if necessary, re-regulated by the GPMRC.

3. (U) COMMUNICATIONS

- a. (U) All medical regulating messages will be in the formats specified by references c and d.
- b. (U) Medical regulating messages will be sent unclassified.
- c. (U) The TPMRC has been given direct liaison authority with the GPRMC, MROs, and all other agencies involved in patient movement.
- d. (U) Secure voice is the preferred method of TPMRC coordinating communications. World Wide Military Command and Control System (WWMCCS) teleconference and Automated Defense Information Network (AUTODIN) message may also be used. Medical regulating requests and reports will be sent by both WWMCCS teleconference and AUTODIN message.
- e. (U) The TPRMC plain language address directory (PLAD) designation is RRRRRRRRRRRR.

UNCLASSIFIED

APPENDIX 2 TO ANNEX Q TO CJTF OPORD XXXX
JOINT BLOOD PROGRAM (U)

(U) REFERENCES:

- a. DOD Directive 6480.4, 5 August 1996, ASBPO Operational Procedures
- b. DOD Directive 6480.5, June 1972, Military Blood Program
- c. Joint Pub 4-02, 26 April 1995, Doctrine for Health Service Support in Joint Operations
- d. Joint Pub 6-04.1, October 1990, U.S. Message Text Format
- e. CJCS Manual 6120.25, Tactical Command and Control Procedures for Joint Operations-Joint Operational Procedures
- f. USCINCLANTINST 6530.2, 23 July 1990, U.S. Atlantic Command Joint Blood Program
- g. USCINCLANT OPORD 2000-YR, Basic Operation Order
- h. USCINCLANT OPORD ?????, (Draft)

1. (U) PURPOSE. To provide the concept of operations, assign tasks, and provide guidance for the management, storage, and distribution of blood and blood products in support of the basic JTF OPORD.

2. (U) CONCEPT OF OPERATIONS

a. (U) General

- (1) (U) The Joint Task Force (JTF) 140 Surgeon has established the theater Joint Blood Program Office (JBPO) on board the LISS MOUNT WHITNEY. The JBPO will coordinate and communicate requirements directly with the Armed Services Blood Program Office (ASBPO) and the CJTF 140 subordinate component Blood Transshipment Center (BTC) and Blood Supply Unit (BSU). Information copies of all JBPO messages, reports, and requests will be provided the U.S. Atlantic Command (USACOM) Surgeon.
- (2) (U) Activation of area JPBOs (AJBPO) is not anticipated.
- (3) (U) The JBPO will operate in accordance with references a, b, c, f, g, and h.

UNCLASSIFIED

- b. (U) In-theater sources. None. However, there is refrigerated space for 1,000 units of liquid-packed red cells at USNAVHOSP Roosevelt Roads.
- c. (U) Distribution of blood and blood supplies.
- (1) (U) CTF 145 will establish a BSU at USNAVHOSP Roosevelt Roads.
 - (2) (U) CTF 146 will establish a BTC at Hunter Army Airfield, Georgia.
 - (3) (U) Blood and blood components will be transported by the most expeditious means, usually Transportation Command (TRANSCOM) airlift from the Armed Services Whole Blood Processing Laboratory (ASWBPL) at McGuire Air Force Base (AFB), New Jersey to the CTF 146 BTC.
 - (4) (U) CTF 146 airlift will move blood and blood products from the BTC to the CTF 145 BSU.
 - (5) (U) All CJTF 140 subordinate components with echelon II or echelon III medical facilities in theater will:
 - (a) (U) Ensure medical units deploy with sufficient blood and blood products to meet internal requirements until the CTF 145 BSU is operational.
 - (b) (U) Direct all requests for blood and blood products to CTF 145 once it becomes operational.
 - (c) (U) Submit daily blood reports (BLDREP) to the CTF 145 BSU by 0200Z with cutoff times of 2359Z.
 - (6) (U) The CTF 145 BSU will:
 - (a) (U) Submit daily BLDREPs to the JBPO to arrive by 0400 with cutoff times of 2359Z.
 - (b) Notify components of incoming blood shipments using blood shipment reports (BLDSHIPREP).

UNCLASSIFIED

3. (U) COMMUNICATIONS

- a. (U) All blood management messages will be formatted specked in references d and e.
- b. (U) Blood management messages will be sent unclassified.
- c. (U) The JBPO has been given direct liaison authority with the ASBPO, the BTC, the BSU, and all other agencies involved in blood management and movement.
- d. (U) Secure voice is the preferred method of JBPO coordinating communications. ASBPO does not have access to World Wide Military Command and Control System (WWWCMCCS) teleconferences. Blood management requests and reports will be sent by both secure voice and Automated Defense Information Network (AUTODIN) message.
- e. (U) The TPRMC plain language address directory (PLAD) designation is FFFFFFFFFF.

Appendix B References

Department of Defense Publications

DOD Directive 3025.1, Military Support to Civil Authorities (MSCA).
DOD Directive 6025.3, DOD Immunization Program for Biological Warfare Defense
DOD Directive 6480.4, ASBPO Operational Procedures.
DOD Directive 6480.5, Military Blood Program.
DOD Instruction 6000.11, Medical Regulating
DOD Instruction 6205.2, Immunization Requirements

Joint Publications and Documents

CJCS Manual 6120.25, Tactical Command and Control Procedures for Joint Operations Joint Interface Operational Procedures.
JCS Message 2411202 Jan 89, Blood Product Planning Factors and Class8B Non-Unit Cargo Record TPFDL.
Joint Pub 1, Joint Warfare of the U.S. Armed Forces.
Joint Pub 1-01.1, Compendium of Joint Publications
Joint Pub 3-00.1, Joint Doctrine for Contingency Operations.
Joint Pub 305, Doctrine for Special Operations.
Joint Pub 3-07, Joint Doctrine for Military Operations Other Than War
Joint Pub 3-07.3, Joint Tactics, Techniques, and Procedures for Peacekeeping Operations.
Joint Pub 3-50, National Search and Rescue Manual.
Joint Pub 3-50.2, Doctrine for Joint Combat Search and Rescue.
Joint Pub 357, Doctrine for Joint Civil Affairs.
Joint Pub 4-01.1, Airlift Support to Joint Operations.
Joint Pub 4-02, Doctrine for Health Service Support in Joint Operations.
Joint Pub 402.2, Joint Tactics, Techniques, and Procedures for Patient Movement in Joint Operations.
Joint Pub 5-00.2, Joint Task Force Planning Guidance.
Joint Pub 5-03.2, JOPES: Joint Operation, Planning, and Execution System, Volume II, Planning and Execution Formats and Guidance.
Joint Pub 6-04.1, U.S. Message Text Formatting.

Multiservice Publications and Documents

AFR 168-11, AR 4J-350, BUMEDINST 6320.1E Patient Regulating to within CONUS.
AR 40562INAVMEDCOMINST 6230.3/AFR 161-131CG COMDTINST M6230.4D Immunizations and Chemoprophylaxis.
FM 8-33, NAVMED P-5038, Control of Communicable Diseases in Man.
TM-8-227-11, NAVMED P-512, AFR 168-3, Operational Procedures for Military Blood Donor Centers, Armed Services Whole Blood Processing Laboratory, and Blood Transshipment Centers.

Service Publications and Documents

Air Force

1st Aeromedical Evacuation Squadron, "Contingency Aeromedical Evacuation: A Primer," 1992.
23rd Aeromedical Evacuation Squadron, "Aeromedical Evacuation Contingency Operations Training," 1993.

Army

AMEDDC&S, "Deployable Medical Systems (DEPMEDS) Hospital/Medical Unit Organizational, Technical and Logistical Planning Data," 1990.
AMEDDC&S, "MF2K Medical Units," 1992.
Department of the Army Memorandum from the Surgeon General, "Status of Medical Personnel and Defense of Medical Units Under the Provisions of the Geneva Conventions," 12 October 1988.
FM 8-9, NATO Handbook on Medical Aspects of NBC Defensive Operations
FM 8-10, Health Service Support in a Theater of Operations
FM 810-6, Medical Evacuation in a Theater of Operations
FM 8-10-7, Health Service Support in a NBC Environment
FM 8-10-9, Combat Health Logistics in a Theater of Operations
FM 842, Health Service Support in Low Intensity Conflict
FM 8-55, Planning for Health Service Support.
FM 27-1, Treaties Governing Land Warfare.
FM 63-2-2, Combat Service Support Operations: Armored, Mechanized and Motorized Divisions.
FM 63-3J, Combat Service Support Operations - Corps.
FM 63-20, Forward Support Battalion.
FM 63-21, Main Support Battalion.
FM 63-22, Division Support Command.
FM 90-3, Desert Operations.

FM 90-5, Jungle Operations.
FM 90-6, Mountain Operations.
FM 101-10-1, Staff Officers Field Manual; Organizational, Technical, and Logistics Data.

Marine Corps

FMFM 4-50, Health Service Support, 1993.

Navy

CINCLANTFLT Instruction 5450.5, Fleet Surgical Teams.
LT Christian's Little Blue Book.
NWP 6, Operational Medical and Dental Support.

International Agreements and Publications

Allied command Europe (ACE) Directive 85-8, ACE Medical Support Principles, Policies, and Planning Parameters.
Geneva Convention for the Amelioration of the Condition of the Wounded, Sick and Shipwrecked Members of the Armed Forces at Sea, 12 August 1949.
Geneva Convention for the Amelioration of the Condition of Wounded and Sick in the Armed Forces in the Field, 12 August 1949.
Geneva Convention Relative to the Protection of Civilian Persons in Time of War 12 August 1949.
Geneva Convention Relative to the Protection of Civilian Persons in Time of War 12 August 1949.
Geneva Convention Relative to the Treatment of Prisoners of War, 12 August 1949.
Hague Conventions, Numbers III, IV, and V, 18 October 1907.
Protocols to the Geneva Conventions of 12 August 1949, 9 June 1977.

Other Publications and Documents

Dynes, R. R. *Disastrous Assumptions about Community Disasters*. Newark: U of Delaware Disaster Research Center, 1994.
Edwards, J.E. *Combat Service Support Guide*, Stackpole books, 1989.
Federal Emergency Management Agency. *Federal Response Plan*, Washington: FEMA. 1992.

- Guinn, R. "Medical Logistics: A Lesson from Vietnam," *Army Logistician*, November-December, 1993.
- Haines, E.T. and B. Weidenbach. "Planning for Medical Support of Disasters," *Military Medicine*, October 1993.
- Legters, L.J. and C.H. Llewellyn. "Military Medicine," in *Public Health and Preventive Medicine*, Norwalk: Appleton & Lange.
- Leonard, R.B. and U. Teitelman. "Manmade Disasters," *Critical Care Clinics: Disaster Management* 7 (2) 1991.
- Letterman, J. *Medical Recollections of the Army of the Potomac*, New York: Appleton and Co. 1866.
- Lillibridge, S.R., K. Conrad, N. Stinson, and E. Noji. "Haitian Mass Migrations: Uniformed Service Medical Support, May 1992," *Military Medicine*, February 1994.
- Luz, G.A., J.W. De Pauw, J.C. Gaydos, R.R. Hooper, and L.J. Legters. "The Role of Military Medicine in Military Civic Action," *Military Medicine*, June 1993
- Nelson, R.A. *Planning Guidance for Medical Readiness Training Exercises (MEDRETE) and Medical Deployments for Training (DFT U.S. Atlantic Command*, 27 April 1993.
- Noji, E.K. "Natural Disasters," *Clinical Care Clinics: Disaster Management* 1 (2) 1991.
- Quarantelli, E.L. *Disaster Planning, Emergency Management, and Civil Protection: The Historical Development and Current Characteristics of Organized Efforts to Prevent and Respond to Disasters*. Newark: U of Delaware Disaster Research Center, 1995.
- Strong, G.C. and K.T. Mason. "Medical Evacuation in a Low Intensity Conflict Environment," *Military Medicine*, June 1991.
- Vollmar, L.C. "Development of the Laws of War as They Pertain to Medical Units and their Personnel," *Military Medicine*, May 1992.
- Wedem, J. Memorandum to the JTF 140 Surgeon, Subject: Veterinary Issues, 1991.