

USAWC STRATEGY RESEARCH PROJECT

**THE JOINT PATIENT MOVEMENT SYSTEM,
A SOLUTION TO ARREST THE EROSION
OF AN EFFICIENT AND EFFECTIVE SYSTEM**

by

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ABSTRACT

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This paper will demonstrate that the current joint medical patient movement doctrine is not practiced and that, the Army must play an integral part in the joint patient movement system for this system to be a success. Finally, it will propose that the Joint Force Surgeon increase the Army's role in the joint patient movement system.

The U.S. Army is the only military service in the world that has, as a part of its doctrine, a dedicated air and ground patient movement system. The organizations within this patient movement system support the full spectrum of modern military operations from high intensity conflict to nation building.

During Operation Iraqi Freedom and Operation Enduring Freedom, the Army's dedicated air and ground patient movement system provided outstanding patient movement support to the service components, coalition forces, DOD civilians, DOD contractors, Department of State employees, Congressional members, Presidential cabinet members, displaced civilians, enemy prisoners of war, non-governmental organizations, private organizations, displaced civilians, and international organizations. This support spanned the entire Iraqi and Afghan theaters of operation and was accomplished without a cogent joint patient movement plan. This resulted in an extraordinary amount of effort and an astonishing commitment of patient movement assets.

To ensure an efficient and effective patient movement system, it is necessary that Joint Force Surgeon practice current joint patient movement doctrine by including the Army as an integral partner in the joint patient movement process. This will streamline the patient movement system making it more effective and efficient.

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PREFACE

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THE JOINT PATIENT MOVEMENT SYSTEM, A SOLUTION TO ARREST THE EROSION OF AN EFFICIENT AND EFFECTIVE SYSTEM

Historically and doctrinally, the Army has been the proponent for patient movement within a theater of operations. It took 181 years to develop a patient movement system that was both efficient, effective and seamlessly linked the continuum of patient care. The pinnacle of this development occurred during the Vietnam War and is the basis for current joint doctrine.

Unfortunately, since the Vietnam War this coherent system has eroded almost to the point of dysfunction, as demonstrated during current contingency operations. The reason for this demise is the failure of the Joint Force Surgeon (JFS) to focus on the patient movement system as a whole. This failure has eroded the extremely efficient and effective patient movement system of Vietnam into an inefficient and marginally effective system. If it were not for the extraordinary efforts of the medical soldiers at the tactical level this system would cease to function.

This paper will begin with a brief history that outlines the evolution of patient movement from conception to the realization of an effective joint patient movement system. It will then discuss the current joint patient movement doctrine, the erosion of an effective system and current patient movement challenges. Finally, the paper will conclude with recommendations on how to recapture the effectiveness of a proven patient movement system.

EVOLUTION OF THE JOINT PATIENT MOVEMENT SYSTEM

CONCEPTION OF A PATIENT MOVEMENT SYSTEM

The history of the patient movement system begins in 1792¹ during the Napoleonic Wars. The French surgeon Dominique Jean Larrey developed the first structured patient movement system, with the primary intent of ensuring the safe, rapid and humane evacuation of the sick and wounded from the battlefield. The premise of this system was to reduce evacuation times and treat the sick and wounded as far forward as safety would allow. Larrey's system was extremely successful and was the foundation for the inception of a patient movement system during the American Civil War.

Major Jonathan Letterman, a Union surgeon during the American Civil War, developed the first structured patient movement system. Letterman adopted Larrey's proven evacuation system, complementing it with a hospitalization system. This was the beginning of the current echelon of care system, where patients requiring the most definitive care are evacuated further from the combat zone. Letterman's system proved so effective that in March 1864, President

Lincoln signed a congressional act approving the creation of The United States Army Ambulance Corps.² However, shortly after the conclusion of the Civil War, the Army significantly reduced the Medical Department and the Ambulance Corps was disbanded.

As a result of the Civil War demobilization, the Army was forced to relearn many patient movement lessons during the Spanish-American War. As with the first two years of the Civil War, evacuation of the sick and wounded was an afterthought to military planners. It was through sheer determination, improvisation, and the re-implementation of Letterman's evacuation system that the medical officers were able to successfully evacuate and treat roughly 1,450 U.S. casualties³, 2600 Spanish casualties, and an untold number of Department of Army civilians and Cuban nationals⁴.

The Spanish-American War also provided the Army Medical Department with new challenges and lessons learned. This was the first time that the Army Medical Department operated jointly with the Navy for the use of hospital and transport ships to treat and evacuate casualties. This operation was burdensome at best, due to ad-hoc planning. However, through cooperation and diligence, this joint evacuation and hospitalization venture proved relatively successful and was responsible for the care and evacuation of 1158 casualties.⁵

During World War I, the Army Medical Department did not have to relearn the hard lessons of patient movement realized during the Civil War and the Spanish-American War. The French, with the help of American volunteers, had established an efficient patient movement system three years before the introduction of American combat forces in 1917. Upon arriving, American forces had only to integrate into an already established patient movement system.

This was a patient movement system based on the Larrey and Letterman models, but more organized and efficient. Motorized ambulances, locomotives and, for the first time, aircraft evacuated the sick and wounded. These evacuation platforms coupled with American and French coalition operations, decreased evacuation times and improved the echelon of care system by ensuring critical patient needs were satisfied.

Applying the patient movement lessons of World War I, The Army Medical Department, with the help of joint and coalition partners, effectively planned and executed a global patient movement system during World War II. Operating in both the European and Pacific theaters, The Army Medical Department improved on the past habitual and innovative methods of evacuation by adding the routine use of fixed wing aircraft and the first use of the helicopter. These innovations and the cooperation of joint and coalition partners further decreased evacuation times and ensured patient accessibility to the full continuum of medical care.

By the end of World War II, The Army Medical Department had an effective patient movement system and had only to improve upon this system at the onset of the Korean War. Once again, The Army Medical Department was the lead service for patient movement operations in this joint and coalition environment. Adding to the tried and true patient movement methods of World War II, the helicopter played a prominent role by moving close to 17,700 patients.⁶ Although patient movement by helicopter was in its infancy and had considerable operational issues, it was soon to become the preferred method for evacuating casualties from the battlefield in future conflicts.

REALIZATION OF AN EFFECTIVE SYSTEM

At the beginning of the Vietnam War, The Army Medical Department had honed the evacuation of casualties to a fine art. The Larrey and Letterman evacuation system was made more expeditious and efficient through improved technology, specifically the helicopter and the radio. The helicopter ambulance was instrumental in decreasing the evacuation time from 4-6 hours, experienced during the Korean War, to 35 minutes.⁷ Long-range radios enabled medical regulation enroute, allowing the helicopter ambulance to bypass echelons of care to ensure patients were flown to the appropriate definitive care facility. This enormous improvement to the medical evacuation system allowed a 97.5 percent survival rate of all patients evacuated by air.⁸ Army helicopter ambulances evacuated 850,000 to 900,000 US, civilian, joint and coalition casualties in Vietnam, from 1962 until 1973.⁹ Technology, initiative, innovation and the willingness to transform were the drivers in accomplishing this extraordinary feat.

To complement the Army's system, the Air Force became an integral part of the patient movement system assuming the responsibility for patient movement out of the Vietnam area of operations. This combination of the Army and Air Force patient movement systems ensured an uninterrupted continuum of patient care and became the basis for modern day joint patient movement operations.

JOINT PATIENT MOVEMENT DOCTRINE

The effective patient movement system of Vietnam is the foundation of current joint patient movement doctrine. This doctrine is both joint and service specific, with air as the primary means for patient movement and ground patient movement playing a supporting but essential role. As in the past, patient movement and the echelon of care system are inextricably linked.

The Army continues its responsibility for patient movement in support of joint and coalition operations within the theater or intra-theater operations, while the Air Force has become the

responsible service for operations between theaters or inter-theater operations. The following sections will discuss the base joint patient movement doctrine, service component patient movement doctrine for each service and command and control for joint patient movement operations.

BASE PATIENT MOVEMENT DOCTRINE

The theater evacuation policy is the foundation for patient movement planning within a theater of operations. The Secretary of Defense, in coordination with the geographic combatant commander, determines a theater evacuation policy that “establishes, in number of days, the maximum period of noneffectiveness (hospitalization and convalescence) that patients may be held within the theater for treatment”¹⁰. This policy helps medical planners determine the requirement for dedicated patient movement assets.

Building on this foundation, the echelon of care system is the framework in which all of the services execute patient movement. This system is comprised of five echelons that begin at the point of injury and extends to definitive care, fixed facility hospitals in the United States (Figure 1). As patients progress through the system, each subsequent echelon increases its level of care.

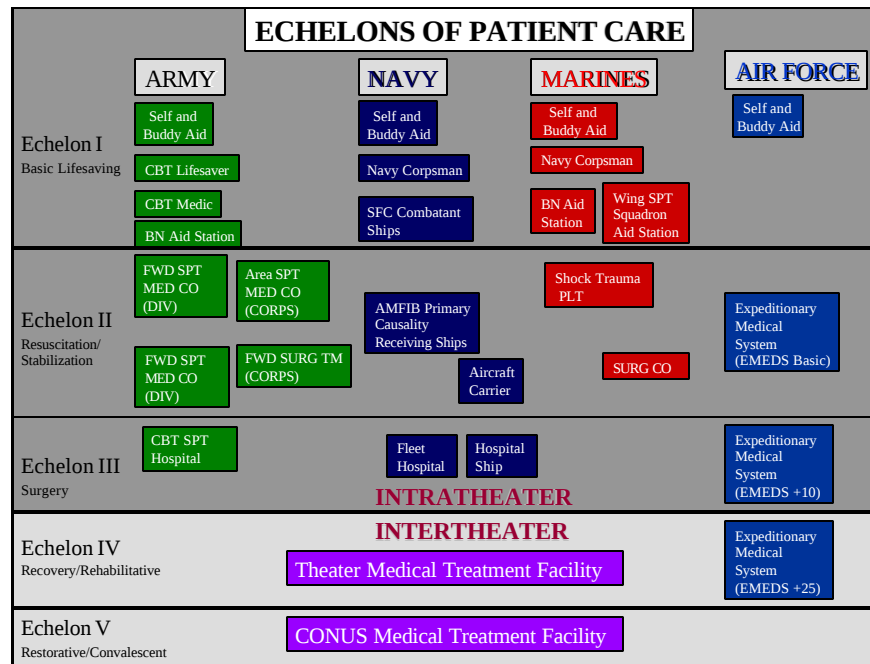


FIGURE 1, ECHELONS OF PATIENT CARE

If the echelon of care system is the framework in which all of the services execute patient movement, the patient movement system provides the connectivity. This system sustains and complements the echelon of care system by ensuring rapid transportation of a wounded, ill or injured soldier to the appropriate echelon of care as defined by the nature of the wound, illness or injury. This system also allows patients to move through each echelon sequentially or bypass echelons to ensure the patient receives the appropriate level of medical care.

There are two methods in which patients are moved:

The preferred method of patient movement is with dedicated patient movement assets that support the medical evacuation mission. These assets are externally marked with a red cross and are afforded protection under the Geneva Convention. Furthermore, dedicated assets are configured for patient evacuation and have on-board medical care.¹¹

In the absence of dedicated patient movement assets, moving patients by non-standard means, is sometimes necessary through lifts of opportunity. Lifts of opportunity are non-medical ground air or boat assets used to move patients. These assets are not marked with a red cross and not afforded protection under the Geneva Convention. Most significantly, however, lifts of opportunity are not configured for patient evacuation and do not have on-board medical care.¹²

Patient movement with dedicated patient movement assets is generally referred to as MEDEVAC; whereas moving patients by non-standard means, or utilizing lifts of opportunity is frequently referred to as CASEVAC. MEDEVAC is used primarily by the Army and supports all services, coalition forces and non-combatants. CASEVAC is primarily utilized by the Navy and the Marine Corps, however all services use CASEVAC during mass casualty operations.

The inter-theater and intra-theater patient movement systems are sub-elements that define the joint patient movement system. To efficiently move patients through the echelons of patient care these systems must interact seamlessly.

Inter-theater patient movement utilizes dedicated fixed wing strategic patient movement platforms and supports the theater evacuation policy by moving patients from echelon III Medical treatment facilities (MTF) through echelon V MTFs. Conversely, intra-theater patient movement utilizes dedicated patient movement assets and lifts of opportunity to move patients from point of injury to echelon III MTFs. These patient movement platforms are both tactical and operational in scope and include ground, fixed wing, helicopter, boat and ship assets.

A cogent joint patient movement system complements the echelon of care system by seamlessly linking inter-theater and intra-theater patient movement within the guidelines of the theater evacuation policy. This requires the JFS to develop a detailed joint patient movement

plan that ensures absolute synchronization of service component and coalition patient movement capabilities and encompasses both inter-theater and intra-theater patient movement. In this way, the JFS will ensure timely as well as quality medical care for wounded, injured and sick soldiers.

COMMAND AND CONTROL

Joint doctrine states that each service has patient movement responsibility from point of injury through echelon III. However, joint patient movement may occur anywhere from the point of injury through echelon V if available and requested, or if required by operation order. Normally, in a mature theater of operations, patient movement through echelon II is an individual service responsibility, movement from echelon II to III is both a joint and individual service responsibility and movement from echelon III to echelon V is a joint responsibility. As a rule, the Air Force has responsibility for joint inter-theater patient movement while the Army has responsibility for joint intra-theater patient movement.

Command and control (C2) of joint patient movement, in a theater of operations is the responsibility of geographic combatant commanders.¹³ Geographic combatant commanders become joint force commanders (JFC) during contingency operations within their geographic areas of responsibility.

Assigned to each JFC is a joint force surgeon (JFS) who normally reports directly to the commander and has the delegated authority for planning a cogent joint patient movement system that effectively links both inter-theater and intra-theater systems. The following are patient movement planning responsibilities of the JFS:

- “Assist the combatant commander in formulating a recommended theater patient movement policy within the geographic area.”¹⁴ The JFS develops patient movement Rules Of Engagement (ROE).

- “Assist the component commands in identifying health service support (HSS) requirements and coordinating cross-service support, where practical.”¹⁵ The JFS ensures that intra-theater patient movement operations are joint in nature, and that all patient movement assets are efficiently utilized across the service and coalition components.

- “Coordinate HSS provided to or received from, allies, coalition partners, host nation (HN) military, or other friendly nations.”¹⁶ The JFS coordinates and facilitates patient movement support for coalition partners.

- “Coordinate support from the Global Patient Movement Requirements Center (GPMRC).”¹⁷ The JFS coordinates inter-theater patient movement with the GPRMC (Figure 2).

- Direct the activities of the Theater Patient Movement Requirement Center (TPMRC) and the Joint Patient Movement Requirement Center (JPMRC). The JFS ensures that both the TPMRC and the JPMRC are coordinating, planning and facilitating inter-theater and intra-theater joint patient movement (Figure 2).
- "Prepare patient movement (lift-bed) requirements based on the casualty estimates provided by the appropriate staff."¹⁸ The JFS ensures there are sufficient evacuation assets available to execute intra-theater patient movement.
- "Identify possible requirements for fixed-wing patient airlift based on casualty estimates."¹⁹ The JFS ensures the availability of fixed-wing aircraft to execute inter-theater patient movement.
- Coordinate and plan an integrated communication system that supports both intra-theater and inter-theater patient movement operations.
- "Monitor and inform the subordinate JFC on the status of HSS resources."²⁰ This includes both dedicated patient movement assets and lifts of opportunity.
- Develop the medical ROE for noncombatant patient movement operations.
- "Obtain service specific casualty rate information to model HSS force structure and casualty flow for the joint operation."²¹
- "Identify possible requirements for fixed wing patient airlift based on casualty estimates."²²

To ensure an efficient and effective joint patient movement system, the JFS manages two patient movement requirement centers the TPMRC and the JPMRC. These patient movement requirement centers assist in the planning, coordination and the execution of the joint patient movement system.

The TPMRC plans and coordinates both inter-theater and intra-theater patient movement primarily focusing on the inter-theater system. To affect patient movement, the TPMRC coordinates the inter-theater plan and patient movement requirements through GPMRC. The GPMRC reports directly to Transportation Command (USTRANSCOM) and coordinates patient movement requirements through TRANSCOM's Air Mobility Command (AMC), who has command and control over all inter-theater airlift. AMC will mission the Tanker Airlift Control Center (TACC), who "will use dedicated, preplanned, opportune, or retrograde aircraft missions to pick up patients from staging facilities at aeromedical evacuation (AE) interface airfields"²³ to the execute the inter-theater patient movement plan. Once coordination is complete, patients are moved via Army or Air Force dedicated patient movement assets aircraft to aeromedical staging facilities for movement by Air Force dedicated patient movement assets aircraft to echelon IV or V MTFs.

The JPMRC is subordinate to the TPMRC and complements the TPMRC's planning and coordination mission. However, its focus is to facilitate intra-theater patient movement and to ensure a seamless transition between the two systems.

To affect patient movement, the JPMRC develops and communicates the intra-theater plan that assigns patient movement responsibilities to each JTF component command. This plan synchronizes all intra-theater dedicated patient movement assets and lifts of opportunity to ensure the realization of an efficient and effective system. Furthermore, this plan must mutually support both service and coalition components, as well as address joint patient movement support for: Department of Defense (DOD) civilian employees, DOD contract personnel, Department of State employees, Congressional members, Presidential cabinet members, displaced civilians, enemy prisoners of war (EPW), nongovernmental organizations (NGO), private organizations (PVO), displaced civilians, international organizations (IO) as well as humanitarian and civic assistance. Finally, this plan must seamlessly link the intra-theater system with the inter-theater system.

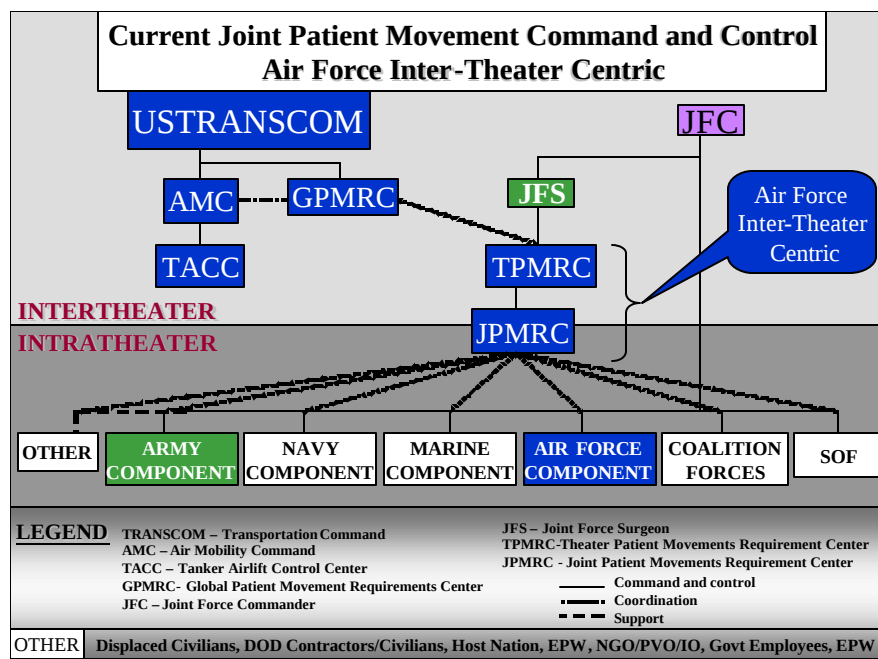


FIGURE 2, CURRENT JOINT PATIENT MOVEMENT COMMAND AND CONTROL

SERVICE COMPONENT PATIENT MOVEMENT DOCTRINE

Each service provides unique patient movement capabilities to the joint patient movement system, with the Army and the Air Force historically providing the doctrinal framework, the expertise and preponderance of dedicated patient movement assets. This section will outline the doctrine for each service component and their contribution to the joint patient movement system.

ARMY DOCTRINE

The Army is the only service that has dedicated air and ground patient movement assets that complement a doctrinally based patient movement system, specifically designed to facilitate joint intra-theater patient movement. The Army relies exclusively on this system to move its patients from point of injury to echelon III. Utilization of lifts of opportunity is a part of the Army doctrine; however, it is only used when dedicated patient movement assets are overwhelmed. To facilitate joint inter-theater patient movement, the Army coordinates for Air Force fixed wing dedicated patient movement assets through the JPMRC or the TPMRC.

Due to its dedicated air and ground patient movement assets and its proven intra-theater patient movement system, joint intra-theater patient movement is an Army core competency. Thus, during joint operations, services will coordinate through the JPMRC or the TPMRC for Army for intra-theater air and ground patient movement support to complement or enhance their capabilities.

AIR FORCE DOCTRINE

The Air Force relies on ground ambulance, helicopter lifts of opportunity and dedicated fixed wing patient movement assets to move patients from point of injury through echelon V. However, to complement and enhance their intra-theater patient movement operations, the Air Force will coordinate with the JPMRC or the TPMRC for Army dedicated intra-theater patient movement assets.

Due to its dedicated fixed wing patient movement assets and its proven inter-theater patient movement system, joint inter-theater patient movement is an Air Force core competency. Thus, during joint operations, services will coordinate through the JPMRC or the TPMRC for Air Force dedicated inter-theater patient movement assets.

NAVY DOCTRINE

The Navy's echelon I through echelon III patient movement responsibilities includes ship-to-ship, shore-to-ship and ship-to-shore operations. The primary means of patient movement

while at sea or in support of amphibious operations is by helicopter, with landing craft boats as a secondary source of patient movement. Both means of patient movement utilize lifts of opportunity. While underway, the medical administrative officer aboard the aircraft carrier is responsible for patient movement operations, coordinating ship-to-ship, ship-to-shore and inter-theater patient movement for the carrier battle group.

During joint and combined operations, the medical administrative officer will coordinate through the TPRMC or the JPRMC for intra-theater and inter-theater patient movement support. Doctrinally the TPRMC or the JPRMC will task the Army's dedicated helicopter patient movement assets to perform the intra-theater ship-to-shore and shore-to ship-missions. To obtain inter-theater patient movement support, the medical administrative officer coordinates through the TPMRC to request patient movement by the Air Force.

During amphibious operations, the medical regulating control officer (MRCO) is responsible for patient movement. The MRCO is co-located with the Commander Amphibious Task Force (CTAF) Surgeon on the CTAF flagship and coordinates inter-theater and intra-theater patient movement with the CTAF surgeon, the JPRMC or the TPRMC.

MARINE DOCTRINE

During amphibious operations, the Marines are responsible for patient movement from point of injury through echelon II. The primary means for patient movement is helicopter lifts of opportunity. However, if air evacuation is not available, patient movement "is accomplished using any surface (water or ground) transportation available (ground ambulance, five-ton truck, small boat, landing craft air cushion)"²⁴

To facilitate patient movement from echelon II to echelon III during amphibious or inland-sustained joint operations, the Marines health service support element (HSSE) coordinates with the Navy MRCO. The Navy MRCO will coordinate with the JPMRC or the TPMRC, who will then normally task the Army for intra-theater air and ground patient movement support to complement or enhance their patient movement capabilities.

To acquire inter-theater patient movement support, the HSSE will submit a patient movement request through the Navy MRCO. The Navy MRCO will coordinate with the JPRMC or the TPMRC to request patient movement by the Air Force.

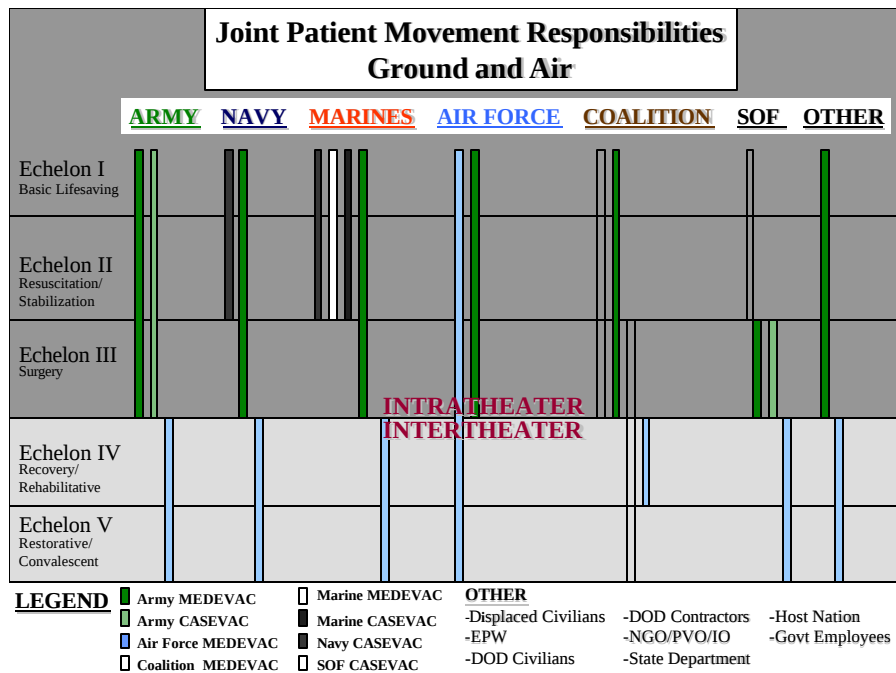


FIGURE 3, JOINT PATIENT MOVEMENT RESPONSIBILITIES-GROUND AND AIR

The joint patient movement system is the seamless integration of each service's patient movement capabilities. There are unique capabilities within each of the services, as well as redundancies. However, it is the harmonious combination of these capabilities, through detailed planning and effective C2, that allows efficient inter-theater and intra-theater patient movement operations.

EROSION OF THE PATIENT MOVEMENT SYSTEM

The previous sections establish that joint patient movement operations are service interdependent, where the Army is normally responsible for Intra-theater patient movement and the Air Force is normally responsible for inter-theater patient movement. This interdependency requires detailed joint planning and service coordination to realize seamless integration and successful joint patient movement operations.

The joint patient movement system executed during the Vietnam War absolutely defined interdependent patient movement operations and was a tremendous success. A culmination of

181 years of patient movement evolution, this model became the foundation for the current joint patient movement doctrine. However, following the Vietnam War the services, faced with decreasing budgets and a major decrease in force structure, vied for relevancy. This competition contributed to a service centric atmosphere within the Department of Defense.

The medical departments of each of the services were not impervious to this service centric atmosphere. They also vied for relevancy while contending with a shortage of physicians, a decrease in funding and an increase of retired medical beneficiaries. This dilemma forced the medical departments to focus on fixed facility healthcare delivery systems and pay cursory attention to tactical health care delivery systems.

The cursory attention to tactical health care delivery systems discouraged joint patient movement planning or training, resulting in the erosion of the effective, interdependent patient movement system experienced during the Vietnam War. The services apparently made the naive assumption that since the doctrine was proven and sound the patient movement system required little attention and would function doctrinally when needed.

This assumption was proven incorrect in 1983 during Operation Urgent Fury, where the neglect of the joint patient movement system was painfully apparent. The lack of joint training was evident as medical evacuation helicopters, with patients, were denied landing on naval vessels, as the Army pilots were not qualified.²⁵ More significantly, joint patient movement planning for this operation was non-existent until the second day, when a patient movement center was finally established.²⁶ However, the focus of this organization was strictly on inter-theater patient movement, which forced intra-theater patient movement operations to remain ad-hoc and service centric. The reason a coherent joint intra-theater patient movement plan was never realized is that it was not perceived as a problem, as the individual services were making the system work. Thus, the primary patient movement lesson learned from Operation Urgent Fury was that the ad-hoc, service centric method of intra-theater patient movement was successful and required no formal joint planning. However, there was a necessity for a coherent joint inter-theater patient movement plan.

The need for only a coherent inter-theater patient movement plan translated six years later into the patient movement plan for Operation Just Cause. The joint patient movement plan, for Operation Just Cause, was completely inter-theater centric. The plan required the joint and coalition forces to independently move patients to a Joint Casualty Collection Point (JCCP).²⁷ The JCCP, an echelon II facility enhanced with a surgical capability, would stabilize patients and arrange for movement to an echelon V facility.

Very little joint planning was devoted to intra-theater patient movement as it was considered an individual service responsibility to transport patients to the JCCP. However, intra-theater patient movement during Operation Just Cause was anything but service centric. Diligence, informal coordination and ad-hoc planning between Army, Air Force and Special Operations Forces highlighted the need for interdependency to ensure success. It also reinforced the need for joint intra-theater patient movement plan to link the patient movement assets of joint and coalition forces into a cogent system.

The inter-theater centric patient movement plan of Operation Just Cause was successful and unfortunately reinforced the lesson learned during Operation Urgent Fury. Essentially, this success validated the need for only a coherent joint inter-theater patient movement plan, resigning intra-theater patient movement as an individual service responsibility that does not require a coherent joint plan. Because of the perceived success of the patient movement system during Operation Just Cause, inter-theater centric patient movement planning was subsequently practiced and reinforced during Operations Desert Shield, Desert Storm, Uphold Democracy and Restore Hope with the effect of slowly eroding the intra-theater patient movement system.

This practice ultimately resulted in joint medical planners focusing on only the inter-theater patient movement system and disregarding the intra-theater patient movement system. The result of this practice is an effective, organized and efficient inter-theater patient movement system at the expense of the intra-theater system, which is currently marginally effective, disorganized and inefficient. Another consequence of this practice is that it has effectively removed Army planners from the joint patient movement planning process, as joint inter-theater patient movement is an Air Force core competency and thus planned by Air Force personnel²⁸ (Figure 2).

CURRENT PATIENT MOVEMENT CHALLENGES

The cascading effects of inter-theater centric patient movement planning were exemplified during both Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). After action reviews (AAR) from both OEF and OIF reveal that, inter-theater patient movement was proficiently planned and executed, however intra-theater patient movement was ad hoc in it's planning and disjointed in its execution.

In accordance with joint patient movement doctrine, each service and coalition partner proficiently planned and executed patient movement from point of injury through echelon II. However, there existed no comprehensive intra-theater plan that synchronized service

component and coalition patient movement assets, or provided a seamless linkage with the inter-theater system. In addition, there was no cogent patient movement plan that addressed: humanitarian and civic assistance, DOD civilians, DOD contractors, Department of State employees, Congressional members, Presidential cabinet members, displaced civilians, EPWs, NGOs, PVOs, displaced civilians, IOs.

The CHS/CSS plan was never discussed, rehearsed, or synchronized prior to operations beginning. Due to this lack of MDMP our medical plan was never incorporated into the maneuver plan for the BN or the BDE CHS plan. We were required to support the established plan the best that we could for the BN and rely on BDE to provide aerial MEDEVAC for anything else. There was never any ground evacuation plan for anything further rearward than the BN CCP.²⁹

Confusion regarding intra-theater joint patient movement, during OIF and OEF is a result of insufficient planning by the JFS for each operation, specifically the TPMRC and the JPMRC. The reason for this cursory planning is that the both the TPMRC and the JPMRC were manned and directed exclusively by the Air Force (Figure 2).

The fact that the Air Force core competency is inter-theater patient movement, coupled with an independent rather than an interdependent inter-theater patient movement mind set within the services were key elements that resulted in this planning oversight. The failure of the medical planners to formulate a coherent joint intra-theater patient movement plan forced combatant commanders to spontaneously plan, coordinate and execute intra-theater patient movement.

Once in theater, MED Planner's at all levels failed to plan as a team. The maneuver elements recognized this and began to make the medical plan on their own. We saw air ambulance teams being moved and reorganized by the maneuver elements they supported. These moves placed duplicate efforts within minutes of each other, while other maneuver elements were left uncovered.³⁰

Recognizing the lack of a joint planning at the operational level, and understanding that intra-theater patient movement is an Army core competency, the Army service component planned, directed and approved joint intra-theater patient movement at the corps, division and brigade levels. This resulted in joint patient movement system that was cumbersome (Figure 4), inefficient and Army centric.

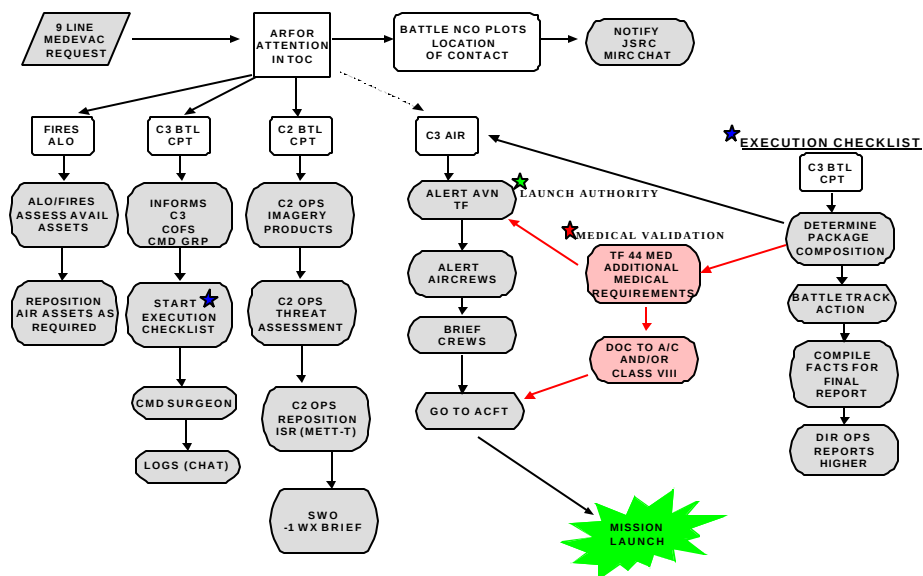


FIGURE 4, OEF DEDICATED PATIENT MOVEMENT ASSETS REQUEST PROCEDURES³¹

Currently, joint patient movement planning is synonymous with inter-theater patient movement, as illustrated by both OEF and OIF. Thus, the JPMRC and the TPMRC are habitually manned and directed by the Air Force (Figure 2). Intra-theater patient movement planning, coordination and execution have evolved into a service component responsibility. This has resulted in the described inefficiencies that in some cases have removed patient movement decisions from the medical chain of command.

During operation Anaconda, launch approval was at the O-8 level. The command did not take into account of the additional time it would take to launch an MEDEVAC and added about 30 minutes on average to get launch approval. Because of this the CH-47 lift aircraft were used for most of the mission for patient evacuation due to the fact that they could launch sooner than the MEDEVAC. Utilizing this launch authority, the chain of command negated the effects of a fast evacuation system that could provide quality in route care.³²

Intra-theater and inter-theater patient movement is a joint planning responsibility and makes up the joint patient movement system. Joint medical planners must recognize the importance and interconnectivity of both intra-theater and inter-theater patient movement systems within the joint system. The consequences of joint medical planners disregarding intra-theater patient movement planning are too great. This is aptly illustrated in the following OEF AAR comment:

The combat casualties greatest chance for survival following initial life-saving care comes from timely and efficient COMBAT CASEVAC. During OEF, CASEVAC availability ranged from minutes to as long as 16 hours. One specific incidence, involved a patient with a through-and-through gunshot wound (GSW) to the chest. The casualty was conscious, alert and oriented two and one half hours post injury under the care of a Physician Assistant and Senior 18D at the Area Operations Base (AOB). After much confusion and aircraft request procedures, the CASEVAC arrived approximately three hours post injury with a physician and blood products. The casualty expired just prior to the arrival of the CASEVAC aircraft. The configuration of ARSOF on the battlefield, CASEVAC includes the use of available aircraft to fly the casualty directly to the next echelon of medical care or the use of other various means of CASEVAC, i.e. ground mobility vehicles to transport the casualty to the next higher element. In both cases, conventional platforms and locations are not equipped by TO&E to support continuous management and monitoring of the combat casualty. Conventional MEDEVAC resources in the area of operations (AO) should not be considered reliable, available, or dedicated to the SOF mission.³³

RECAPTURING THE EFFECTIVENESS OF A PROVEN SYSTEM

Since the attacks of 11 September 2001, the Department of Defense (DOD) has accelerated transformation, accentuating joint operations and service interdependence to fight the war on terror. The new Chief of staff of the Army (CSA) General Schoomaker has complemented this transformation effort through his vision of a "joint interdependent, precision maneuver force, dominant across the full range of military operations."³⁴

The current joint patient movement doctrine promotes interdependent operations that mutually support both inter-theater and Intra-theater operations. Furthermore, this is a proven system that supports both DOD and Army transformation. The challenges that currently exist are a result of ignorance of the joint patient movement system, flawed thinking and failure to focus on the patient movement system as a whole.

To correct these discrepancies, the JFS within each combatant command must first recognize that the joint patient movement system requires mutually supporting inter-theater and intra-theater systems. Disregarding any one of these systems will degrade the entire system.

Next, the JFS must understand that the Army is the only service component that is structured to provide comprehensive intra-theater dedicated ground and air patient movement support to the other service components, coalition forces, humanitarian and civic assistance, DOD civilians, DOD contractors, Department of State employees, Congressional members, Presidential cabinet members, displaced civilians, EPWs, NGOs, PVOs, displaced civilians and IOs. Therefore, intra-theater patient movement is an Army core competency that Army personnel must plan and execute.

Conversely, the Air Force is the only service component that is structured to provide dedicated inter-theater fixed wing patient movement support to the other service components and coalition forces. Therefore, inter-theater patient movement is an Air Force core competency that Air Force personnel must plan and execute.

Finally, the JFS must recognize that joint patient movement training is essential to reinforce interdependency, interoperability and ensure the seamless transition between the inter-theater and Intra-theater system.

To meet these objectives and ensure a comprehensive patient movement, the JFS must appropriately staff both the TPMRC and JPMRC with both Army and Air Force patient movement planners. This would require the Air Force predominantly staffing and having oversight of the TPMRC and the Army predominantly staffing and having oversight of the JPMRC (Figure 5).

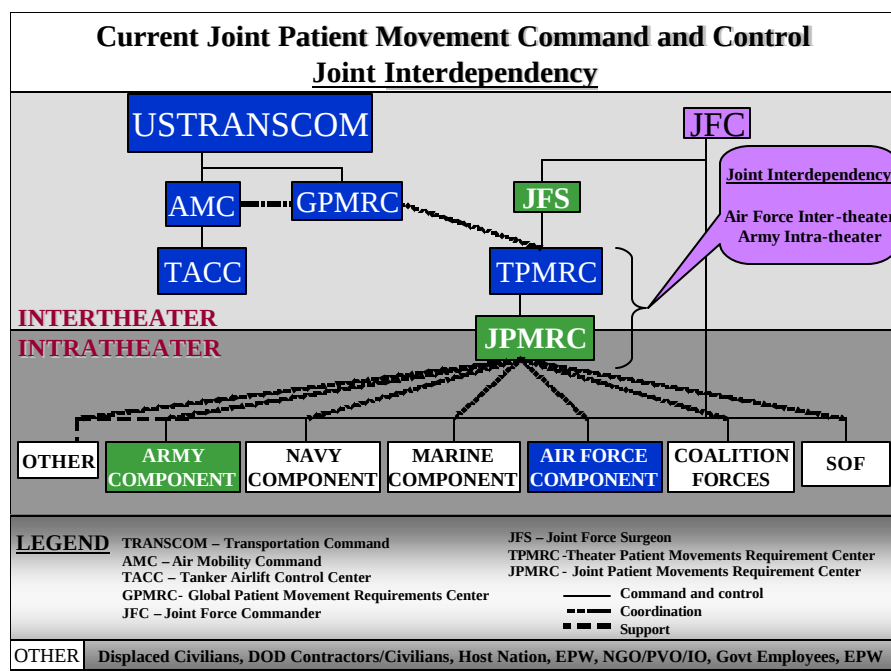


FIGURE 5, PROPOSED JOINT PATIENT MOVEMENT COMMAND AND CONTROL

By following the above initiative, the JFS will promote interdependent joint patient movement operations that mutually support both inter-theater and Intra-theater systems.

CONCLUSION

Historically, the Army was the sole proponent of patient movement until 1947, when the Air Force separated from the Army and became a separate service. By the end of the Vietnam War, the Army and the Air Force had developed a coherent interdependent joint patient movement system that supported all of the services, to include non-combatants within a combat zone. This effective and efficient Army and Air Force centric system became the cornerstone for today's joint patient movement doctrine.

In recent history, the joint patient movement system migrated from an Army and Air Force centric system to exclusively an Air Force centric system and from interdependency to independency. This shift began during Operation Urgent Fury and reinforced during subsequent operations, eventually resulted in the degradation of the joint intra-theater patient movement system. Consequently, when joint intra-theater patient movement was required, during OEF and OIF, the system was marginally effective, disorganized and inefficient as tactical commanders assumed the responsibility for intra-theater patient movement.

To remedy this disparity and recapture the effectiveness of this proven system, the JFS must focus on the patient movement system as a whole. Intra-theater and inter-theater patient movement must be planned as mutually supporting systems at the joint level with both Army and Air Force planners. Furthermore, the joint staff must promote joint patient movement training to reinforce interdependency, interoperability and ensure the seamless transition between the inter-theater and Intra-theater system.

Although somewhat dysfunctional, the current patient movement system continues to be instrumental in saving countless lives while supporting the broad spectrum of military operations. However, to prevent erosion of this system to the point of total dysfunction, the joint medical community must regain the streamlined, efficient and coherent patient movement system of the Vietnam era. Failing to do this will force the military to relearn past lessons at the expense of this nation's most precious resource, its soldiers.

WORD COUNT=5833

ENDNOTES

¹ MD0405 Correspondence Course of the United States Army Medical Department Center and School, "Military Medical History,"; available from <<http://www.cs.amedd.army.mil/history/ele-milmed.html>>; Internet; Accessed 25 September 2003.

² Peter Dorland and James Nanney, *DUSTOFF: Army Aeromedical Evacuation in Vietnam* (Center of Military History, United States Army, Washington D.C., 1982), 6.

³ Mary C. Gillett, *The Army Medical Department 1865-1917* (Washington D.C.: Army Historical Series: Center of Military History, United States Army, 1995), 148.

⁴ Ibid., 149.

⁵ Ibid., 157.

⁶ Peter Dorland and James Nanney, *DUSTOFF: Army Aeromedical Evacuation in Vietnam* (Center of Military History, United States Army, Washington D.C., 1982), 11.

⁷ MD0405 Correspondence Course of the United States Army Medical Department Center and School, "Military Medical History,"; available from <<http://www.cs.amedd.army.mil/history/ele-milmed.html>>; Internet; Accessed 25 September 2003.

⁸ Spurgeon Neel, *Vietnam Studies, Medical Support of the U.S. Army in Vietnam, 1965-1970* (Washington, D.C.: Department of the Army, 1991), 70.

⁹ Peter Dorland and James Nanney, *DUSTOFF: Army Aeromedical Evacuation in Vietnam* (Center of Military History, United States Army, Washington D.C., 1982), 115.

¹⁰ Department of the Army. *Medical Evacuation in a Theater of Operations, Tactics, Techniques, and Procedures*, Field Manual 8-10-6 (Washington, D.C.: U.S. Department of the Army Field Manual Headquarters, 14 April 2000), 1-4.

¹¹ Joint Chiefs of Staff, *Joint Tactics, Techniques and Procedures for Patient Movement in Joint Operations*, Joint Pub 4-02.2 (Washington, D.C.: U.S. Joint Chiefs of Staff, 30 December 1996), II-5

¹² Ibid., II-6.

¹³ Joint Chiefs of Staff, *Doctrine for Health Service Support in Joint Operations*, Joint Pub 4-02 (Washington, D.C.: U.S. Joint Chiefs of Staff, 30 July 2001), I-1.

¹⁴ Ibid., II-4.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Ibid., II-5.

²² Ibid.

²³ Joint Chiefs of Staff, *Doctrine for Health Service Support in Joint Operations*, Joint Pub 4-02 (Washington, D.C.: U.S. Joint Chiefs of Staff, 30 July 2001), II-10.

²⁴ U.S. Marine Corps. *Health Service Support Operations*, Marine Corps Warfighting Publication 4-11.1, (Washington, D.C.: Headquarters United States Marine Corps, 10 March 1998), 8-3.

²⁵ Ronald H. Cole, *Operation Urgent Fury, The Planning and Execution of Joint Operations in Grenada, 12 October – 2 November 1983* (Washington, D.C.: Office of the Chairman of the Joint Chiefs of Staff, Joint History Office, 1997), 68.

²⁶ Ibid., 55.

²⁷ Rod Lenahan, *Confrontation Zone, 1989 U.S. Intervention into Panama, Operation Just Cause* (Charlston, South Carolina: Narwhal Press, 2002), 253.

²⁸ David Heintz <heintzs@socom.mil>, "OIF AAR" electronic mail message to David MacDonald <david.macdonald@us.army.mil>; 5 December 2003.

²⁹ AMEDD Lessons Learned, "Observation: [6013] Patient Flow on the Battlefield (OIF)," available from <<https://secure-ll.amedd.army.mil/>>; Internet: accessed 2 December 2003.

³⁰ David Heintz <heintzs@socom.mil>, "OIF AAR" electronic mail message to David MacDonald <david.macdonald@us.army.mil>; 11 December 2003.

³¹ "Operation Enduring Freedom MEDEVAC Procedures." Briefing slide, Fort Rucker, AL: Medical Evacuation Proponentcy Division, U.S. Army Medical Command, 17 December 2003.

³² AMEDD Lessons Learned, "Observation: [5681] MEDEVAC response time Delayed," available from <<https://secure-ll.amedd.army.mil/>>; Internet: accessed 2 December 2003.

³³ AMEDD Lessons Learned, "Observation: [6019] Combat CASEVAC," available from <<https://secure-ll.amedd.army.mil/>>; Internet: accessed 2 December 2003.

³⁴ Department of the Army, *United States Army Transformation Roadmap 2003*, (Washington, D.C.: U.S. Department of the Army, November 2003), X.

BIBLIOGRAPHY

- 36th Medical Evacuation Battalion, Operation Iraqi Freedom AAR/Lessons Learned." 20 May 2003.
- Air Force Medical Service. "A History of The Air Force Medical Service." Available from <<http://airforcemedicine.afms.mil/history.html#reengineering>>. Internet. Accessed 28 January 2004.
- AMEDD Lessons Learned. "Observation: [5681] DEDICATED PATIENT MOVEMENT ASSETS response time Delayed." Available from <<https://secure-ll.amedd.army.mil/>> . Internet. Accessed 2 December 2003.
- AMEDD Lessons Learned. "Observation: [6013] Patient Flow on the Battlefield (OIF)." Available from <<https://secure-ll.amedd.army.mil/>> . Internet. Accessed 2 December 2003.
- AMEDD Lessons Learned. "Observation: [6019] Combat LIFTS OF OPPORTUNITY." Available from <<https://secure-ll.amedd.army.mil/>> . Internet. Accessed 2 December 2003.
- Armfield, Blanche B. *Medical Department United States Army in World War II, Organization and Administration in World War II*. Office of The Surgeon General, Department of the Army, Washington, D.C., 1963.
- Clyde, William D. III. "Operation Iraqi Freedom (OIF) After Action Report (AAR)." Memorandum for Commander, 56th Medical Evacuation Battalion. FT. Bragg, NC., 30 May 2003.
- Cole, Ronald H. *Operation Urgent Fury, The Planning and Execution of Joint Operations in Grenada, 12 October – 2 November 1983*. Washington, D.C.: Office of the Chairman of the Joint Chiefs of Staff, Joint History Office, 1997.
- Demma, Vincent H. *American Military History*. Army Historical Series: Center of Military History, United States Army, Washington D.C., 1989.
- Department of the Air Force. *Aeromedical Evacuation*. Air Force Tactics, Techniques, and Procedures 3-42.5. Washington, D.C.: Secretary Of The Air Force, 19 July 2001.
- Department of the Air Force. *Health Services*. Air Force Doctrine Document 2-4.2. Washington, D.C.: Secretary Of The Air Force, 11 December 2002.
- Department of the Army. *Medical Evacuation in a Theater of Operations, Tactics, Techniques, and Procedures*. Field Manual 8-10-6. Washington, D.C.: U.S. Department of the Army Field Manual Headquarters, 14 April 2000.
- Department of the Navy. *Patient Movement*. Navy Tactics, Techniques, And Procedures 4-02.2. Washington, D.C.: Office of the Chief of Naval Operations, April 2001.
- Dorland, Peter and James Nanney, *DUSTOFF: Army Aeromedical Evacuation in Vietnam*. Center of Military History, United States Army, Washington D.C., 1982.

- Gerber, Fredrick E. *Employment of the 307th Medical Battalion (Airborne) in Operations Desert Shield and Desert Storm*. Personal Experience Monograph. Carlisle Barracks: U.S. Army War College, 8 July 1992.
- Gillett, Mary C. *The Army Medical Department 1818-1865*. Army Historical Series: Center of Military History, United States Army, Washington D.C., 1987.
- Gillett, Mary C. *The Army Medical Department 1865-1917*. Army Historical Series: Center of Military History, United States Army, Washington D.C., 1995.
- Heintz, David S, medical evacuation consultant to the Army Surgeon General. Telephone interview by author, 7 November 2003.
- Heintz, David S, medical evacuation consultant to the Army Surgeon General. Telephone interview by author, 12 November 2003.
- Heintz, David S, medical evacuation consultant to the Army Surgeon General. Telephone interview by author, 14 November 2003.
- Heintz, David S, medical evacuation consultant to the Army Surgeon General. Telephone interview by author, 25 November 2003.
- Heintz, David S, medical evacuation consultant to the Army Surgeon General. Telephone interview by author, 4 December 2003.
- Heintz, David S, medical evacuation consultant to the Army Surgeon General. Telephone interview by author, 7 November 2003.
- Heintz, David S, medical evacuation consultant to the Army Surgeon General. Telephone interview by author, 5 December 2003.
- Heintz, David S, medical evacuation consultant to the Army Surgeon General. Telephone interview by author, 10 December 2003.
- Heintz, David S, medical evacuation consultant to the Army Surgeon General. Telephone interview by author, 12 December 2003.
- Lenahan, Rod. *Conforntation Zone, 1989 U.S. Intervention into Panama, Operation Just Cause*. Charleston, South Carolina: Narwhal Press, 2002.
- Lynch, Charles, Joseph H. Ford and Frank W. Weed. *The Medical Department of the United States Army in the World War: Volume VIII, Field Operations*. Washington, D.C.: Government Printing Office, 1925.
- MD0405 Correspondence Course of the United States Army Medical Department Center and School. "Military Medical History." Available from <<http://www.cs.amedd.army.mil/history/ele-milmed.html>>. Internet. Accessed 25 September 2003.
- Naval Medicine. "About Naval Medicine Online." Available from <<http://navalmedicine.med.navy.mil/default.cfm?seltab=about&selmod=7AF79F11-2A5E-780B-45D6C0D83FF101C8&docid=10259&parentid=&>>. Internet. Accessed 28 January 2004.

- Neel, Spurgeon. *Vietnam Studies, Medical Support of the U.S. Army in Vietnam, 1965-1970*. Department of the Army, Washington, D.C., 1991.
- "Operation Enduring Freedom MEDEVAC Procedures." Briefing slide. Fort Rucker, AL: Medical Evacuation Proponency Division, U.S. Army Medical Command, 17 December 2003.
- "Operation Enduring Freedom Medical After Action Review Back Brief." Briefing slides. Fort Sam Houston, TX: U.S. AMEDD Center and School, 25 October 2002.
- Reister, Frank A. *Battle Casualties and Medical Statistics, U.S. Army Experience in the Korea War*. Washington, D.C.: The Surgeon General, Department of the Army. Available from <<http://history.amedd.army.mil/booksdocs/korea/reister/frameindex.html>>. Internet. Accessed 29 OCT 2003.
- Sanfleben, Kurt A. *The Unofficial Joint Medical Officers' Handbook*, 2nd ed. Maryland: Uniformed Services University of the Health Sciences, 1997.
- Shaw, William J., LTC, M.C., Division Surgeon, 41st Division, 6th Army. "Report of Medical Department Activities in New Guinea." New Guinea, 2 September 1944.
- Sly, Leonard J. 62nd *Medical Group's Deployment to Somalia*. Personal Experience Monograph. Carlisle Barracks: U.S. Army War College, 24 May 1995.
- Stanley, James G. "50th Medical Company (Air Ambulance) Detachment AAR for Operation Enduring Freedom." Memorandum for Record. 50th Medical Company (Air Ambulance), 101st Airborne (Air Assault) Division, Ft Campbell, KY., 13 September 2002.
- Storey, D. E., CPT, M.C., 643rd Medical Clearing Company. "Annual Report of the 643rd Medical Clearing Company Activities for the calendar year ending 31 December 1944." Memorandum for The Surgeon General, U. S. Army, Communications Zone, ETO, APO 562, 30 January 1945.
- Streit, Paul H., COL, M.C., Surgeon Central Pacific Base Command. "Report of Medical Department Activities in Pacific Ocean Areas." Fort Shafter, Hawaii, 21 May 1945.
- "Third Infantry Division (Mechanized) After Action Report, Operation IRAQI FREEDOM."
- U.S. Marine Corps. *Health Service Support Operations*. Marine Corps Warfighting Publication 4-11.1. Washington, D.C.: Headquarters United States Marine Corps, 10 March 1998.
- U.S. Department of the Army, *United States Army Transformation Roadmap 2003*. Washington, D.C.: U.S. Department of the Army, November 2003.
- U.S. Joint Chiefs of Staff. *Doctrine for Health Service Support in Joint Operations*. Joint Pub 4-02. Washington, D.C.: U.S. Joint Chiefs of Staff, 30 July 2001.
- U.S. Joint Chiefs of Staff. *Joint Tactics, Techniques and Procedures for Patient Movement in Joint Operations*. Joint Pub 4-02.2. Washington, D.C.: U.S. Joint Chiefs of Staff, 30 December 1996.

U.S. Joint Chiefs of Staff. *Joint Tactics, Techniques, and Procedures for Patient Movement in Joint Operations*. Joint Pub 4-02.2. Washington, D.C.: U.S. Joint Chiefs of Staff, 30 December 1996.