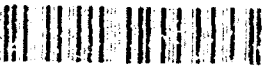

STUDY PROJECT

TO BE THERE, TO BE READY, AND TO SAVE LIVES: FAR-FORWARD MEDICAL CARE IN COMBAT

BY

COLONEL DARREL R. PORR
United States Army

USAWC CLASS OF 1993

U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

Form Approved
OMB No 0704-0188

1a REPORT SECURITY CLASSIFICATION
UNCLASSIFIED

1b RESTRICTIVE MARKINGS

2a SECURITY CLASSIFICATION AUTHORITY

3 DISTRIBUTION/AVAILABILITY OF REPORT
APPROVED FOR PUBLIC RELEASE
DISTRIBUTION UNLIMITED

2b DECLASSIFICATION/DOWNGRADING SCHEDULE

4 PERFORMING ORGANIZATION REPORT NUMBER(S)

5 MONITORING ORGANIZATION REPORT NUMBER(S)

6a NAME OF PERFORMING ORGANIZATION
U.S. ARMY WAR COLLEGE

6b OFFICE SYMBOL (If applicable)

7a NAME OF MONITORING ORGANIZATION

6c ADDRESS (City, State, and ZIP Code)
ROOT HALL, BUILDING 122
CARLISLE, PA 17013-5050

7b ADDRESS (City, State, and ZIP Code)

8a NAME OF FUNDING/SPONSORING ORGANIZATION

8b OFFICE SYMBOL (If applicable)

9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER

8c ADDRESS (City, State, and ZIP Code)

10 SOURCE OF FUNDING NUMBERS

PROGRAM ELEMENT NO	PROJECT NO.	TASK NO	WORK UNIT ACCESSION NO

11 TITLE (Include Security Classification)
I BE THERE, TO BE READY, AND TO SAVE LIVES
FAR-FORWARD MEDICAL CARE IN COMBAT (UNCLASSIFIED)

12 PERSONAL AUTHOR(S)
COL Darrel R. Parr

13a TYPE OF REPORT	13b TIME COVERED	14 DATE OF REPORT (Year, Month, Day)	15 PAGE COUNT
Study Report	FROM _____ TO _____	15 April 1993	25

16 SUPPLEMENTARY NOTATION

17 COSATI CODES		
FIELD	GROUP	SUB-GROUP

18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)

19 ABSTRACT (Continue on reverse if necessary and identify by block number)

20 DISTRIBUTION/AVAILABILITY OF ABSTRACT
☐ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS

21 ABSTRACT SECURITY CLASSIFICATION

22a NAME OF RESPONSIBLE INDIVIDUAL

22b TELEPHONE (Include Area Code) 717-245-3510

22c OFFICE SYMBOL
AWCAA

DD Form 1473, JUN 86 Previous editions are obsolete SECURITY CLASSIFICATION OF THIS PAGE

ABSTRACT

AUTHOR: Darrel R. Porr, COL, USA

TITLE: To Be There, To Be Ready, And To Save Lives: Far-Forward Medical Care In Combat

FORMAT: Individual Study Project

DATE: 15 April 1993 PAGES: 23

CLASSIFICATION: Unclassified

U.S. Army combat medical care is the best in the world! But the number of injuries sustained by soldiers that lead to death, usually due to hypovolemic shock, remains unacceptably high. Mobile Army Surgical Hospitals (MASH) far forward on the battlefield have led to advanced, professional medical and surgical care earlier than previously possible. Yet MASH hospitals are Corps-level assets, and as such are often too far back to intervene in the "golden hour" of trauma care when lives can be saved. Forward surgical teams can be built from the assets of either MASH hospitals or Combat Support Hospitals (CSH), and can be utilized as far forward as the medical companies of the Division's Forward Support Battalions (FSB), thus decreasing the evacuation distance from point of wounding and providing life-saving surgical treatment much farther forward than previously possible. This study examines the historical context for surgical hospitals on the battlefield since World War I, defines the limitations of the present-day MASH hospitals, and suggests a way to use the MASH hospital composed of forward surgical teams farther forward on the battlefield in order to better save lives.

USAWC MILITARY STUDIES PROGRAM PAPER

TO BE THERE, TO BE READY, AND TO SAVE LIVES:

FAR-FORWARD MEDICAL CARE IN COMBAT

AN INDIVIDUAL STUDY PROJECT

by

Colonel Darrel R. Porr
United States Army

Colonel Ralph Kahlan
Project Adviser

Colonel Bruce O. Bailey
Medical Adviser

U.S. Army War College
Carlisle Barracks, Pennsylvania 17013

ABSTRACT

AUTHOR: Darrel R. Porr, COL, USA

TITLE: To Be There, To Be Ready, And To Save Lives: Far-Forward Medical Care In Combat

FORMAT: Individual Study Project

DATE: 15 April 1993 PAGES: 23

CLASSIFICATION: Unclassified

U.S. Army combat medical care is the best in the world! But the number of injuries sustained by soldiers that lead to death, usually due to hypovolemic shock, remains unacceptably high. Mobile Army Surgical Hospitals (MASH) far forward on the battlefield have led to advanced, professional medical and surgical care earlier than previously possible. Yet MASH hospitals are Corps-level assets, and as such are often too far back to intervene in the "golden hour" of trauma care when lives can be saved. Forward surgical teams can be built from the assets of either MASH hospitals or Combat Support Hospitals (CSH), and can be utilized as far forward as the medical companies of the Division's Forward Support Battalions (FSB), thus decreasing the evacuation distance from point of wounding and providing life-saving surgical treatment much farther forward than previously possible. This study examines the historical context for surgical hospitals on the battlefield since World War I, defines the limitations of the present-day MASH hospitals, and suggests a way to use the MASH hospital composed of forward surgical teams farther forward on the battlefield in order to better save lives.

INTRODUCTION

"I will leave this battlefield when my duties are over...when I have your wounded."[1]
Major General Patrick Brady

Words spoken during the confusion and chaos of battle and death amidst a firefight in Vietnam. With his helicopter under intense ground fire, attempting to descend upon a landing zone caught in the crossfire...these words, spoken by then Major Patrick Brady, a man who earned the Congressional Medal of Honor for his actions that day as a Medical Service Corps aeromedical evacuation pilot, speak to the essence of medical care on the battlefield: Combat medical care provided far-forward, in a timely manner, with lifesaving potential, and--if need be--delivered in harm's way.

Combat medical care and the medical readiness of Table of Organization and Equipment (TO&E) units have been the missions of the Army medical services since the Revolutionary War. This mission was pushed to its gravest limits during the Civil War in battles like Antietam (23,000 casualties in one day), Gettysburg (50,000 casualties in three days), and Shiloh (24,000 casualties in two days). Because so many died so needlessly, due to questionable tactics and slow, meager medical care (combined with increasingly lethal methods of firepower), changes in combat medical care arose out of necessity.

The use of the first field hospitals and of forward surgical care (albeit mostly amputation of shattered limbs), the use of field (wagon) ambulances for "rapid" recovery and removal of

wounded from the battlefield, the practice of preventive medicine, and the first improvement in the approaches to trauma care were innovations brought to Army medicine by Dr. Jonathan Letterman, then Medical Director of the Army of the Potomac under General McClellan. Little of these advances were instituted in medical care in the Army of the Confederacy, in large part owing to a widely dispersed, often improvised system of medical care which had little central command, control, or coordination, and inconbsistent methods of resupply. Indeed, outside of McClellan's Army, with Letterman as Medical Director, the Army of the North was likewise slow to incorporate such advances, especially in the Western campaigns.[2]

Over time and through sucessive conflicts, far forward medical care with more timely evacuation and casualty treatment was devised. This, together with preventive medicine measures and medical advances (such as the use of sterile technique and antibiotics), steadily lowered morbidity and mortality from the wounds of war, and from disease and non-battle injury (DNBI).

In World War I the concept of mobile hospitals with mobile surgical teams closer to the battles was initiated. This method of far forward care was continued into World War II, with the development of the "Surgical Hospitals, Mobile Army" (MASH) concept in 1948, with their subsequent first use in combat during the Korean conflict.

Tested under fire in the Korean conflict, the MASH remained part of the Army Medical Department's (AMEDD) field hospital

system TO&E structure into the Vietnam Conflict. Because of the relatively small country, helicopter evacuation means, and tactical situations, fixed facility surgical hospitals alone were used in Vietnam.

Following Vietnam, only minor changes in MASH hospitals were made. It remained for the wide expanses of the desert of the Arabian Peninsula and highly mobile mechanized and armor warfare of Operation DESERT STORM (ODS) to severely test the MASH concept again.

It was found that MASH hospitals can't keep up with the units they support; they are "moveable" but not readily mobile as configured in the present TO&E (?0 or 60 bed configuration); and by doctrine are proposed for use at locations that aren't best described as "far forward".

HISTORICAL BACKGROUND

> "The mobile army surgical hospital, or MASH, as it was instantly and permanently dubbed, ...was a new kind of organization conceived soon after World War II, mainly as a way of bringing emergency lifesaving surgery closer to critically wounded men. The concept called for placing and keeping a sixty-bed, truck-borne MASH in a forward location just out of enemy artillery range in support of each division. Only four of the mobile units were in Korea initially, not enough to place one in support of each division; and, because of a shortage of evacuation hospitals, each MASH had been enlarged to 150 beds and was handling more than just surgery patients. But the early treatment of wounded at a MASH located only minutes from the battlefield, combined with the swift, comfortable (sic) delivery of seriously hurt men by helicopter, had helped to lower the fatality rate for the Army's wounded. The rate had been 4.5 percent during World War II. In Korea, it would eventually reach a new low of 2.5 percent."[3]

The first Surgical Hospitals, Mobile Army (MASH) were developed and built in 1948 and 1949; by 1949 there were five such hospitals. They were intended to be a 60 bed, tented, truck-transportable hospital manned by 126 personnel (14 physicians, 12 nurses, 2 operations officers (Medical Service Corps), one warrant officer (maintenance), and 97 enlisted soldiers (medics, cooks, radio operators, and drivers). They were the first hospitals brought to the Korean conflict due to "the severe problems of transport"[4] inherent in moving field hospiptals. Though untested in combat, their attributes seemed to fit the austere conditions they would face, for "...they had their own transport and their compliments were small."[5] They also were heavily surgical, were intended for use behind the front lines just beyond artillery range, and were, of necessity, adaptable.

The concept for mobile surgical capabilities and mobile hospitals had originated in World War I when the Americans in France packed their hospitals (equipment, personnel and tents)--and heretofore unknow mobile surgical teams--into trucks and moved with the changing front of the war. In Korea this became a deadly serious exercise--not only keeping up with the combat units early, but also retreating with cumbersome hospitals and many patients who were often immobile, as the course of events changed throughout the war. "So long as the armies were on the move, the medic's main task was simply to keep up."[6]

As in all protracted conflicts the medical theater grew over

time. The MASH hospitals were followed by Evacuation Hospitals. These were fixed facilities larger in size, capability, number of personnel, and logistical requirements, which were kept further back, and used as a staging base to transport wounded personnel out of theater if they did not meet the evacuation policy. By 1953 Station Hospitals, the next step in evacuation prior to transport to the Army hospitals in Japan, were also in place. During the Korean Conflict eight MASH hospitals, eight Evacuation hospitals, and eleven Station hospitals had been used in Korea. There were also three additional Surgical Hospitals-- which were really stationary MASH hospitals that had been reconfigured, made larger, kept farther back from the battle front, made immobile, and redesignated--stationed in Korea by war's end.

In contrast to World War II, the number of hospitals in Korea was small. In the European Theater of Operations during the Second World War, approximately (the numbers changed week to week, and no one documented them strictly in this fashion) 141 General Hospitals, 45 Station Hospitals (mostly of the 750 bed type), four Convalescent hospitals, 24 Field Hospitals, and 48 Evacuation Hospitals were used just in the European campaigns. The numbers of hospitals, let alone the types used in Northern Africa and the Far East, were not consistently documented. As it was common practice to determine the expected number of beds needed, not hospitals, documentation of hospital numbers is conflicting and ambiguous, especially since any given type of hospital was modified, sometimes several times, to expand or

contract its capacity and capability given the situation, terrain, and part of the theater in which it was used. A good example was the Station hospitals, which were used both in World War II and in Korea as 150-, 250-, 500-, and 750-bed facilities. Although the 750-bed Station Hospital was most frequently seen, they were staffed and equipped differently from one another, and certainly staffed and equipped below what the TO&E called for at the time.[7]

Though TO&Es were updated from the time of the Korean War, it was done largely by educated guess, within a vacuum. Some changes were based on the Vietnam experience, though only fixed surgical hospitals were used in Vietnam. The hospitals there were used as surgical centers rather than mobile surgical units, and hospitals were placed in a fixed facility (such as an existing Vietnamese hospital). These hospitals had few of the characteristics of the MASH TO&E (equipment, bed numbers, personnel, or types of medical care providers) for that time, and served as general purpose hospitals like all of those during the Vietnam conflict.[8]

The majority of today's Army medical leadership has had service in these fixed facilities as their only "field" assignment. This point is not made to denigrate that experience --for many lives were saved by their considerable dedication, hard work, and expertise--but rather to shed light on the experiences and thought process that our Army Medical Department (AMEDD) senior

leaders bring to considerations that impact on doctrine regarding far forward medical care in a combat environment. In a system where peacetime health care has dominated the concerns of a thirty year career, where "field assignments" for physicians are viewed as "taking a break" or as distractors from the mission at hand, it remains difficult to expend scarce resources (young physicians) to an area where the need manifests itself only with the occasional conflict.

CONCEPT

Severe trauma, whether from blunt injury (rapid deceleration such as during an automobile accident, usually with concomitant penetrating and blunt tissue injury) or outright penetrating trauma, such as knife wounds, gunshot wounds, or shrapnel injury, requires prompt medical care if life and limb are to be spared. That type of care is usually one or several surgical procedures.

The Army MASH hospitals today can fulfill that requirement, but have several significant limitations. The mix of surgeons and assisting physicians could be improved. The hospitals are too large and can't keep up with the units they support. The hospitals have no directly controllable aeromedical evacuation assets. When established, the hospitals are Corps assets and are too far removed from the casualties they can best save. And, despite the comment in the MASH hospital mission statement that says "This unit requires 100% of its TOE and supplies be transported in a single lift using its authorized organic

vehicles"[9], it cannot approach performing that mission.

In a document which described his MASH unit's experiences during Operation DESERT SHIELD/DESERT STORM (ODS/S), Colonel Kenneth Steinweg detailed the four different configurations--with markedly different capabilities--in which the hospital was forced to deploy in order to complete its mission(s). Colonel Steinweg, then commander of the 5th Surgical Hospital, Mobile Army (MASH), a hospital belonging to the 44th Medical Brigade (Airborne) of XVIIIth Airborne Corps from Fort Bragg, North Carolina, states the problems that we, within the Army Medical Department, have when providing far forward medical care on the battlefield.

The first problem is that of misunderstanding on the part of those who look at the hospital. Both from without, and even from the physicians within the unit, the expectation is that combat medical care provided and the equipment used in a combat field hospital must be "state-of-the-art", and must be as good as the best we can provide in our fixed facilities back in the United States for every soldier we treat. This sentiment was also relevant as far back as 1968, during the Vietnam Conflict, when Major General J. Lawton Collins (then the Surgeon General of the U.S. Army) returned from visiting Southeast Asia and commented, "Our hospitals in Vietnam are not evacuation hospitals, surgical hospitals, or field hospitals. They are more than that and consequently require sophisticated equipment....We are all interested in providing the best care possible. At present we have some items of equipment in Vietnam that equal what you have

at Walter Reed." (Walter Reed Army Medical Center in Washington, D.C. is the United States Army's premier teaching and treatment facility.)[10]

It is most difficult to disagree with "state of the art" medical care for wounded young Americans on a battlefield fighting to protect this country's (hopefully) vital interests. But we cannot provided that type of care inexpensively; we cannot provided care that extensive as far forward as it needs to be to save lives; and we cannot move equipment such as computerized axial tomography (CT) scanners, international standard organization (ISO) shelters, and environmental control units (ECUs) in a timely nor purposeful manner to care for our most seriously wounded so far forward, let alone build an environment that peacetime health care providers consider "state-of-the-art".

The Army was taken to task by Dr. Nancy Snyderman, a trauma surgeon from Los Angeles, acting as a technical medical expert for CBS News, in October 1990 during ODS. The 28th Combat Support Hospital (CSH) at King Khalid Military City in Saudi Arabia wasn't shiny enough, wasn't modern enough, wasn't "state-of-the-art" medical care as she knew it in her civilian trauma practice. Unfortunately, the "bad press" the Army received, and her uninformed and inept portrayal of medical care on a battlefield, led Dr. Snyderman to surmise that lifesaving surgical care in battle should be as aseptic, technologically advanced, and thus stationary as her hospital setting in Los Angeles. Dr. Snyderman never considered that this trauma unit, a

field hospital, was required to move hundreds of miles on several occasions, was required to keep up with the combat units it was meant to support, and had to limit its equipment, from tents to operating tables to surgical instruments, to that which could be packed up in a few hours, moved long distances, and reassembled ready again for lifesaving surgery at any time.

Dr. Snyderman never understood the mission, the conditions, nor the second-and third-order effects of the criticisms she made. She also never stayed long enough to see that this same hospital was one of the first deployed into Iraq to support allied soldiers, and that again and again it distinguished itself by the professional, efficient, timely surgical treatment and medical evacuation that saved young American soldiers', and injured Iraqi civilians' lives.

The media repeatedly ascribes that "truth is the first casualty of war"[11]. Misunderstanding and reporting such as this ensures that such statements will remain true in future conflicts.

The former commander of the 5th MASH in ODS/S, Colonel Kenneth Steinweg, has written that there are seven variables that markedly impact the capability of any combat medical care entity:

"--Mobility....the ability to move tactically and strategically by ground and air.

--Surgical Ability....operating tables and numbers of patients treated surgically.

--Staffing....all necessary health care providers.

--Patient Care....hospital bed numbers and related equipment.

--Physical Stability....durability to withstand all forms of weather and the wear and tear of assembly, disassembly, and movement.

--Environmental Adaptation....ability to adjust to heat and cold, and to maintain a reasonable climate for medical care and patient comfort.

--Independence....ability to sustain operations (comprehensive food service, maintenance sections, integral logistics/resupply section)."[12]

As Dr. Steinweg continued,"The highest priority is getting there, defined as mobility, followed immediately by resuscitative surgical ability. The MASH is the only mobile hospital (in the Army TO&E inventory[13]), and so has this singular responsibility. Next, staffing determines patient care and surgical abilities."[14] These two considerations are foremost in determining whether surgical care will be far enough forward on the battlefield to save lives.

The concept of mobility, whether by air, ground, or water, is extremely important. As the TO&E for the 60 bed MASH hospital is written, moving the hospital by aircraft (strategic mobility) requires thirty-two of the 234 available Air Force C-141 transports. A C5A transport is also needed, as the 5 ton crane necessary to assemble and move the hospital won't fit in the cargo compartment of a C-141. To move a MASH hospital by ship required a full 30 days from the time it reached port in the United States--not from the time alerted--until it was unloaded in Dhahran; at a minimum, it took an additional seven days to move the hospital from the port, prepare the site, and establish

the hospital.

Tactical mobility is likewise arduous. The 60 bed MASH, by its TO&E, has 38 vehicles, a mixture mostly of 2 1/2 and 5 ton trucks, for movement of its equipment and personnel. In order to move in the desert at the onset of DESERT STORM, the early deploying MASH hospitals left nearly 25% of their equipment behind due to mission-tailoring and lack of mobility, and had to acquire an additional twelve trucks and flatbed trailers to move the remaining 75% of equipment, personnel, and supplies. Although by mission requirements the MASH is supposed to be 100% mobile in one lift, it cannot move its own TO&E equipment in such a manner with organic vehicles. The MASH also has a considerable quantity of Common Table of Allowances (CTA) equipment and supplies ; these are additional items beyond the TO&E complement of a unit necessary to complete that unit's mission. This equipment and supplies has no means of being moved except by the vehicles organic to the MASH hospital, which were too few to move TO&E equipment.

The concern with mobility lies at a deeper issue that is at the heart of combat medical care. In order to care for wounded soldiers, medical care must be where they are wounded if we are to make a difference. In the care of trauma patients from any type of trauma, surgeons refer to the "Golden Hour". By this they mean the period of time during which the human body, through physiologic means and the effects of adrenalin after wounding, can maintain homeostasis and statistically still have a chance to

recover following severe, even massive trauma, provided that prompt resuscitative care, to include surgery if needed, is accomplished.[15]

In language understood outside of the medical profession, severe wounding causes death in a trimodal (three-peaked) pattern. First, some severe injuries cause death within seconds to minutes; no medical care usually can change that. In the second instance, however, a large portion of serious injury causes death if not definitively treated over the course of roughly an hour; it is here that the argument for far forward surgical medical care lies. If surgery or medical intervention is performed, lives can be saved; if not, death ensues. In the third instance, wounding requires treatment, sometimes extensive, but its delay is not particularly detrimental and will not cause death or significant additional morbidity.[16]

To be of benefit in war, medical care has to be there. To be there it has to be mobile, not "moveable". And, once mobile and located where soldiers are wounded, it has to have the capability to save lives, be that surgical or medical. The largest proportion of battle deaths that can be saved arise from hypovolemic shock--the soldier bleeds to death. The treatment to prevent death lies in replacing the blood volume lost, in stopping the bleeding (often surgically), or both. This must be done rapidly, since it is lifesaving rather than just timely. Hence, the "bottom line" need for far forward medical care.

CONCLUSION

> "11 January 1863. "Martha....I can inform you that I have Seen the Monkey Show ((War)) at last, and I don't Waunt to see it no more I am satsfide (sic) with Ware Martha I Cant tell you how many ded I did see....one thing Shore I dont Waunt to see that site no more."[17]
>
> Private Thomas Warrick, C.S.A.

It has become an unwritten but unmistakable axiom when American soldiers are committed to war that dead American soldiers will erode public support for the use of military force more quickly than any other event; and the best possible medical care will always be expected on the battlefield delivered in a professional, timely, and well-executed manner. There must also be adequate medical treatment available to care for all our casualties.

As Colonel (later Major General) Paul R. Hawley, Chief Surgeon for both European Theater of Operations, U. S. Army (ETOUSA) and Services of Supply (SOS) stated early in World War II, "Above all else...the American people demand in war...that their soldiers be given <u>superior</u> ((his emphasis)) medical service. No one thing can cause such a furor in the United States as the knowledge that adequate and proper hospital facilities are not being provided for their troops...".[18] Of special interest, perhaps only to those who have so attended, Hawley had previously been the Assistant Commandant at the Medical Field Service School, Carlisle Barracks, Pennsylvania, and then attended the Army War College which at that time was located in Washington D.C.[19]

Today the Army Medical Department (AMEDD), following the rapid conclusion of ODS/S, has promulgated a warfighting concept for the AMEDD based on six battlefield rules (in order of precedence):

Provide a medical presence with the soldier;

Maintain the health of the command;

Save lives;

Clear the battlefield;

Provide state-of-the-art care; and

Return soldiers to duty as soon as possible.[20]

First we must be on the battlefield and in the units with the soldiers, and provide the means and the instruction to assure the health of the command. Next, in battle, we must proficiently save lives and clear the battlefield in a timely manner while providing "state-of-the-art" medical care. And finally we must return to duty those soldiers who can recover in a quick and efficient manner. Worthy goals, all, but, except for the second point, these goals are too little practiced and difficult to meld with a peacetime health care mission that has overwhelmed our entire Army medical system.

Our MASH hospitals, as now configured and presently resourced, require changes in design, equipment, personnel, and doctrine. Their mission will continue to be far-forward surgical care, but they need to be located within a Division's rear area rather than in the Corps area. They must also be made mobile enough to move with the units they support if they are to

continue to maintain a presence with the soldier, and in so doing be far enough forward to save lives.

From the MASH hospital we need to mold forward surgical teams that possess their own organic transport, have the capability to set up in tents and conduct surgery, and can be attached to the forward support medical battalion's medical company for the holding beds they possess. These forward surgical teams could then be moved about the battlefield, falling in on Divisional forward and main support battalions' medical companies to surgically support units in combat. When that unit no longer needed the capability, the forward surgical team would then be moved back to the MASH hospital, or on to another medical company in support of another Divisional battalion.

Forward surgical teams already exist. The first were built within the special operations community, and then within the 44th Medical Brigade, to support their units medically. Others have been developed that support conventional units. While the composition is different among the half-dozen that exist, their characteristics are more similar than different.

Perhaps the most mobile, and best developed to support conventional units, are those of the 44th Medical Brigade and the 82d Airborne Division. The entire forward surgical team can be contained on four HMMWVs (high mobility, multiple wheeled vehicles) that can carry all of its equipment (tents, anesthesia equipment, surgical tables and instruments, supplies) and personnel. This surgical team can be infiltrated by parachute or

air-landed if need be, with the unit driving to the location of employment following insertion by parachute or air-land operations on a captured airfield. The entire surgical team can be transported on two C-130 or two C-141 aircraft.

Coupled with the personnel and the 40 bed holding capacity of the forward support medical company, the medical company and the forward surgical unit provided dedicated, capable surgical and resuscitative support within the forward support battalion (FSB) area at the location of the brigade trains. When attached to a Divisional medical company, the forward surgical teams obtain their support from that Division through the brigade trains.

Employed in this manner, the forward surgical team (FST) can support combat operations medically from the brigade support area, or can return to the MASH hospital from whence it came and constitute a surgical hospital with more depth that can operate within the division support area. Yet belonging to a field hospital of the medical brigade (a Corps element), it can be controlled in a manner that allows it to be utilized along a broad front where it is needed in a timely manner consistent with medical doctrine as it exists today.

The forward surgical team is a surgical element with capabilities that lend itself to movement and use on short notice with life-saving potential. We owe it to the soldiers in our Army whom we support, and to their families who remain behind, whenever our Army calls its units to combat. We should be

changing our manner of doing business to employ such surgical teams and MASH hospitals now.

War is inevitable. And with war, soldiers become casualties. Whenever the next war occurs, we owe our soldiers superb medical care that is there where they need it, ready when it is needed, capable of saving lives where possible. For what Homer said so many years ago, is as pertinent today, as in antiquity:

> "Men grow tired of sleep, love, singing, and dancing sooner than (they do of) war."

ENDNOTES

[1]Brady, Major General Patrick H. "'When I Have Your Wounded.'" Army. Association of the United States Army, Arlington, Virginia. June 1989. p. 53.

[2]Letterman, Jonathan, M.D. Medical Recollections of the Army of the Potomac.Jonathan Letterman, M.D., Surgeon for the Army of the Potomac, 1862-1865. D. Appleton and Company, New York. 1866.

[3]Mossman, Billy C. United States Army in the Korean War: Ebb and Flow, November 1950--July 1951. Center of Military History, United States Army, Washington, D.C. 1990. p. 107.

[4]Cowdrey, Albert E. United States Army in the Korean War: The Medics' War. Center of Military History, United States Army, Washington, D.C. 1987. p. 172.

[5]Ibid., 69-70.

[6]Ibid., 173.

[7]Cosmas, Graham A., and Albert E. Cowdrey. United States Army in World War II: The Medical Department: Medical Service in the European Theater of Operations. Center of Military History, United States Army, Washington, D.C. 1992. p. 110.

[8]Neel, Major General Spurgeon. Vietnam Studies: Medical Support of the U.S. Army in Vietnam 1965-1970. Department of the Army, Washington, D.C. 1973. p. 63, p. 65.

[9]Department of the Army. Table of Organization and Equipment, Number 08863L0, CTU-9110, Mobile Army Surgical Hospital (60 Bed). Headquarters, Department of the Army, Washington, D.C. 1 October 1988.

And

Department of the Army. Table of Organization and Equipment, Number 08765L0, CTU-9204, Mobile Army Surgical Hospital: 30 Bed. Headquarters, Department of the Army, Washington, D.C. 1 August 1991.

[10]Neel, 65.

[11]Source unknown. An "axiom" used frequently by the media in the context of denouncing military control of battlefield access.

[12]Steinweg, Kenneth K. "Mobile Surgical Hospital Design: Lessons From 5th MASH Surgical Packages for Operation Desert Shield/Desert Storm." Kenneth K. Steinweg, MD, COL, MC, Consultant for Ambulatory Care, Office of the Surgeon General, Falls Church, Virginia 22041. 1992. p. 12.

[13]My emphasis. Special Operations Forces have the capability to "build" a hospital that is mobile--and did to support OPERATION JUST CAUSE in Panama in December 1989--but it is not documented as a TO&E field hospital.

[14]Steinweg, 12-13.

[15]American College of Surgeons. Advanced Trauma Life Support Program. Committee on Trauma, American College of Surgeons. Chicago, Illinois. 1989. p. 3.

[16]Ibid., 3.

[17]Ward, Geoffrey C., with Ric Burns and Ken Burns. The Civil War: An Illustrated History. Alfred A. Knopf, Inc.; distributed by Random House, Inc. New York, New York. 1990. p. 184.

[18]Cosmas, 43.

[19]Ibid., 11.

[20]Office of the Assistant Deputy Chief of Staff for Operations and Plans. The United States Army Modernization Plan, Volume II. Annex O: Medical. Office of the Assistant Deputy Chief of Staff for Operations and Plans, Force Development, ATTN: DAMO-FDR. Department of the Army, Washington, D.C. 20310. January 1993. p. O-10.

BIBLIOGRAPHY

Academy of Health Sciences. FM 8-10-5. Brigade and Division Surgeons' Handbook: Tactics, Techniques, and Procedures. Academy of Health Sciences, United States Army, Fort Sam Houston, Texas 78234. November 1990.

American College of Surgeons. Advanced Trauma Life Support Program. Committee on Trauma, American College of Surgeons. Chicago, Illinois. 1989.

Brady, Major General Patrick H. "'When I Have Your Wounded.'" Army. Association of the United States Army, Arlington, Virginia. June 1989.

Cosmas, Graham A., and Albert E. Cowdrey. United States Army in World War II: The Medical Department: Medical Service in the European Theater of Operations. Center of Military History, United States Army, Washington, D.C. 1992.

Cowdrey, Albert E. United States Army in the Korean War: The Medics' War. Center of Military History, United States Army, Washington, D.C. 1987.

Department of the Army. Table of Organization and Equipment, Number 08765L0, CTU-9204, Mobile Army Surgical Hospital: 30 Bed. Headquarters, Department of the Army, Washington, D.C. 1 August 1991.

Department of the Army. Table of Organization and Equipment, Number 08863L0, CTU-9110, Mobile Army Surgical Hospital (60 Bed). Headquarters, Department of the Army, Washington, D.C. 1 October 1988.

Gerber, Lieutenant Colonel Frederick E. Employment of the 307th Medical Battalion (Airborne) in Operations Desert Shield and Desert Storm--A Personal Experience Monograph. Lieutenant Colonel Frederick E. Gerber, USA. United States Army War College Study Project. Carlisle Barracks, Pennsylvania. 1992.

Headquarters, Department of the Army. FM 100-10. Combat Service Support. Headquarters, Department of the Army, Washington, D.C. February 1988.

Letterman, Jonathan, M.D. Medical Recollections of the Army of the Potomac.Jonathan Letterman, M.D., Surgeon for the Army of the Potomac, 1862-1865. D. Appleton and Company, New York. 1866.

Mossman, Billy C. United States Army in the Korean War: Ebb and Flow, November 1950--July 1951. Center of Military History, United States Army, Washington, D.C. 1990.

Neel, Major General Spurgeon. Vietnam Studies: Medical Support of the U.S. Army in Vietnam 1965-1970. Department of the Army, Washington, D.C. 1973.

Office of the Army Surgeon General. "Historical Statistics on Disease and Non-Battle Injuries and Deaths versus Battle Injuries and Deaths". Office of the Army Surgeon General, Washington, D.C. 1991.

Office of the Army Surgeon General. Historical Statistics Data, Office of the Army Surgeon General (Consultant for Preventive Medicine, Directorate of Professional Services). Collection from various sources, primarily the Armed Forces Institute of Pathology, Walter Reed Army Medical Center. 1992.

Office of the Assistant Deputy Chief of Staff for Operations and Plans. The United States Army Modernization Plan, Volume II. Annex O: Medical. Office of the Assistant Deputy Chief of Staff for Operations and Plans, Force Development, ATTN: DAMO-FDR. Department of the Army, Washington, D.C. 20310. January 1993.

Smith, Herbold. A Short History of the Civil War. Oxford University Press, New York New York 10020. 1991.

Steinweg, Kenneth K. "Mobile Surgical Hospital Design: Lessons From 5th MASH Surgical Packages for Operation Desert Shield/Desert Storm." Kenneth K. Steinweg, MD, COL, MC, Consultant for Ambulatory Care, Office of the Surgeon General, Falls Church, Virginia 22041. 1992.

Thompson, R. L. Unit History of the 45th Surgical Hospital (8067 Army Unit). Contained in the archives at the U.S. Army Military History Institute, U.S. Army War College (Upton Hall), Carlisle Barracks, Pennsylvania 17013. 5 April 1960.

United States Army Reserve Annual Report. Army Reserve Special Report 1992: "Twice the Citizen". Washington, D.C. January 1993.

United States General Accounting Office. Operation Desert Storm: Full Army Medical Capability Not Achieved. "United States General Accounting Office (GAO/NSIAD-92-175). Report to the Chairman, Subcommittee on Military Personnel and Compensation, Committee on Armed Services, House of Representatives." Washington, D.C. August 1992.

United States Government Printing Office. Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms. Washington, D.C. 1 December 1989.

Ward, Geoffrey C., with Ric Burns and Ken Burns. The Civil War: An Illustrated History. Alfred A. Knopf, Inc.; distributed by Random House, Inc. New York, New York. 1990.