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COMBAT MEDICINE: EXPENSIVE HUMANITARIAN EFFORT OR
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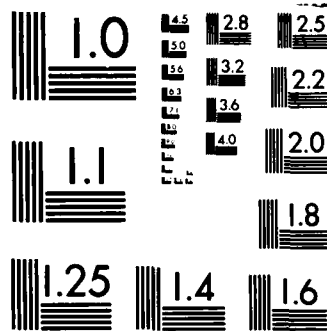
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COMBAT MEDICINE;
EXPENSIVE HUMANITARIAN EFFORT, OR COMBAT MULTIPLIER?

BY

COLONEL BARRY W. WOLCOTT, MC

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UASWC MILITARY STUDIES PROGRAM PAPER

COMBAT MEDICINE;
EXPENSIVE HUMANITARIAN EFFORT, OR COMBAT MULTIPLIER?

AN INDIVIDUAL ESSAY

by

Colonel Barry W. Wolcott, MC

Colonel Robert Sloane, AR
Project Advisor

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US Army War College
Carlisle Barracks, Pennsylvania 17013
1 April 1985



ABSTRACT

Combat medicine should augment units' combat power by minimizing avoidable losses to injury and illness, by rapidly treating and then returning to duty all soldiers capable of continued fighting, and by expeditiously but humanely clearing the battlefield of those too sick or too injured to rapidly rejoin the battle. To properly employ medical combat service support requires that tactical commanders, their medical staff officers, and their subordinate medical unit commanders be able to communicate effectively and efficiently. To facilitate such communication, this paper defines in terms simultaneously meaningful to all involved seven principles governing the employment of combat medical support.

COMBAT MEDICINE;
EXPENSIVE HUMANITARIAN EFFORT,
OR
COMBAT MULTIPLIER?

American combat commanders sometimes deal with their medical subordinates as uniformed technicians rather than as military officers, and, therefore, may judge the value of their medical subordinates' advice against personal, rather than military, criteria. In addition, they may consider combat medicine as a humanitarian effort which, at great cost to combat power, clears the battlefield of sick and wounded, rather than as a military asset directly supporting combat operations.

In the same way, American military medical planners frequently plan medical support without clearly relating their plans to the principles of war governing the actions and intentions of the commanders they support (1). They do not clearly state in non-medical terms the probable effects of medical problems confronting commanders and the military rationale for their medical advice.

Properly conducted, combat medical care is a multiplier of combat power. It minimizes preventable losses, rapidly returns to battle the maximum number of combat-effective soldiers, and clears the combat zone of soldiers too severely sick or wounded to fight. By minimizing preventable losses and by returning experienced soldiers to duty with their own units, combat medical care assists commanders in preserving unit strength and

effectiveness. By rapidly clearing the severely sick and wounded from the combat zone, it helps protect commanders' freedom of action and supports unit morale.

In this paper I define six principles governing combat medical support of field commanders. These principles have been derived from the experience of combat medicine throughout modern western military history. Each directly supports application of one or more of the principles of war articulated in FM 100-5. They are as follows:

THE PRINCIPLE OF THE UNIT AS THE PATIENT;
THE PRINCIPLE OF THE COMMAND OF HEALTH;
THE PRINCIPLE OF PREVENTION;
THE PRINCIPLE OF BUDDY/SELF AID;
THE PRINCIPLE OF THE FIRST POST-WOUND HOUR;
THE PRINCIPLE OF SELECTIVITY.

The principles of war are most useful as responses to an interrogatory asking three questions: What do we want to do? (principle of the objective). Who will command? (principle of unity of command). How do we want to do it? (principles of offensive, mass, economy of force, maneuver, security, and surprise). By directing commanders' responses to these three questions, the principles encourage clarity of thought and make success more likely.

The above-stated principles of combat medical support address the same three questions: What do we want to do? (principle of the unit as the patient). Who will command? (principle of command of health). How do we want to do it?

(principles of prevention, buddy/self aid, first post-wound hour, and selectivity).

If followed by military medical planners, the principles will lead to medical doctrine, force planning, and support plans clearly linked to the principles of war. By referring to them, military medical planners and operators will be able to effectively advise their commanders using military terms and concepts. Commanders will also be able to refer to these six principles when judging whether the medical advice they are receiving properly supports their concept of operation. By understanding them, commanders will be able to deal with their medical subordinates in a military rather than a technical manner.

good is the norm. Fortunately, providing the best medical care for individual soldiers usually also provides the greatest unit strength, and there is no conflict in anyone's mind. When it does not, military medical personnel, their commanders, and those they support must recognize that the Army Medical Department's motto, "To Conserve the Fighting Strength" comes from the obligation to follow this most basic principle of combat medicine: good combat medicine is that which maximizes the chances of the unit's survival and success.

THE PRINCIPLE OF THE UNIT AS THE PATIENT

Recognize that the primary function of combat medical support is to make victory more likely by maximizing the number of troops capable of fighting; relieving suffering while minimizing deaths and disabilities is a necessary, but secondary, function.

In 1942 on Guadalcanal, Marines were treated for malaria in their fighting positions unless their temperature rose over 105 degrees. In 1944 almost all of Merrill's Marauders had one or more medical conditions fully justifying evacuation to the States, yet they were ordered back into the jungles to fight the Japanese. In 1951 hundreds of Marines and soldiers forced to retreat by the Chinese advance into Korea fought a retrograde action over several hundred miles on badly frostbitten feet. In 1969 in Vietnam soldiers with mild hepatitis filled sandbags during their recovery rather than remaining in bed. While these occurrences would have been poor medical care in peacetime, none of these or other similar incidents represent poor medical care in a combat theater. Rather, they represent the fact that military medicine in wartime has the combat unit, not the individual soldier, as its "primary patient". If forced by circumstances of war to choose, combat medicine must choose first to meet the needs of the unit to survive and succeed and then to treat the individual.

If military medicine did not primarily devote itself to maintaining the combat power of units, it would be ignoring the obvious fact that in combat individual sacrifice for the common

from TDA units and test only the operational, non-medical capabilities of their medical units. In this context, TOE commanders usually make several specific errors:

1. They believe that, since regulations make the local TDA hospital commander responsible for peacetime health care on their installations, the only way they (the TOE commanders) can address their responsibilities for the health of their command is by placing their medical personnel under the functional control of the hospital commander who, in turn, supervises these personnel as they provide sick call and hospital care for the installation population.

2. They consider the ability of medical units to pass ARTEPS incorporating mock casualty care or PCMS inspections as more reliable measures of unit effectiveness than demonstrated ability to care for actual patients.

3. They accept that during peacetime the personnel of their organic medical units provide medical care only as individual fillers in hospital-run clinics, wards, or labs even though they must function as units from the first day of combat.

4. They tolerate the inconsistency between (a) peacetime assignment policies which, without command board action, assign physicians to staff positions as division surgeons and (b) Army doctrine which requires this medical staff officer, upon combat deployment, to assume command from the command board-selected Medical Service Corps officer who commands

THE PRINCIPLE OF THE COMMAND OF HEALTH

Carry out command responsibility for the health of the command by receiving advice from assigned medical staff officers and exercising command over assigned medical units.

Since the beginning of the American Army, commanders have been responsible for the health of their commands and have had medical elements assigned directly to maneuver elements rather than placed "in support of" maneuver elements by a central medical authority. To compensate for commanders' lack of technical expertise in medical matters, they have medical officers assigned either to their personal staffs alone or simultaneously to both their personal and their special staffs.

Commanders exercise their responsibilities for the health of their commands as they exercise their command responsibilities in other areas. They receive advice and recommended plans from their staff medical officers; listen to the views of other staff officers, their medical unit commanders, and other commanders; make decisions; and approve plans for implementation by medical unit commanders using assigned troops and equipment.

An accepted tenet of military training is that commanders and their subordinates should prepare for war by doing things during peace as closely as possible to the way they will do them during war. Unfortunately, instead of being held responsible during peacetime as they will be in wartime for the health of their commands and the technical proficiency of their medical units, peacetime commanders usually "receive" medical support

death awaiting evacuation as their buddies watched ... not knowing what to do. Ironically, had these deaths been prevented by early self/buddy aid, appropriate physician care within the next hour would have returned many of these soldiers to duty in a short time.

Commanders' fears that troops trained in self/buddy aid will stop fighting to aid their buddies are not supported by the Israeli experience in any of their wars, by the British experience on the Falklands, or by the US Rangers' experience on Grenada. All available evidence indicates that self/buddy aid training increases the willingness of soldiers to expose themselves to combat risk (presumably because they know that help is nearby) and decreases the time they spend with wounded buddies (presumably because they know what to do and the limits of their ability to help).

Commanders can decrease needless combat deaths by training their troops in three simple procedures: how to stop bleeding, how to treat open chest wounds, and how to keep open the airways of wounded soldiers. These skills can be taught quickly and kept current with minimal refresher training time. Troops must understand that in combat the unit medic will most likely be fully occupied caring for massively wounded soldiers. Wounded needing "only" pressure dressings, tourniquets, or chest dressings will have to care for themselves using their own first aid skills and supplies (14) or get care from their buddies until a medic becomes free. Treatment for each of these conditions are

THE PRINCIPLE OF BUDDY/SELF AID

Insure your troops can perform those simple tasks which will save their own or their buddy's life if they are wounded in combat.

American soldiers are listed "as killed in action" if they die from wounds prior to arrival at a division level medical clearing company. If they arrive alive at the clearing company, but subsequently die at any level in the medical evacuation chain, they are listed as "died of wounds." During World War II, 4.5% of those arriving alive at the medical company subsequently died of wounds; this fell to 2.5% during the Korean War and to less than 2% in Vietnam (12). Most combat deaths occur before wounded soldiers reach the medical company.

Most American KIAs in Korea and Vietnam died from medically untreatable wounds such as massive head injuries or dismembering effects of high explosives. These injuries would have caused their death even had the most sophisticated of medical care been instantly available.

However, as many as 38% of American deaths in Vietnam were preventable by application of simple techniques of self/buddy aid (13). Most of these preventable deaths were due to severe bleeding from arm or leg wounds (treatable by pressure dressings and/or tourniquets) or to asphyxiation from either untreated open chest wounds or obstruction to breathing (each treatable with simple techniques). In many cases soldiers suffocated or bled to

cooks how to properly clean field mess equipment; showing soldiers how to effectively care for their feet, bathe, and wash their clothes while in the field; and practicing insect and rodent control are neither glamorous nor well rewarded occupations for commanders or their subordinate officers and NCOs. Instead, peacetime FTXs frequently utilize commercially contracted chemical toilets, paper plates, piped in water, and rations trucked to the field from rear area fixed kitchens in order "not to waste training time." Currently, we do not train to avoid the illnesses of filth by properly combatting the filth of field living.

We will avoid exorbitant losses of trained soldiers who become ill before ever reaching the battle only if combat commanders in peacetime become as involved in preventive medical support for their troops as they are in preventive maintenance support for their vehicles. While the principles of preventive maintenance and preventive medicine are the same, the current peacetime training emphasis on them is not. During actual combat, demands of mission completion and planning will decrease the ability of commanders to personally attend to either issue. In wartime their units will continue only those prevention programs ... either medical or maintenance ... which have become second nature through peacetime training. Unless we change the way we train, we risk going to war with a high percentage of our vehicles "up" but a large percentage of our soldiers "down".

He said, "Not all my commanders took me seriously when [my program of] prevention began. After I sacked three of them, they got my meaning (10)." The Israeli Defense Force has relieved officers whose units suffer preventable heat casualties (11). Command action in October 1968 also limited preventable losses from skin disorders in the Ninth Infantry Division where, based upon medical advice from his staff, MG Julian Ewell directed a 48 hour limit to continuous operations in the paddies (8). Similarly, responsible command action has limited losses to malaria, heat casualties, sexually transmitted diseases, hepatitis and other diseases associated with past military operations and can minimize their impact in future wars.

Recognizing the potential magnitude of preventable losses of combat manpower to DNBI, the Army provides commanders at all levels with staff possessing special expertise in preventive medicine (PM). From preventive medicine teams at company level through preventive medicine officers on division staffs, to special units at Corps and echelon above Corps (EAC), experts are available to provide advice and assistance to commanders based on their special training and education. Unfortunately, proper use of such expertise is no longer part of the education of all US Army officers. It was prior to WWII when sanitation and hygiene was included in the curricula of West Point, branch basic and advanced courses, and the Command and General Staff College.

Today, enforcing sleep schedules; insuring that NCOs correctly locate latrines, water points, and mess lines; teaching

diseases or diseases of climate are capable of producing isolated DNBI rates exceeding 100 per day per thousand. Even if such a disease only disabled its victims for an average of three days and all recovered fully, a unit so struck would be 30% combat-ineffective by the third day and its strength would remain so decremented until the epidemic completed its course.

Examples in military history are easy to find: in the winter of 1944, Patton's Army was more nearly stopped by losses to frostbite than by losses to the German Army (6). The Marine Force in Lebanon in 1958 became combat-ineffective within days of landing due to sewage-borne diarrhea rather than to enemy fire (7). During 12 months of 1968-69 in Vietnam, infantry battalions of the Ninth Infantry Division lost 26,800 man-days to skin diseases (8). Future conflicts could easily be characterized by epidemics of heat injuries among troops operating in chemical protective suits, battle-stress reactions among troops in high-intensity combat, skin disease in troops not taught how to stay clean in the field, or fatigue-related disorders among officers conditioned during 72 or 96 hour peacetime exercises that "real leaders" do not sleep while in the field (9).

Most epidemics of infectious or climate-related diseases afflicting armies are preventable or at least ameliorable by command action. Field Marshall Sir William Slim in the WWII India/Burma Theater understood that command action was necessary to reverse the preventable losses to malaria, diarrhea, skin disease, and heat which threatened the dissolution of his Army.

THE PRINCIPLE OF PREVENTION

To maximize a unit's effective strength upon engagement, take command actions prior to engagement which minimize disease and non-battle injuries.

The statement "more soldiers are lost to disease or injury than to the enemy" is simultaneously trite and true. American Army losses to disease/non-battle injuries (DNBI) have always exceeded losses due to wounds. This is both because illness and accidents occur throughout the Theater of Operations (while most combat injuries occur in the forward area of the combat zone) and because illnesses and injuries occur every day (while heavy combat is episodic).

Each average day of conventional land warfare, one to three soldiers per thousand committed divisional troops are rendered ineffective by DNBI regardless of combat intensity (4). At the same time, the number of soldiers rendered ineffective by wounds or killed in battle varies from much less than one to slightly over ten per thousand committed divisional troops per average day (5), while losses in specific hard-hit units can be much higher. Thus, in "normal" combat settings, DNBI's constitute a slow but steady loss of combat power while battle injuries (KIAs and WIAs) constitute episodic major losses.

Armies live in filth and are subject to the diseases of filth in addition to "normal" illnesses. Failure to take preventive medical measures can dramatically raise the DNBI rate and turn slow but steady losses into torrents. Infectious

priority to the optimal training of one type of unit at the expense of the other's training.

Training manuals and devices are readily available to the motivated medical planner within the training support system of TOE units: game-board simulations of required medical platoon, medical company, or mobile hospital actions can be played in conjunction with CPXs of appropriate level; moulage kits are available to provide realistic appearing wounds requiring treatment, and casualty "cards" for identifying wounds and treatment requirements can be integrated into force-on-force training. As in all training programs, command emphasis is the needed catalyst.

training. To be realistic, medical training beyond routine care must be added to field problems. This is different from the adequate training challenges field operations usually provide for other combat support and combat service support areas such as communications, supply, and maintenance. When detached from base-ops support, commanders must constantly struggle to provide their units with water, electricity, communications, sewage, maintenance, and resupply which they "receive" in garrison along with medical care. This struggle during field exercises constitutes good training for commanders in dealing with most of their combat support and combat service support needs, since their units will have roughly equivalent requirements in these areas, both qualitatively and quantitatively, during combat. In contrast, peacetime medical needs in the field are so qualitatively simple and quantitatively small that meeting them does not provide realistic training for medical units ... requirements for medical care in combat will be far more complex and orders of magnitude greater.

Commanders should recognize that maximally realistic peacetime medical field training requires the real-time evacuation of large numbers of mock casualties from maneuver units during ongoing operations. When the training benefit of requiring maneuver units to operate at realistically reduced strength outweighs the effects of not training "at 100% strength", concurrent medical and maneuver unit training requires only appropriate planning. At other times, commanders must give

2. Either (a) the Army Medical Department must change its peacetime assignment policies (so that the physicians assigned to TOE command positions requiring physicians in wartime have the military medical competence, the capability as a staff officer, and the military schooling predictive of successful command); or (b) the Army must change its doctrine so that Medical Service Corps officers in peacetime command of TOE medical units remain in command when the units deploy to directly care for patients.

While these changes are occurring, commanders must be attentive to the potential for severe conflicts between physician medical staff officers and non-physician medical unit commanders: nowhere else does regulation require that a staff officer replace a peacetime commander "as soon as the balloon goes up" (and with the peacetime commander staying on as the unit's executive officer!). Because of this unique relationship between physician staff officers and non-physician medical unit commanders, the potential for conflict during peacetime is far beyond the classic "staff versus command" tension that many feel improves units' function. Only with senior command recognition that these problems result from a structural flaw rather than from isolated "personality conflicts," can commanders avoid their potential negative effects on training and medical care.

3. Their commands' capabilities to integrate realistic combat medical support, planning, and execution into combat operations must be regularly tested in CPXs, FTXs, and other

A second major obstacle is that all beneficiaries receiving care at the installation hospital will perceive increased medical officer assignments to TOE units as having come at their expense. They will complain about this "erosion" of their medical benefits. To avoid the morale and political consequences of such beneficiary criticism, increased assignment of medical officers to TOE units will obligate the TOE unit to care for patients other than simply those soldiers assigned to the units themselves. This could include soldiers of neighboring TOE units without organic medical units, family members of active duty personnel, or retired personnel and their family members. It would be analogous to combat units having area medical support and/or MEDCAP responsibilities assigned in addition to their direct medical support wartime missions. Fortunately, as discussed above, providing medical care is a major requirement of proper medical training. Thus, the TOE commanders under such agreements are no longer "turning their soldiers over to the hospitals to do the hospitals' jobs." Instead, the TOE commanders and the hospital commanders are cooperating to simultaneously better meet their separate major medical missions: providing actual medical care for patients in peacetime and conducting medical training to support wartime care. Agreements governing how to have TOE medical units care for active, retired, and family member beneficiaries "within the regulations" have been successful at several posts. Fort Lewis, Washington, is currently serving as a model for such agreements (3).

units not directly caring for patients as a unit are not training for their wartime mission ... even if their performance on inspections, ARTEPS, etc. is acceptable.

This training can be as varied as: a medical company operating a ward at the hospital when in garrison and in the field during FTXs, a medical platoon operating a battalion aid station on a daily basis, or a field ambulance platoon operating the on-Post non-emergency ambulance service. Such unit training will require filling a higher percentage of authorized medical officer (both warrant officer physician assistant and physician) slots in TOE units than are now filled, since delivering medical care requires the presence of medical officers.

TOE medical staff officers must coordinate with medical unit commanders to prepare plans for such peacetime medical care. The plans must recognize and support the installation hospital commanders' legal and regulatory responsibilities to oversee all health care on the installations. Before implementation at an installation, these plans must be approved by both the senior TOE commander and by the hospital commander. The plans to be implemented by the medical units should allow the TOE commanders freedom to utilize their medical assets to meet their training needs; however, equally importantly, they must also obligate the TOE commanders to meet meet the legal and regulatory requirements governing the practice of medicine as interpreted by hospital commanders. The TOE commanders' next higher headquarters should deal with any failure by their subordinates to meet these legal

and regulatory requirements as they currently deal with subordinate commands' failures to meet regulations and laws governing peacetime maintenance, training, discipline and fiscal actions.

One major obstacle to such agreements is the desire of TOE commanders to remain independent of the hospital commanders while using their assigned TOE medical personnel to meet TOE units' medical care and medical training needs. Such independence is impossible! TOE commanders cannot simply run their own clinics or wards using assigned medical personnel. Only the installation hospital commanders have the peacetime authority to allow either TDA or TOE medical personnel to practice medicine (2). The TDA hospital commanders must endorse any plan by which TOE medical personnel are to operate clinics, wards, etc. Without continual cooperation and coordination with hospital-based quality control experts, TOE unit medical personnel cannot meet the increasingly stringent quality assurance programs mandated by: civilian medical practice standards; intense congressional interest in military health care; the current medico-legal atmosphere; and DOD, DA, and medical MACOM regulations. The situation is analogous to the cooperative relationship that must exist between TOE maintenance units and experts from the post engineers if installation commanders are to be spared problems resulting from failure to comply with Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) regulations.

the division's medical battalion in peacetime but who serves as its executive officer in combat.

5. They tolerate the inconsistency between (a) peacetime assignment of command board-selected Medical Service Corps officers as commanders of TOE hospitals and (b) regulations calling for them to be replaced by physicians when the hospitals care for patients.

6. They acquiesce to having assigned so few of their required medical officers (both warrant officer physicians assistants and physicians) that meaningful medical skills training for their enlisted medics is dependent upon the installation hospital providing trainers whose availability, ATMS training skills, and priorities may not match TOE training needs.

7. They approve plans for CPXs, FTXs, and other training, which fail to adequately stress integration of medical planning and execution into combat operations.

Since these peacetime expediencies facilitate medical care in garrison and their effect on combat readiness is not easily seen, they have been accepted as "normal" rather than resisted as training and operational deficiencies. To eliminate these deficiencies, commanders must recognize, and insist to their superiors, that training medical units for combat readiness requires certain things:

1. The training plan for their medical units must include unit training involving actual patient care. Medical

units not directly caring for patients as a unit are not training for their wartime mission ... even if their performance on inspections, ARTEPS, etc. is acceptable.

This training can be as varied as: a medical company operating a ward at the hospital when in garrison and in the field during FTXs, a medical platoon operating a battalion aid station on a daily basis, or a field ambulance platoon operating the on-Post non-emergency ambulance service. Such unit training will require filling a higher percentage of authorized medical officer (both warrant officer physician assistant and physician) slots in TOE units than are now filled, since delivering medical care requires the presence of medical officers.

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currently taught as Basic Soldier Skills. Soldiers must learn to perform these tasks in the dark as well as in the light and while remaining covered and concealed. They should be taught to perform these skills rapidly and return immediately to the fight comfortable that they have done "all they can" to help themselves or their buddy. Already scarce peacetime training should not be wasted on measures unlikely to save lives in combat: CPR classes should be readily available on-Post since the ability to provide CPR is a useful skill, but it should not receive the training emphasis of being a Basic Soldier Skill.

Properly performed buddy/self aid decreases combat deaths at minimal costs, thus increasing morale and fighting power. The American Army has always taken pride in the quality of the medical care it provides its combat soldiers. It will never be possible to assign or to attach sufficient medics to combat units for a medic to provide initial care to each wounded soldier. Additional front-line medical care by organic or attached medics could come only at tremendous cost to combat power, since it competes for weight and space with ammunition, food, and combat equipment. Self/buddy aid is a low cost, highly effective way to avoid needless deaths without decreasing unit effectiveness.

THE PRINCIPLE OF THE FIRST POST-WOUND HOUR

Position and equip your most forward medical officer treatment teams so that they can perform life-saving procedures for wounded soldiers within one hour of wounding.

Wounded soldiers surviving their initial injury and then receiving appropriate self/buddy aid need to reach medical-officer directed life-saving care (usually at the battalion aid station) within one hour of wounding. This forward care stabilizes the wounded soldiers so they will survive movement rearward to an operating room. There, surgeons aided by general anesthesia can perform initial surgery. Unless they receive stabilizing care within the first hour, many wounded will die enroute to initial surgery even if they received adequate self/buddy aid when wounded.

The medical care needed within the first hour is not sophisticated and is taught to all military physicians and physicians assistants. It requires only equipment and supplies already organic to the battalion aid station, and it can be performed quickly. What is essential is that this care be available within one hour of wounding. Delay beyond that time dramatically increases deaths from blood loss, lung collapse, and airway obstruction. Without this stabilizing care, patients will not survive evacuation to TOE hospitals.

This one hour time limit for initial medical officer care was met in Vietnam through removal of wounded from the battlefield by medivac helicopters. Soldiers commonly went

directly from the site of wounding to a sophisticated hospital bypassing the battalion aid station and division clearing companies. This bypassing of the battalion and division levels of care worked in Vietnam where we controlled the air. However, helicopters probably will not be able to safely operate forward of the brigade trains on tomorrow's conventional battlefields; and, therefore, movement times to rearward hospitals will be long and wounded soldiers' survival will depend on reaching a medical officer-directed treatment team within an hour of wounding. On the next battlefield, commanders' medical support plans must:

1. provide for removal of the wounded by litter or organic vehicle from the site of wounding to the nearest medical officer-directed treatment team (This could easily be the weakest link in the combat medical care chain, since maneuver units are not authorized additional soldiers to act as litterbearers, the single platoon medic cannot do this job in addition to providing emergency care to the seriously wounded, and the number of front line ambulances is limited both by TOE authorizations and by individual commander's actions to lessen their "non-combat tail");

2. position medical officer-directed treatment teams far forward (possibly in the first defilade position behind the line of contact) in order to meet the requirement for first treatment directed by a medical officer within one hour;

3. assign two medical officers (two physicians or one physician and one physicians assistant) to each battalion to

allow echeloned movement of battalion aid stations in direct support of maneuver battalions;

4. equip medical officer-directed treatment teams to be at least as mobile as the units they support;

5. move rapidly forward additional medical officer-directed treatment teams (which would normally be organic to the divisions' medical companies) to augment battalion surgeons organic to units sustaining large numbers of casualties;

6. improve the communication capability of medical units to allow rapid shifting of medical assets to battlefield positions of maximum need.

Initiatives already underway will alter maneuver unit medical support configuration to insure that two medical officers are assigned to each maneuver battalion in combat. Proposals to meet the control, communication, and mobility needs are under study by the Academy of Health Sciences at the direction of the Surgeon General and TRADOC. Additionally, the unit staff surgeon and the medical unit commander must energetically participate in the commander's planning process to develop a workable supporting plan consistent with this principle. They must keep their combat commander informed of limitations in meeting the one hour treatment requirement within imposed constraints. The commander must be aware of the effects on the wounded of not meeting that requirement and balance those effects against effects on his operation potentially imposed by such forward medical support.

THE PRINCIPLE OF SELECTIVITY

Insure that medical plans provide for care far forward to those sick, injured, or wounded who can quickly recover and reenter the battle and for rapid evacuation of those who cannot.

Unless soldiers with short-term disabilities are treated as far forward as medically possible, combat power of engaged units will be needlessly depleted. Such forward treatment requires that properly organized and equipped medical forces accompany combat units as they are deployed and that the magnitude of forward medical support vary with the medical need. At the same time, unless the severely wounded are quickly removed from the battle area, their care will interfere with combat unit mobility, overtax limited logistical capability, and delay the care of those capable of soon returning to battle.

This principle was initially articulated by Colonel Edward Churchill, MC, in Beebe and DeBaKey's book, Battle Casualties summarizing his WWII experience as a senior medical consultant. Colonel Churchill was reacting to his observations that throughout the war the least severely injured were frequently "pushed to the rear" (leading to delays in their care and return to duty) because forward medical units concentrated their professional attention on (and frequently overwhelmed their facilities with) the more severely wounded whether or not they needed far forward care to survive their inevitable evacuation. He recognized that to effectively support combat operations, military medicine could not allow extent of wound alone to be the

sole criteria in determining the priority of forward care or the order of evacuation. In this book he states:

The physiological deterioration in the casualty initiated by wounding, and the biological process of healing, do not compromise with faulty medical administration ... and are beyond the reach of command decision. Military planning must accede to a reasonably precise schedule of wound care, unless grim necessity demands the permanent sacrifice of large numbers of combat troops who are evacuated for simple wounds. To disregard this requirement means acceptance of an overall increase in mortality and disability and reduced returns to duty. These losses in combat troop strength are as real as those caused by enemy action.

[and]

Evacuation, in theory, is but an exercise in logistics in which anticipated casualties, capacity of transport shuttles, and available beds are the primary considerations. But men are not ration boxes, and physiological considerations are overriding. In actual practice, evacuation becomes a selective transport of casualties away from the combat area, based on professional medical judgments relative to the nature of the wound and to the time, distance, and method of evacuation.

[and]

The Medical Department is a supporting service, and the facilities with which it is provided are determined by decisions of command. Provision of the facilities necessary for complete selectivity in treatment and evacuation would impose a logistical burden that might well endanger the success of the military undertaking as a whole (15).

Colonel Churchill understood the simultaneous requirements of combat medicine: (a) the need to treat in far forward, austere, medical units those sick, injured, or wounded who can quickly recover and reenter battle; and (b) the need to immediately remove from the forward combat zone (with delay only for the few requiring emergency initial surgery to survive

evacuation) those soldiers whose recovery will be delayed and whose presence in the battle area will impede combat operations.

Most illnesses/injuries affecting soldiers in combat are common and seldom life-threatening. Diarrhea, colds, rashes, sprains, and cuts account for most DNBI combat man-days lost. Treating these conditions does not require sophisticated medical knowledge or equipment, even though the patients may require a place a short distance behind the line of contact where they can sleep, be fed, and be medically observed during a brief period of treatment. Upon recovery they can be quickly returned to their parent units. Similar logic governs the treatment of the least severely wounded, since many hospitalized wounded are treated for uncomplicated extremity wounds and recover within 15 days. [In fact, fully fifty percent of all hospitalized wounded recover and are discharged to duty in less than 90 days (16).]

Evacuating patients who will quickly recover without sophisticated care causes several problems:

1. The farther rearward care is provided, the longer the recovery time. (Two factors cause this: the natural reluctance of some soldiers to return "unnecessarily quickly" to combat, and the propensity of some rear area medical units to occasionally delay as long as possible the return to the parent unit of a soldier performing useful work for the rear area medical unit.)

2. The farther rearward care occurs, the less likely is it that the soldier will return to his parent unit. (If treated in the division A0, he returns to his parent unit upon discharge. If treated behind the division rear, upon discharge he enters into the individual replacement system and will go to the unit with the "greatest need" at the time of discharge.)

3. Evacuation becomes a "reward" for illness/injury which may render ineffective even an enlightened command's preventive medicine program. (When malaria cases were routinely returned to CONUS for treatment during the early years of the Vietnam War, some soldiers intentionally avoided malaria prophylaxis and exposed themselves to mosquitoes in order to "get sick and go home.")

Although treating far forward soldiers with minor and quick-resolving illnesses, non-combat injuries, or wounds is essential to properly conducting combat medical care, it is equally important to rapidly evacuate soldiers with more complex or more slowly resolving conditions because:

1. Otherwise they displace to the rear soldiers who will quickly recover with minimal care.

2. The expertise and/or equipment to care for such conditions is not organic to forward medical units. If misguidedly cared for far forward, the soldier may suffer needlessly. Attempts to properly treat complex conditions far forward will result in unauthorized equipment and supplies being

illicitly procured and brought forward, thus misusing medical supplies and scarce transportation assets. (This is similar to the problems caused if rifle squads meet their perceived firepower needs by illicitly procuring machine guns and then requisitioning an on-going ammunition supply.)

3. Such patients are usually too ill/injured to assist in their own care or to perform even minor tasks. As such they are non-producing consumers of rations and supplies whose presence impairs unit tactical mobility.

4. Unit morale will drop if soldiers do not feel their command will evacuate them when they are seriously ill or injured.

Commanders must insist that every ill, injured, or wounded soldier be treated as far forward as his condition and units' authorized medical assets will allow. Commanders must guard against the possibility that useful manpower will be evacuated from their units while insuring that supply channels are not clogged with unauthorized medical supplies and equipment being moved forward to treat patients who cannot soon contribute to unit mission. Commanders should recognize that the concept of "fix it forward" applies as well to soldiers as to mechanical items.

"Evacuation" and "transportation" are not synonymous terms. "Evacuation" is the medically managed movement with ongoing medical supervision of the sick, injured, or wounded.

"Transportation" is their non-medically managed movement without ongoing medical supervision. Thus, most patients are transported rather than evacuated to the battalion aid station, since most walk there, are carried there by their fellows, or are brought there by tactical vehicles. Very few are sent there by medical personnel in medical vehicles. Rearward of the battalion aid station, patient movement is regulated by medical personnel and utilizes medical helicopters, fixed wing tactical and strategic aircraft specially configured for patient transport, hospital trains, and ambulance convoys. In fact, any transportation of patients rearward of the battalion aid station violates the principle of selectivity since the selection of patients to move rearward must be medically directed and there must be ongoing medical supervision.

Experience in World War II, the Korean War, and the Arab-Israeli Wars indicates that three-quarters of severely wounded soldiers will survive an eight to twelve hour evacuation prior to initial surgery... provided buddy/self aid at the site of wounding and life-saving care at the battalion aid station are properly performed. During such evacuation, up to twenty-five percent of the wounded are in great danger of dying from: continued internal bleeding, untreatable effects of prolonged blood-loss anemia, brain swelling, or lung damage. The emergency initial surgery they require to survive such evacuation is not that characterizing contemporary "big city hospitals". Rather, it is technologically unsophisticated general surgery requiring little beyond a general surgeon, anesthesia, light, and a flat

surface. The effectiveness of emergency initial surgery declines rapidly if delayed beyond four hours of wounding. This timeliness requirement means that emergency initial surgical capability may be needed forward of the division near boundary whenever evacuation out of the division is projected to take more than four hours. It can be provided by forward displacement of austere mobile surgical teams from corps medical units (17).

Medical planners obtain guidance as to how the "selectivity" process will occur rearward of the combat zone through command policies. The policy which attempts to balance the costs and the benefits to the senior combat commander of evacuation of the severely sick/wounded is called the Theater Evacuation Policy. The Theater Evacuation Policy is recommended by the CINC, established by the Secretary of Defense (SECDEF), and dictates that soldiers whose recoveries are expected to take longer than a length of time specified in that policy will be evacuated from the Theater as soon as they can be safely moved. It formulates, at the strategic level, the process of "selectivity" described earlier (18).

The Theater Commander then sets an Intra-Theater Evacuation Policy establishing, for patients expected to recover within the time established in the SECDEF-imposed Theater Evacuation Policy, how many days of projected hospitalization may be spent within the combat zone and directing evacuation to the COMMZ for those who will not recover within that time. This formulates the "selection" process at the operational level.

Selectivity must govern the care of wounded, sick, or injured soldiers. Urgency of care need, likelihood of return to duty, anticipated duration of disability, and conditions required for optimal recovery are the factors which military medical officers must consider collectively in selecting which casualty needs care far forward in anticipation of early return to combat, which needs emergency care to preserve life or limb prior to evacuation, and which requires evacuation without emergency care.

Combat commanders must recognize that the principle of selectivity requires their officers and planners, both medical and non-medical, to think and act in a manner incompatible with their peacetime expectations and/or experience. In peacetime all medical workers, military and civilian, provide complete care for the most severely ill or injured before caring for the less injured or ill. In peacetime no one ... patient, medical worker, or casual observer ... would accept as reasonable that the presence in the emergency department of fifteen people with colds needing care in order to go to their jobs would justify a hospital's moving a critically injured motor vehicle accident victim to another hospital after life-saving and stabilizing care, even if the move does not compromise his eventual outcome. Moving that patient is poor care in peacetime but is good care in wartime! Training medical planners and operators to act selectively in combat and training non-medical operators to accept and support that selectivity requires as much peacetime effort by commanders as does training soldiers to accept that while killing in peacetime may be criminal, killing in combat is

honorable. Both conflicts are real, deeply seated, and of profound effect if not resolved prior to combat.

CONCLUSION

Principles which have stood the tests of analysis, experimentation, and practice, guide the medical support of combat operations. They are similar to and derived from the same western military experience which give rise to the principles of war outlined in FM 100-5.

Directing the conduct of medical support is a command responsibility in both peacetime and in wartime. Commanders at battalion level and above have assigned staff surgeons and organic medical units to assist them in properly exercising this responsibility.

Diseases of filth or environment can quickly render entire combat units ineffective. Only peacetime command emphasis and training will produce the patterns of behavior which minimize such losses during combat.

Most combat deaths are instantaneous or nearly so. They cannot be prevented by instant application of even the most sophisticated medical care. However, preventable deaths will occur in combat if soldiers do not know how to provide simple first aid to themselves or their buddies. Successfully using these skills in combat requires training during peacetime. In combat, soldiers trained in self/buddy aid have demonstrated increased morale and no tendency to divert themselves from winning the fight at hand to "practice medicine".

To save lives, care by medical officer teams at the battalion aid station must follow appropriate self/buddy aid within the first hour after wounding. This care requires no sophisticated equipment or training. In order to be available within one hour, it may need to take place as close to the line of contact as the the first terrain feature protected from direct fire.

Many casualties suffer illnesses, injuries, or wounds which will resolve with minimal treatment. The fact that initial treatment of these casualties can be delayed many hours with negligible increased risk makes rapidly evacuating them far to the rear superficially appealing to the unsophisticated, especially during casualty surges when forward medical units are overloaded. However, if these casualties are evacuated long distances and recover in the rear, their return to battle is delayed.

The most appropriate response to casualty surges is similar to the appropriate response to surges in battle-damaged but repairable major items of equipment: move forward the additional personnel and equipment necessary to continue a "fix forward" policy for the easily repairable while continuing evacuation of the severely damaged. Evacuation of those casualties who will recover with only minimal medical or surgical care because "they are clogging the forward system" and because "they can be moved" is a poor substitute for temporarily moving forward reinforcing medical augmentation teams. Evacuation of these patients moves

combat power to the rear with no benefit to the casualty. Conversely, providing for other than emergency care far forward for patients who require evacuation diverts medical assets intended to care for casualties who could soon reenter combat. If the untreated (and less severe) casualties are evacuated to "make room" for treatment of the more severe casualties, combat power is again moved to the rear for no benefit to the casualties. To minimize loss of combat power, military medical officers must select who is cared for forward, who receives emergency initial surgery before evacuation, and who is immediately evacuated.

Despite receiving self/buddy aid and initial care at the battalion aid station, some wounded soldiers will require emergency initial surgery to survive evacuation. To be effective, such surgery must occur within the first four hours after wounding and can be followed by immediate evacuation. To minimize preventable deaths and disability, wounded who will survive evacuation without surgery should reach non-emergency initial surgery within twelve hours. Properly positioning operating capability requires commanders balance the forward positioning of surgical capability with the availability and capability of evacuation assets. Combat commanders must carefully evaluate the medical support plan their staff surgeon and medical subordinate commanders recommend to ensure it strikes this proper balance.

In this paper I have defined the principles underlying military medicine as it supports combat commanders in their application of the principles of war. Described in military rather than in medical terms, they have utility for officers of all branches. They will provide military medical staff officers and medical commanders a framework within which to construct advice and plans as well as a lexicon to employ in explaining their recommendations to non-medical commanders. These principles will provide non-medical commanders a military basis both for the application of combat medical support to their combat missions and for the evaluation of the efforts of medical staff officers and subordinate medical commanders. Employed correctly, combat medical care is a combat-multiplier rather than simply an expensive humanitarian effort against the inhuman effects of war.

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14. The current Army standard individual "first aid pouch" is inadequate to care for even a single wound, since it contains only one dressing and no dressing-covering cravats. Until a better individual kit becomes standard Army issue, as it is now in the Marine Corps, commanders should insist that soldiers carry additional dressings and cravats on their load bearing equipment and that vehicles carry standard stocks of extra first aid supplies; otherwise soldiers will be unable to perform in combat as they trained to in peacetime.

15. Beebe and DeBakey, "Battle Casualties". Springfield: Charles C. Thomas, 1952.

16. U.S. Army Medical Department IPR Briefing to VCSA, Jan 1985.

17. The personnel, equipment, and supplies to meet these minimum requirements for a single operating room for one day (10 surgical patients constitutes a full day's work for a single surgeon in a single operating room) will fit into one 2 1/2 ton truck towing a water buffalo and a 1/4 ton pulling a trailer. The French, British, and Norwegian armies have had such capabilities in airdrop and backpack configurations for many years.

Much more sophisticated operating and post-operative facilities, several days supplies, multiple operating rooms, and continuous operational capability are available in the various deployable Army hospitals. These hospitals resemble corps and echelon above corps general support maintenance units since, (a) even when provided with extensive host nation support (e.g. electricity, buildings, water etc.) they have large initial airlift requirements, and (b) once deployed and emplaced, they remain difficult to move both because of their weight/cube and because they must move all their patients prior to displacing.

These deployable hospitals are designed to routinely provide initial surgery to the seventy-five percent of wounded capable of surviving evacuation to them in eight to twelve hours following self/buddy aid and BAS life-saving care and for continued initial surgery for the twenty-five percent who required emergency initial surgery prior to evacuation. Since they are too big and immobile to be positioned in the division area, they can only provide required emergency initial surgery when evacuation time is less than four hours.

18. If the SECDEF sets the Theater Evacuation Policy at 15 days, sick/wounded whose recovery is predicted on initial evaluation to take more than 15 days will be evacuated as soon as possible. Such patients are not be held in-Theater for 15 days and then evacuated. Conversely, those predicted to recover within 15 days will receive care in-Theater without evacuation.

Some patients will, from their first evaluation, obviously require more than 15 days to recover but not be fit for evacuation until well after 15 days. Some patients initially appearing to require less than 15 days of care to recover will develop complications necessitating care for more than 15 days. Some patients initially evacuated will actually recover in less than 15 days. These occurrences are infrequent, are handled by medical personnel, and are of no concern to commanders.

An example of the impact of the Evacuation Policy on combat operations may place this in the correct perspective. Anyone planning a defense against a conventional attack in Europe needs

to recognize that choosing a 30 day Theater Evacuation Policy rather than one of 15 days requires moving several thousand additional medical personnel and their hundreds of airframe lift requirements of equipment and supplies into the Theater in place of combat power. However, following day 15 of the conflict, those additional in-Theater medical assets will allow the daily discharge to duty in-Theater (rather than in CONUS) of a battalion-equivalent of recovered combat-experienced soldiers. If treated in-Theater under a 30 day Theater Evacuation Policy, that battalion-equivalent will not compete for cross-ocean shipment with reinforcements and supplies from CONUS. The in-Theater discharge of those experienced soldiers represents the long range pay-off on the initial investment of the resources to support a 30 day rather than a 15 day Theater Evacuation Policy. As he recommends the intra-Theater evacuation policy, the Theater Commander must make these tradeoffs between the short-term loss of combat power and long-term loss of sustainability.

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