MEDICAL IMPLICATIONS OF

COMBAT IN CITIES

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ABSTRACT

THE MEDICAL IMPLICATIONS OF

COMBAT IN CITIES

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This paper examines the medical implications of combat in cities and the adaptability of current Medical Department doctrine to future involvement of United States land forces in urban combat. The outstanding medical problems of major World War II and Vietnam, city battles are highlighted in the text and reveal that there are significantly unique aspects of city fighting which must be included in future revisions of several specific field manuals. The inclusion of the recommendations of this paper in medical and tactical literature is mandatory if future urban fighting is to be conducted with the least cost in military manpower.

NOTE: Table of Contents has been modified from the original to support the electronic format.

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Chapter 1

INTRODUCTION

In the spring of 1972, while assigned to the Office of Medical Staff and Operations at the U.S. Army Infantry School, I was privileged to participate with other members of my office in a special combined arms review of existing doctrine for urban combat. During our preliminary studies, the medical staff discovered, alarmingly, that there is "little detailed information involving medical support requirements and doctrine"[1] for such operations. There is no single document that specifically addresses the medical considerations for combat in cities and fortified areas, even though history is replete with the vivid details of medical lessons learned in urban combat. It is the purpose of this paper to summarize some of the more cogent of those historical lessons in a single document that can be used as a basis for future medical planning.

Cities abound in virtually every geographic area for which the U.S. Army has contingency missions. In

smaller underdeveloped nations, cities often represent the heart of vital communications networks, industry and transportation for thousands of dependent citizens. In many nations, cities can be huge population centers where labor and industrial might are centered. A city may be the political capital of a nation or even the world capital of a religious sect. Service component commanders in the theater can seldom ignore these and other equally important facts when planning their ground campaigns.

Down at division and corps level, a city might sit astride an avenue of approach, control access to a decisive objective or harbor a significant portion of a retreating, enemy's forces which friendly forces are pursuing. The list could go on endlessly. Suffice it to say that city combat is terribly difficult and will be avoided when practical. However, for many reasons, it may be impossible for tactical commanders to disregard all built-up areas. For the sake of this paper, therefore, the basic assumption will be that combat in cities and fortified areas will be probable in virtually every future conflict involving U.S. ground forces, regardless of magnitude.

Since World War II, a great deal has been written concerning the difficulties involved in isolating, attacking, defending, and occupying cities. Some commanders in those campaigns enjoyed overwhelming success and at the same time were able to avoid urban health hazards through advance, resourceful, medical planning. Unfortunately, there were often other commanders who "succeeded" in their city combat missions, while simultaneously suffering unusually high and unnecessary personnel losses from preventable injury and disease. From these experiences, it is tempting to conclude that the relative success of city battles may depend materially on medical support which has carefully considered the environmental effects that the city and its inhabitants will have on the operational forces and visa versa. Even though this is impossible to prove, I have made this the basic assumption of my research.

The spectrum of urban combat activities is far too broad for any single research paper. To be thorough, one should study the more than three hundred city battles of World War II, as well as the civil disturbances such as the Watts Riots, or limited objective operations such as the 1965 crisis in the Dominican Republic. A truly detailed study would also include an analysis of the medical peculiarities of urban insurgencies such as that conducted in Algiers in 1957. Such detailed studies, however, would be meaningful only to historians since practically all of the medical lessons learned in Manila in World War II were learned again in Saigon and Hue in 1968. The lessons to be garnered from all of these battles are, therefore, quite probably applicable to all levels of armed conflict short of a war involving the use of nuclear or chemical weapons.

Even though there are remarkable similarities among the city battles of World War II, Korea, and Viet Nam, there are certain lessons in each which stand out and which one can ill-afford to "learn" again. The sheer magnitude of the forces and logistical requirements of World War II makes a study of its city fighting a must. On the other hand, though the conflict in Viet Nam was ostensibly of a lower intensity and involved fewer troops, the lessons to be learned from its city battles are equally as valuable.

Are our more modern weapons, for example, as effective when used in the city? Does the soldier's protective equipment serve its intended purpose in the city? Does our improved cross-country and air mobility mean that forces can get around any better in a city now than they could in 1945? How may all of the recent innovations in medical service such as helicopter evacuation and the new Medical Unit Self-Contained-Transportable (MUST) be affected if employed in support of city fighting? The answers to these and other similar questions are elusive to present-day medical planners, but hopefully some useful ideas will emerge from the discussions in the following chapters.

Initially we shall examine the implications of city combat for the fighting man and the medical aidman.

From that point, we shall address the peculiar difficulties of the city that might hamper the medical department and its normal hospitalization n and evacuation system. Finally, our discussions will focus on the insidious destruction of manpower that has occurred in city battles where proper, timely, medical precautions were forgotten or ignored. In the closing chapter we will draw some general conclusions and recommend solutions to the apparent problems.

Chapter 2

THE INDIVIDUAL SOLDIER AND HIS COMBAT MEDIC

The accomplishments, courage and dedication of the combat medic on the battlefield are legendary. During the earlier years of our involvement in the Viet Nam War, it was a rare Medal of Honor list that failed to relate the story of some devoted, selfless medic. Wherever his infantry platoon, artillery battery, or tank troop went, the "Doc" was always there, ready with skilled, competent hands to do his tasks. Consequently, when a young man enters the Army and becomes a combat soldier, it is not surprising for him to rely heavily on his medic to "always be there" and care for him in case of emergency. As good as the medic is, he can't be everywhere at once and this is especially true in city fighting. In this chapter we will examine the special urban combat environment end the unusual effects that it can have on the fighting men and his medical aidman.

THE ISOLATED SOLDIER

One striking aspect of urban, combat operations is that small units operate independently end in isolation because of the unusual character of the built-up area. In a city with a block-type arrangement, a rifle company is considered capable of neutralizing a single city block.[2] At first thought, this seems to be a reasonably manageable situation; but as the 180-man company melts into the hundreds of rooms of the block, the picture becomes clear--control will be difficult and soldiers will suddenly discover that they are alone.

Experiences in the city of Hue in 1968, indicate that overwhelming problems of command and control evolved as the squads of a platoon dispersed inside buildings.[3] The small squad radios and the hand and arm signals that are so valuable in the open, were useless in the city. Therefore, commanders decentralized much of their control over subordinate commanders who alone knew what was really happening and could act with first hand knowledge of the tactical situation.[4] This is however, little consolation to the aidman who must at least attempt to keep up with his platoon members. It is even less consolation for the wounded soldier who may go for hours before his unit misses him. After his discovery, it may be many more hours before he can be safely extracted from the rubble and hand carried over debris- cluttered roads to a medical facility.

After the Battle of Saigon (Cholon) in 1968, I recall hearing soldiers remark that they would often maneuver through several blocks and suddenly discover that one of their number was missing. Where was he? Was he wounded? Was he dead? Do we stop to look for him or do we carry on? There were similar occurrences in the Battle of Hue where entire detachments could be quickly isolated from the main body by the rapidly changing tactical situation.[5] At no time has this phenomenon of isolation been more obvious than in modern-day Belfast and Londonderry where the size of the operational force in an entire neighborhood maybe a squad which hardly warrants having a full-time medical aidman along.

This point seems to surface some interesting questions. How prepared are our soldiers to care for themselves or their fellow soldiers if injured? How well does each soldier know the part of the city in which he is moving so that he can look for a missing unit member? Has someone assured that each soldier carries sufficient emergency medical supplies to care for himself? Are unit members aware of expedient evacuation techniques using improvised litters for evacuation of the critically injured from the eighth floor of a building and over the rubble to a patient collecting point?[6] These and other questions must be answered long before the campaign begins since the actions of each soldier in these instances will directly affect the ability of the Medical Department to provide assistance. Expressed simply, there is little which can be done medically for the dead and that is precisely what can happen to a badly injured soldier if he is not handled properly from the beginning.

THE AMPLIFICATION OF WEAPONS EFFECTS IN CITIES

In addition to the threat of isolation that city combat poses, there is another striking circumstance of city fighting that merits some discussion and that is the unusually high casualty

experience of many units. One USMC company in Hue in 1968 suffered 45 casualties on the first day of fighting there.[7] Other examples of unusually high casualties are almost too numerous to mention. Regardless of where the urban campaigns have been there seem to be at least two likely reasons for the surge in casualty rates.

From my personal experiences, streets were never used because of the danger of snipers. The usual method of advance was to move through buildings by blowing holes in the walls that separated them. In this manner the soldier could move among the buildings and at the same time felt protected from small arms fire. Even though there is a degree of protection afforded by the building, there is a distinct possibility that the building offers a false sense of security since it can collapse if hit or weakened by heavy artillery and demolitions. Furthermore "buildings constructed of flammable materials are easily burned and may prove to be traps for the troops using them."[8] Ironically, a building, even though apparently the best cover and protection in a city may prove to be a severe casualty producer under certain circumstances.

There is another insidious but logical effect that buildings seem to have on weapons effects. In the city of Hue, "the presence of buildings and other structures greatly intensified the lethality of all types of explosive situations when exposed troops were caught within the bursting radius."[9] This synergistic effect is presumably due to reflection and subsequent intensification of blast waves from, walls and ceilings or even from a spalling of concrete and other materials to create secondary missiles.

This all means that there will quite probably be a significant increase in certain types of injury in the city. In a high intensity conflict, one might expect a greater number of crushing injuries, burns, and multiple injuries from flying debris. In lower intensity operations on the other hand, such as the short-term involvement in the Dominican Republic, firepower was not optimized. In this case there may well be very few of those previously mentioned injuries and more of the high velocity wounds resulting from sniper fire or the concussion and shrapnel wounds created by booby traps. The point is that a detailed study of past city battles could very well provide a basis for predicting the types and frequency of injury. Such predictions could materially influence the Medical Department's ability to have the correct medical supplies and medical specialists pre-positioned in the supporting medical treatment facilities.

For fear of painting too grim a picture, I must hasten to add that there are simple protective measures for the soldier that have historically proven quite effective if given proper command emphasis. Flack vests,

when available, should be used.[10] They can afford a great deal of protection from low-velocity fragments of all types. The steel helmet will also prove quite effective against many fragments and affords some protection from falling debris.[11] These simple and obvious measures can reduce the likelihood that casualty rates will rise beyond unacceptable levels. We will say more about those and other precautions later.

Without a doubt, cities do expose the soldier to significantly unique hazards. The isolation, the amplification of weapons effects, the problems of establishing even short-range communications, and other unusual circumstances could demoralize most units if their members Are not trained and disciplined before the city campaign begins. If soldiers are prepared to care for themselves and patiently wait for their medic or their unit members to find them, the biggest part of the individual's dilemma is passed. From then on, he is in the care of his unit and its supporting medical organizations. It is to that process that we will next turn our attention.

Chapter 3

MEDICAL HOSPITALIZATION AND EVACUATION

It could be argued that medical support contributes absolutely nothing to combat power. On the other hand, a high wire performer can do so many more daring things if he is given the benefit of working with a safety net. Therefore, the existence of a competent, well-organized, medical treatment and evacuation system must have at least an encouraging effect on the soldier performing his tasks in a hazardous environment. In any combat arena, a well-advertised and well-rehearsed medical organization can be of immeasurable assistance to the soldier in his emotional preparation for what he is about to do. In the city, this assurance factor may be considerably more important.

A mere promise to "be there right behind you" is hardly enough. It should go without saying that medical support schemes must be credible. With a simple study of city combat, the myriad of difficulties that must be overcome become obvious, and we in the Army Medical Department had better have some convincing solutions to our problems.

THE MEDICAL EVACUATION CHALLENGE

Medical evacuation will be difficult for several reasons, not the least of which is a limitation on communications. Quite probably wire and messengers will be the only effective means of communications in the city because of the interference of buildings in the area.[12] While in a city, the unit commander will probably not be able to call on the magic helicopter to swoop from out of nowhere and relieve him of the burden of his wounded soldiers. If the unit commander can contact an evacuation unit of any kind, it will have to be done through a complicated, time-consuming relay of runner, wire, and limited radio messages,

To compound this particular problem with aeromedical evacuation, there are seldom suitable helicopter landing zones within the city that are not covered by fire or studded with obstacles.[13] Rubble-covered streets will more then likely be a barrier to even the meager number of surface evacuation vehicles that could make their way into parts of the city. This leaves the tactical unit commander with but one grim choice...litter evacuation.

A proposal to resurrect litter evacuation seems blasphemous, especially in these days where sophisticated aeromedical evacuation vehicles have revolutionized battlefield medicine and significantly

reduced mortality. A city, however, is a special medical challenge even though a temporary one. The fact that we must occasionally attack and occupy them should have little effect on our conventional medical support plans, but it must alert us to the probability that a significant number of litter bearers, for example, will have to be made available to the supporting medical commander for the duration of the operation.

The tactical commander can ill-afford to furnish litter squads to evacuate each non-ambulatory casualty over long distances.[14] The mere loss of a single such litter team would result in an unacceptable loss of combat effectiveness. Evacuation, therefore, must remain a responsibility of the Medical Department and it will most probably have to be done by medical troops.

The duration of such a crude evacuation system will, of course, depend on the length of the active combat portion of the urban operation. There are some means available, however, that should help keep the casualties from suffering too much from being carried on litters over long distances and obstacles. The command engineer, as an example, could help shorten the manual evacuation route by helping clear the debris from selected streets so that rotor vehicles can move as close as possible to the area of combat.

At the forward end of that cleared route and at a spot mutually agreed upon by the tactical and medical commanders, an appropriately marked casualty collecting point should be established. There the casualty would be relatively safe from hostile fire and could be treated by company medics. From that point, the evacuation vehicles could move the casualties to a medical treatment facility operating safely outside the city limits or to a landing zone outside the city from which the critically injured soldier could be taken to a designated hospital for further treatment. (See Figure 1.)

Figure 1.

In most cities, one street or building can look a great deal like another and it's most likely that one's orientation will suffer. This being the case, detailed maps of the city, if issued before the operation begins, would be of immeasurable benefit to the supporting medics. Street corners, prominent buildings, railway crossings, bridges, or any easily identifiable feature will usually be designated on the map as check points or contact points.[15] These points could serve equally well as excellent collecting points.

The now-infamous "Wheels Study" of the Department of the Army has without question seriously reduced evacuation flexibility within the front line units by eliminating half of the front-line ambulances from maneuver battalions. In city fighting, this loss of flexibility will be even more apparent, where helicopters will be relegated to evacuation from treatment units outside of the city. There should be available, however, more than ample quantities of combat vehicles suitable for accomplishing essentially the same tasks as the front-line ambulances. Those vehicles can be used for evacuation, provided they are not being used for their principle tasks. Even civilian vehicles ranging from taxicabs to goat carts are acceptable as long as medical personnel are available to supervise loading, unloading, and en route supportive care. The best solution is, of course, to have sufficient ambulances earmarked ahead of time for each battalion medical platoon. This will help avoid the time-consuming altercations that may erupt between the preoccupied, combat commander and his frustrated medical support planner.

HOSPITALIZATION IMPLICATIONS

Hospitalization facilities will probably not encounter circumstances that are measurably different from those of similar units supporting the more conventional combat operations. I have found no evidence that anyone in the past has bothered to study the effects of urban combat on the incidence or severity of injuries, but I will speculate as discussed in Chapter 2 that serious trauma will increase based on the experience in Cassino during World War II.[16] Surgical, burn, shock, and other special cellular teams may have to be oriented on those medical facilities which are supporting the city campaign. During the first few days of the campaign, the area medical support headquarters should be thoroughly briefed on developments in the area so that other requirements for specific specialties and augmentation can be determined.

Combat in fortified and built-up areas will naturally involve the inhabitants of the city. Many will refuse to evacuate the city, feeling that they can somehow protect their homes. In other instances, such as the World War II Battle of Manila, civilians may be held in the city as hostages.[17] Regardless of the circumstances, there will be requirements to recover, evacuate and treat a significant number of civilians until the local civilian medical personnel and facilities can be reconstituted and supplied. A major effort should be made to put the responsibility for the medical care of civilians into civilian hands as soon as practical.

I believe that good medical intelligence (as discussed in detail in the next chapter) can be invaluable in

helping resolve this civilian problem before the operation begins. If, for example, the medical planner can determine that certain critical medical supplies and equipment are short or non-existent, then arrangements can be made to have stocks available for civilians when the city is liberated. If there are needs for unusual immunizations among the civilians, this may also be possibly determined ahead of time and accommodated.

As grave as the medical situation in a besieged city would seem to be, the simple fact is that because of past experiences, most of the problems can be predicted. If this is true, then it is logical to assume that even a modicum of time for pre-operation coordination among medical personnel and tactical commanders will be invaluable. If that were the only lesson learned from the past, it would be sufficient to help avoid the loss of numerous lives and eliminate unnecessary suffering due to a lack of timely medical support.

Chapter 4

PREVENTIVE MEDICINE

There are few veteran commanders who can relate their combat experiences without at the same time vividly describing the overwhelming influence that the physical environment, the climate, and disease have had on their decision making and on their mission execution. In combat, disease has always taken a greater toll on man-power than has battle injury. This is true even in the Twentieth Century when man has allegedly conquered his age-old microscopic enemies.

In Viet Nam, over two-thirds of U.S. Army hospital admissions were due to disease. In 1968 alone, there were 943,809 man-days lost due to disease, which in theory translates into a bit more than two division-months.[18] There are few indications that this grim health picture will be any different in future wars, but the incidences of disease can be materially reduced through cooperation between combat commanders and their supporting medics.

Experiences such as these abound in the literature of war and it would be far too ambitious to summarize them in a single brief chapter. I shall, therefore, avoid discussions of all the ambient health problems of combat, and concentrate on those special health challenges for combat forces operating in urban areas.

A SPECIAL ROLE FOR MEDICAL INTELLIGENCE

Intelligence officers at all levels will be alert both before and during an attack to gain information from prisoners of war, line crossers, local police, and other civilians.[19] We concluded in Chapter 3 that some of the more important questions that need to be asked of these persons would concern the overall medical situation in the city. Conversations with captured or detained medical personnel can be of particular value, even though civilians or non-medical enemy soldiers can be just as helpful.

Through interrogation before an operation, the attacking commander can determine two things. First, he can ascertain the epidemiology of the city and take all necessary precautions against unusual disease threats that may face his forces as they enter the city. Additionally, those same health problems could have very well affected the defending enemy. If there is good reason to believe that the enemy may not have successfully coped with the local health hazards, then this fact could also play a significant role for our commander in his analysis of relative combat power. Simply stated, the healthier of two opposing forces could conceivably claim a distinct advantage when the fighting begins.

Direct questioning is not the only method of collecting meaningful medical intelligence. Frequently, an examination of the medical supplies that are carried by enemy aidmen can paint a picture of the state of health of specific enemy units. As an example, enemy medics in Vietnam often carried large quantities of quinine. An indicator of possible malaria problems. Such speculation could have been easily corroborated through clinical evaluation of captured enemy soldiers from the units that were being supported by those medics. With such confirmed information, psychological warfare personnel could target specific enemy organizations and even specific enemy personalities with promises of definitive medical treatment, possibly resulting in significant defections.

Along these same lines, a routine medical examination of all prisoners could disclose evidence of such things as nutritional deficiencies among the troops in the city. This could mean that the enemy is experiencing some noteworthy subsistence problems. There may even be evidence of poorly managed trauma among captured enemy troops, indicating a lack of sufficiently trained medical personnel or medical supply shortages. Such bits of information when pieced together are invaluable in determining the overall enemy medical posture.

Notwithstanding these cogent arguments, there are few non-medical personnel who appreciate the value of timely medical intelligence. This should not be so. The fault, if there is any, lies with the Medical Department whose duty it is to convince the combat forces that hospitalization and evacuation represent only two of the many important medical contributions that derive from sound, detailed medical planning. Keeping friendly forces healthy and learning as much as possible about the enemy's medical situation are equally as important. Success in those areas will depend materially on the accurate, advance information that can be provided through perceptive medical intelligence.

IMPLICATIONS FOR THE SOLDIER AND HIS COMMANDER

Before tactical plans are finalized, most combat commanders conduct a thorough terrain analysis. In an urban area, much of this analysis is done by examining the details of available city maps which will often show the locations of public water works, sewage systems, medical facilities and other points of concern to the attacking force.[20] From a command health point of view, high level commanders should take all possible precautions to avoid damage to those facilities by undisciplined troops or untoward destruction through haphazard fire support and maneuver planning. Even without such damage, health problems can be overwhelming.

The Japanese, for example, did very little intentional damage to the sewer system in Manila in World War II.[21] Nevertheless, the sanitation problems that confronted the 37th Infantry Division during its occupation of that city required the efforts of a dozen preventive medicine control and survey units.[22] The best explanation of this paradox seems to be that most Americans are epidemiologically ignorant. Having been used to trusting all municipal water supplies, they unhesitatingly assume that an intact water system in any large city will provide safe drinking water. This is not even true in peacetime, much less under conditions of war. Regrettably, provisions for potable water supplies must be made for friendly forces for all phases of the city battle, even though the city's water works may seem to be in good working order. Additionally, the Corps of Engineers and the Medical Department must collectively provide assistance to the local government in evaluation and reconstitution of municipal water works. Having done everything possible to avoid damaging those facilities will greatly disencumber their reconstruction. This applies equally as well to sewer systems and sanitary fills.

Another unusual phenomenon of the occupation phase of urban combat seems to have been looting among thoughtless and undisciplined troops. Such looting could spread to the seizure of locally available

food items and regionally produced beverages.[23] The temptation is almost too much for most battle-weary soldiers. For them, a roasted pig is much more appealing than their usual "C" Ration. The possibility that the pig may be the source of some parasitic disease is of no immediate concern to most exhausted and hungry soldiers. By the same token, a bottle of soda pop or a glass of wine may very well seem more attractive than the usual scorched cup of coffee. Even this seemingly harmless adventure in local procurement can spell disaster.

As an example, the 14th Medical Laboratory during World War II did some studies on Korean alcoholic beverages and discovered that more than 50% of them contained methanol.[24] The soda pop may contain the organisms of hepatitis or typhoid. The point to be made through

these examples is simply that it is dangerous to trust even the most familiar items of subsistence unless they have been officially approved by veterinary food inspection specialists.

IMPLICATIONS FOR THE MEDICAL DEPARTMENT

Preventive medicine survey and control teams should as a matter routine, be made an integral part of the task organization of corps-level commands, whose units are committed to city campaigns.[25] These teams would be an invaluable augmentation to the preventive medicine specialists which are organic to each division. Likewise, in some of the larger cities, veterinary detachments should be made available not only for city-wide zoonotic disease control, but also for inspection of captured foods and beverages which may be of some value to the local civilian population. This latter activity could lift a huge burden from the U.S. Class I supply system in the same way that protecting the city's medical facilities would relieve U.S. medical units of much of the responsibility for the civilian sick and injured.

Unfortunately, war leaves depth in its path, which can in itself create health hazards if not properly managed. I recall that this was one of our biggest problems in Saigon during the Tet Offensive of 1968, which lasted for nearly thirty days. A very few days after that battle started, it was obvious that human and animal remains must be immediately disposed of, since all manner of vermin were being attracted by them. Fortunately, graves registration efforts were sufficient to cope with recovery and disposition of U.S. human remains. Civilian dead and large animal carcasses were another story. Many more days passed before this particular problem was solved. Once it was, however, the overall health situation improved remarkably.

CONCLUSION

When engaged in combat with a sophisticated enemy who is equipped with modern weapons, it is easy to disregard the microscopic enemy that is just as deadly now as he was two thousand years ago. Curiously, this painful, costly lesson is re-learned with every war; and it seems that the most likely explanation centers around a lack of communications between the commander and his surgeon.

A study of city combat highlights at least two important lessons in preventive medicine. The first is that the combat commander is rightfully responsible for enforcing health measures and medically educating his troops. The Medical Department simply cannot do the job alone. This point was clearly evident in Vietnam, where it was finally concluded that the incredible malaria and hepatitis problems could have been greatly reduced with more positive command efforts.26 The overused phrase, "Let Doc do it" must be eliminated from the commander's repertoire.

The second lesson is that the staff surgeon must assure that the coordinating and special staff officers are

his closest associates. He and the supporting, operational medical units must establish an affable and confident relationship with those officers and their assistants throughout the planning and execution stages of all combat operations. This will assure a free flow of mutually valuable information that is so vital to unit success, especially in the realm of combat preventive medicine activities in cities.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

For decades the United States Army Medical Department has been blessed with bright, innovative soldiers, capable of adapting to virtually any combat environment. When given the opportunity, they proved capable of evaluating each new situation and making necessary modifications to accepted medical support doctrine. As commendable as this innovation was, however, it took valuable time that may not be available in future combat operations. Many future conflicts may very well come to an end in a small fraction of the time consumed by just the planning phase of past combat episodes. Notwithstanding this prediction of abbreviated wars, the problems for the Medical Department will not disappear with peace. As always, disease and suffering will remain long after the war is over, so that more than ever before, there is a need for general guidelines somewhere in military literature for all of the unusual medical consequences of war.

Current literature does indeed address the peculiar medical implications of combat in the extremes of climate as well as the special medical requirements of almost every type of combat operation with the notable exception of urban combat. The reason for this may be that cities vary in size and type, and the medical problems of one city will be somewhat different from those faced in another city hundreds of miles away. Where open, untreated human waste is noteworthy in one town, the thousands of sick and injured civilians in the next city may be of more concern. There are, however, major medical considerations which must be planned for, regardless of the type or size of the city involved.

The summary of research in the preceding chapters clearly indicates a need for specific military publications to address the peculiar medical implications of city fighting. Some of these points are already discussed in many Field Manuals and simply need to be highlighted or related somehow to city combat. Other suggestions that have been derived from the discussions of this paper are not presently included in any of the standard military medical and tactical manuals and should be. The following paragraphs list the most significant of those general guidelines and recommend the specific publications in which they should be discussed.

FM 21-10, "Field Hygiene and Sanitation" and FM 21-11 "First Aid for Soldiers" are among the most important manuals for the soldier. These manuals along with unit Standing Operating Procedures should stress the following points relative to city combat.

-Be psychologically prepared to perform self-aid.

-Carry sufficient first aid materials to care for yourself if you become isolated from your unit.

-Avoid unnecessary injury by wearing individual protective equipment such as helmets and flak vests.

-Reduce the risk of injury by following prescribed "search and clear" procedures.

-Avoid departure from your prescribed "search and clear" area so that you may be more easily found if

you become separated from your unit.

-Maintain voice contact with a fellow soldier at all times. Stick to the "buddy system".

-Familiarize yourself with manual evacuation techniques before entering a city.

-Eat and drink only those rations and beverages which have been approved by the Medical Department. This particularly applies to local livestock and water.

-Respect the citizens of the city and their property. Carelessness can damage their food and water supplies and sanitary systems, lending to probable disease outbreaks that can eventually affect you and your unit.

The platoon medic should also be reminded of the special role that he will play in city fighting. FM 8-36, "The Aidman's Medical Guide" should discuss the following guidelines and precautions.

-Carry extra medical supplies into the city since resupply may be very difficult. You will need extra burn dressings and splinting materials.

-Make sure each soldier has sufficient emergency medical supplies for self-aid before entering the city.

-Assure that each platoon member knows how to perform emergency medical care and manual evacuation procedures. Rehearse evacuation from rooftops, down stairs and over obstacles.

-Get a map of your platoon's area of operations and thoroughly familiarize yourself with it.

-Find out where the patient collecting points are and brief your platoon leader and platoon sergeant on their location, number, and use of those points in your area.

-Find out from the engineers how to safely remove rubble from atop an injured man. This could help you in avoiding injuring him any further.

-Designate a reliable platoon member to take your place if you are injured.

-Brief your platoon members on the dangers of "local procurement" of food and beverages. They must only consume approved rations.

-Help your platoon leader protect the public utilities, medical facilities and sanitary facilities from accidental or careless damage by your unit. This can save you headaches later.

-Be vigilant for evidence of disease among the soldiers in your platoon. This could stop an epidemic before it starts.

Tips for unit commanders would reasonably be included in FM 31-50, "Combat in Cities and Fortified Areas." These should include:

-Notify your staff surgeon as soon as you have determined that your unit is to attack the enemy forces in a city. He will need equally as much time for planning as will the rest of your staff.

-Cooperate with the staff surgeon in his attempts to gather medical intelligence. Information from his efforts will be invaluable in determining the medical problems of the defending enemy and the health hazards to your own forces after entering the city.

-Your medical unit may not be able to establish reliable communications within the city with organic personnel and equipment. Provide them with all the signal assistance that you can.

-Issue detailed city maps to the staff surgeon and supporting medical units. Request their recommendations for evacuation routes and patient collecting points.

-Insure that all unit commanders are familiar with the general medical support scheme before the operation begins.

-The "search and clear" procedures of FM 31-50 will serve to reduce friendly casualties as well as cover the desired area in minimum time. Insure that those procedures are rigidly followed.

-Insure that fire and air support planners are aware of the necessity to preserve medical facilities, utilities and sanitation facilities in the city. Destruction of those valuable systems could create inroads of depth and disease which may affect your entire command.

-Organize unit efforts to dispose of their dead. Area-oriented civil affair teams can be invaluable to you when organizing civilians to care for their dead as well.

-Create and enforce unit Standing Operating Procedures prescribing procedures for prevention of disease and injury.

-During mass casualty periods, provide unit medics with as many surface vehicles as possible for evacuation from the city to supporting medical treatment facilities.

Finally there are some recommendations that should be helpful to the Army Medical Department. These should be included in the new manual which will replace FM 8-15, "Medical Service in Divisions, Separate Brigades and the Armored Cavalry Regiment" and FM 8-10, "Medical Support--Theater of Operations."

-Get involved in the overall planning for the city battle.

-Stress medical intelligence. Pay particular attention to the state of health of the enemy and the city's inhabitants.

-Civilians will severely tax friendly medical resources as the city is liberated. Through sound medical intelligence, their needs can be sufficiently predicted and eventually accommodated.

-As the fighting begins, closely monitor injury trends so that specialty teams can be requested as necessary.

-Maintain freedom of action end avoid communications difficulties by establishing all medical treatment facilities outside the city. Limit treatment inside the city to stabilization procedures at battalion collecting points manned by the aid station sections of unit medical platoons.

-Solicit the assistance of your unit signal officer in establishing a flexible communications system for hospitalization and evacuation.

-Use only surface evacuation in the city. Save air evacuation for movement of patients from clearing units and hospitals just outside the city to hospitals further to the rear of the Combat Zone.

-If vehicles have a difficult time negotiating the congested city streets, litter evacuation from the "front lines" to collecting points may be necessary. This may require that medical collecting units be made available for the urban campaign until normal evacuation means can be reinstated.

-Review surface ambulance requirements before the urban operation begins and request augmentation when necessary.

-Review requirements for preventive medicine and veterinary services and request appropriate unit augmentations.

-Coordinate with the unit engineer. He can be of invaluable assistance in helping to clear evacuation routes in the city and restoring civilian medical facilities, utilities, and sanitary systems.

These lists do not represent a panacea or even a body of rules for prevention or resolution of all medical problems resulting from city combat. That ancient art of soldier-innovation is just as valuable now as it ever was. These time-proven recommendations, if accepted, however can significantly improve the value of innovation and may result in remarkable changes in the severe effects that history has proven cities to be on their inhabitants and fighting forces during time of war.

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