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DEPARTMENT OF THE ARMY FIELD MANUAL

ARMY MEDICAL SERVICE PLANNING GUIDE

HEADQUARTERS, DEPARTMENT OF THE ARMY

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ARMY MEDICAL SERVICE PLANNING GUIDE

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CHAPTER 1

INTRODUCTION

1. Purpose and Scope

a. This manual is intended as a guide to medical service planners in the field. It contains a digest of the accepted principles and procedures pertaining to planning; it also includes rates and experience factors which will be of assistance in the preparation of estimates, plans, and policy directives incident to Army Medical Service in a theater of operations.

b. The material presented herein, although based on nonnuclear combat experiences, may be applicable to both nuclear and nonnuclear warfare. The data are regarded as general guides rather than as authoritative predictions applicable to every situation.

2. Reference Data

Military technique is an art rather than a science. The many imponderables present in military situations make precise measurements impossible. Certain yardsticks are essential in planning, but in a special situation it is dangerous to rely with complete confidence upon an average experience. Yardsticks should be applied with care and discrimination. The provisions of this manual must be modified by the user to meet the needs of his own particular situation, to conform to current regulations and directives of higher headquarters, and to comply with the desires of his own commander. As the data contained in this manual are based on experience principally from World War II and the Korean War, they can be used only as a basis in any future war and must be supplemented or replaced by any known factors available to the medical planner.

3. Organization

Chapter 2 outlines the principles of planning and the factors which influence the development, review, and modification of a plan for Army Medical Service in a theater of operations. It explains the medical estimate, the medical plan, and the base development plan. Chapter 3 discusses general policies and regulations pertaining to procurement, assignment, and replacement

of Army Medical Service personnel both as individuals and as medical service units. It includes data on Army Medical Service personnel losses. Chapter 4 deals with medical supply planning for the theater of operations. Chapter 5 describes the various categories and echelons of maintenance of Army Medical Service equipment in the field, and equipment maintenance requirements. Chapter 6 discusses rates, including definitions and methods of computations of the rates and ratios commonly used by the Army Medical Service. Chapter 7 presents statistical information gathered from experience on such factors as disease, nonbattle injuries, and battle casualties, and explains how to prepare an estimate of probable casualty rates. Chapter 8 discusses evacuation and hospitalization of patients, including prisoners of war. It includes formulas and tables for estimating fixed bed requirements for the theater of operations and for the zone of interior. Chapter 9 outlines the general principles of dental staff planning, including its relationship to medical planning, and presents experience factors designed to assist the dental service planner. Chapter 10 discusses veterinary staff planning.

CHAPTER 2
ARMY MEDICAL SERVICE STAFF PLANNING

Section I. PRINCIPLES OF PLANNING

4. Purpose and Importance of Planning

Adequate timely planning which makes provision for employable and sufficient means within the theater of operations is necessary for effective operation of the field medical service. Planning may be classified as "current," which covers the management of normal day-to-day operations; and "short range" and "long range" planning, which cover successively longer periods ahead. Planning is a continuous process; the staff at higher echelons must always be planning for subsequent operations during the conduct of current operations. Proper advance planning permits the detailed and systematic examination of all factors involved in a projected operation; planning, when delayed to await the assured outcome of a current operation, will be hurried and incomplete. Regardless of the type of military operation or the echelon of command, plans (either formal written plans, or informal mental ones) must be made, and the planner must proceed in an orderly, progressive manner to insure maximum effort and complete coverage. The time required to plan varies with the size of the unit. The amount of detail required varies with the type of command, the experience of the troops, the complexity of the operation, the factors of combined or joint service participation, and the time available for planning. Decision is a command function. Elaboration of the details necessary to carry decision into effect is a staff function. Each subordinate unit involved in an operation must prepare its own plan, based on the plan of the next higher echelon. As the medical service must be planned in conformity with the plans and general policies of the commander, the surgeon must be conversant with these plans at all times so that he can adapt the medical plan to the changing needs of the operations plan. The commander must insure that adequate means are made available for the accomplishment of the medical mission.

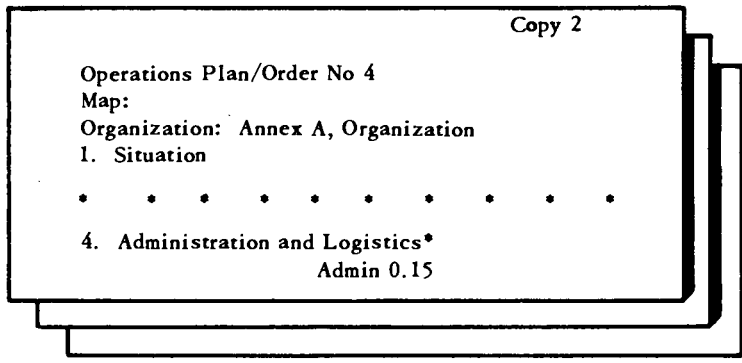
5. Explanation of Terms Used in Medical Service Planning

Certain terms common to all military planning should be understood by the medical service planner.

a. Directive. A directive is an oral or written military communication in which a policy is established or a specific action is ordered. It may constitute a plan issued with a view to placing it in effect when so directed or in the event of a stated contingency. For example, a medical plan, when authenticated, can become a directive. (See also *Order, g* below.) Broadly speaking, a directive is any communication which initiates or governs action, conduct, or procedure. It is a general term and includes all of the various forms of orders and instructions. It is used most often to indicate broad aims, policies, or strategic plans promulgated by commanders at theater or higher commands. The directive for an operation should include the mission, the means available, limiting considerations, and special instructions. Based upon the information contained in the directive, as received by the successive headquarters, plans are prepared for the conduct of the operation. Each plan is then submitted to the next higher headquarters for approval.

b. Plan. A plan is a detailed statement of the course of action to be followed in attaining a desired result. It is the basis of orders or directives and, whether written or oral, must precede execution of any military task. Types of plans prepared for a theater of operations cover a wide range. They include campaign plans, operations plans, logistic or administrative plans, personnel plans, Civil Affairs plans, and base development plans.

(1) An *operations plan* is a basic military plan. It is the document upon which subsequent annexes (such as the logistical plan) and appendixes (such as the medical plan) are based (fig. 1). These amplifying documents always follow the same format as that of an operations plan. An operations plan sets forth the situation, the mission, the commander's decision and plan of action, and such details concerning the method of execution that will insure coordinated action by the whole command. (Refer to example 11 in FM 101–5 for a sample operations plan.) When authenticated, it becomes an order and represents the crystalization of all operational planning. Preparation and issue of an operations plan is the responsibility of the Assistant Chief of Staff G3. The Assistant Chiefs of Staff G1, G2, G4, and G5, and special staff officers concerned (the surgeon, for example) furnish G3 a draft of those paragraphs of the order pertaining to them. The surgeon is particularly concerned with the paragraph on evacuation and hospitalization and the medical subparagraph of the technical services paragraph. Although mentioned here as paragraphs, these portions may be expanded to appendixes to the logistic annex, with the



*Note: Paragraph 4 may be expanded into an annex or a separate plan (see below).

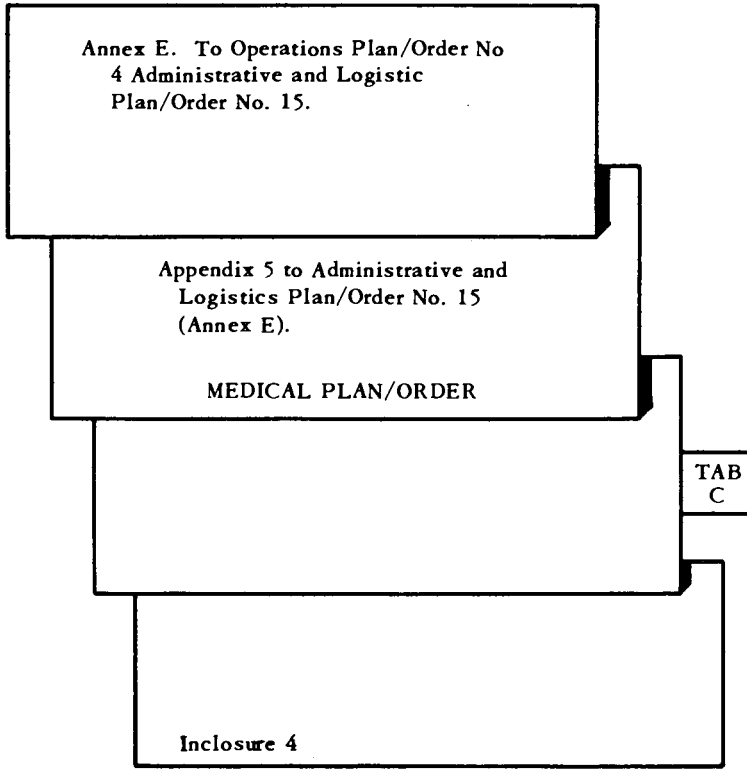


Figure 1. Diagram showing relationship of parts of a plan/order.

medical service paragraph becoming a detailed medical plan. Paragraph 4 of an operations plan deals with the administrative and logistics part of the plan. It contains a statement of administrative matters, including logistical arrangements applicable to the operation. In commands smaller than a division, this paragraph normally contains all necessary information or instructions; but in divisions and higher units, these instructions usually are so voluminous that they require issuance of a separate plan as an annex to the operations order. In the latter case, paragraph 4 of the operations order may consist of only a reference to the administrative or logistics plan, together with any special administrative details which affect immediately and directly the tactical missions of subordinate combat units.

(2) The *logistics (administrative) plan* is formulated by G4 and includes pertinent logistic information for support of the operations plan. G1 provides G4 with the paragraphs pertaining to personnel functions; G5 furnishes G4 the paragraphs pertaining to Civil Affairs; G4 then prepares the paragraphs concerning the logistical support of the operation and combines them with the ones submitted by G1 and G5 to produce a complete plan. One of the technical services appendixes to this plan is the medical plan, prepared by the staff surgeon. A separate logistics plan is normally issued by organizations down to and including division level, although there is no set rule governing whether it will be issued separately, or as an annex to the operations plan or as a paragraph within it. Determining factors are (1) the estimated time it will be effective, (2) the volume, (3) the content, and (4) the specific type of operation. It is generally issued separately when the chances are that the plan will continue to hold for more than one phase of the operation or for more than one operation plan. Its format follows that of the operations plan.

c. Annex. An annex is a separate document attached to and forming a part of a complete plan or order. (For example, the logistics plan is often an annex to the operations plan.) Details are presented in this way to preserve brevity and continuity in the original document and to supply information of a limited or technical nature. A written annex normally follows the five-paragraph form used in the operations order, but with its annex designation included in the heading. Annexes are prepared by the appropriate staff officer and submitted to the commander, or to

the staff officer designated by him, for approval prior to use. They are lettered alphabetically in the sequence in which they are mentioned in the basic plan.

d. Appendix. An appendix is supplemental material added to an annex or to a plan. Its scope is similar to that of an annex, which it is frequently used to amplify. Appendixes are numbered serially with Arabic numerals. For example, the medical plan is one of the technical services appendixes attached to the logistics or administrative annex or plan.

e. Tabs. Additions which are necessary to amplify an appendix are contained in tabs, designated in sequence by letters of the alphabet.

f. Inclosures. Additions which are necessary to amplify a tab are contained in inclosures, which are numbered serially with Arabic numerals.

g. Order. An order is a communication, written or oral, which conveys instruction from a superior to a subordinate. It details the complete information and orders necessary to implement the decision and plan of the commander. It is written so that each subordinate unit or agency will have a thorough understanding of the part it is to play in the operation. A plan which is approved and ordered executed constitutes an order: the operations plan, for example, becomes the operations order; the administrative plan, the administrative order. The term includes all annexes, appendixes, and tabs appended thereto.

h. Standing Operating Procedure (SOP). This consists of a set of instructions giving the methods to be followed by a particular unit for the performance of those features of operation, both tactical and administrative, which the commander desires to make routine. Use of such instructions reduces the number and complexity of orders which must be issued (app. XIII).

6. Sequence of Planning

Planning is initiated upon receipt of the directive from higher headquarters. The commander formulates a plan based upon his own estimate and the estimates of his key staff officers, and upon his concept of the operation. The G3 then prepares the *operations plan* delineating the responsibilities of subordinate units and basic operational policies. The *logistic annex,* appended to the basic plan, includes logistical details for supporting the mission as outlined in the operations plan. At higher echelons especially, the logistics plan is further amplified by several technical service appendixes, one of which is the *medical plan.* A medical plan is de-

veloped by a logical sequence of events. The surgeon, keeping in mind the tactical mission of the command and staying within the scope of pertinent Army regulations and policies, starts planning even before he receives the directive. Normally, the surgeon and selected members of his staff are given highest operational security clearances and participate in the operational planning. Such concurrent planning is necessary for efficient cooperation and support. The surgeon gathers information through all means available: intelligence information contained in the current operations plan and the current logistics plan; additional information furnished by G2; information contained in the various technical intelligence reports; and all pertinent data bearing upon the medical problems that may be encountered in the operation. (For further details concerning this information refer to FM 8–10, FM 100–10, FM 101–5, and FM 101–10.) Medical plans of higher or comparable echelons of medical service may also contain helpful information. When the information is gathered, the surgeon and his staff make a medical estimate of the situation and then formulate a medical plan, which must be approved by the commander. To insure a well-integrated medical plan, it should be coordinated with all other staff plans to reconcile conflicting interests and promote complementary action. This coordination is a function of command exercised in small units by the commander himself, and in larger units through the commander's general staff or comparable assistants. After the commander's approval, the medical plan is put into effect by means of directives. Both command and technical channels are used to control the flow of directives, orders, and other official communications which implement the medical plan. These steps in medical planning permit integration of ideas, coordination between all interested echelons of the command, and a check by higher authorities on plans made by subordinate echelons of the command. Alternate medical plans must also be developed for use in the event the original plan fails, or the situation changes. Medical planning at all levels must be based on planning for the possibility of the use of nuclear weapons. These principles and this sequence of medical planning remain constant, though situations and problems vary in kind and scope.

7. Basis for Medical Planning

The medical plan, like all other supporting plans, must be based on the operations plan. Current policies, regulations, agreements, etc., may be properly modified by an operations plan to meet the requirements of a particular military operation. The operations plan, therefore, is the control factor; all other plans must conform to it. In making the medical plan, all pertinent factors (as modified

by the operations plan) must be considered. Some of these factors are (1) policies and regulations governing military organization; (2) interservice regulations (especially joint operations); (3) interallied relations and mutual support; (4) medical supply; and (5) service support procedures. Consideration must be given to policies concerning utilization of auxiliary labor, facilities, CBR warfare, and logistical policies as contained in pertinent field manuals. Statistical average casualty rates from similar experiences must be considered. In addition, planning for future medical service operations must take into account major medical problems, both past and present, such as underestimates and overestimates of supply requirements, types of evacuation, or emergency situations.

8. Coordination

One of the most essential elements in successful planning is coordination. This should be effected from the beginning by including the surgeon and his assistants in the early planning of operations. With a knowledge of the tactical situation and objectives, they can better plan for medical support. This method also enables them to begin medical planning early—even before a directive is issued—and allows time for more thorough planning on their part. The surgeon, in turn, must include his staff and selected subordinate commanders and surgeons in his planning. He must also coordinate with the staff representatives at the various headquarters, who can furnish him needed information and who need to coordinate their plans with his. Refer to FM 8–10 for a detailed list of these various sections and directors with whom the surgeon effects coordination.

9. Characteristics of a Satisfactory Medical Plan

There are certain characteristics which all military plans, including medical plans, should possess. Some of these must be balanced against others. The medical plan representing the best balance of these characteristics is most likely to be effective.

a. Plan Must Be Sound. It should be based on adequate information and analyzed by experienced medical personnel. It should provide the maximum efficiency with the greatest economy of medical means. The course of action selected and the responsibilities assigned in the medical plan must represent the best way to assist the commander in accomplishing his mission. This is the first and most important characteristic of any good plan.

b. Plan Must Be Complete. Fragmentary medical plans, disseminated in the interest of concurrent planning to save time should be supplemented as rapidly as possible with a complete medical

plan to give each subordinate a clear picture of what he and those about him are expected to do. The medical plan should anticipate and answer in advance any questions that subordinate medical planners may raise. Completeness must never be sacrificed in the interest of brevity.

c. Plan Must Be Simple. As medical plans are the basis of medical orders, elaborate plans would call for complex orders. A simple plan telling the subordinate what he has to do and when he has to do it, but leaving the method of carrying out the order to be worked out by him, will have greater chance of success than an involved plan. Maximum use of SOP's contributes greatly to the simplicity and brevity of subsequent plans.

d. Plan Should Be Brief. It should include only those details necessary for implementing the commander's decision. Supplementary material or material of limited technical interest should be attached as annexes or appendixes to the plan proper. Use of an established format also saves valuable time in searching for information and instructions, as all personnel concerned are familiar with the prescribed organization of the written plan.

e. Plan Should Be Flexible. Military situations change frequently and often with little or no warning. A medical plan should be so drawn that it can be modified immediately either before or after it is placed in operation. It should provide reserve medical means, readily available, sufficient to cope with new needs as they arise. It must at all times be capable of being adapted to fit the changing tactical situation. This requirement of flexibility makes brevity an even more important characteristic of a medical plan, as a simple plan lends itself to change much more readily than an elaborate one.

f. Plan Must Be Timely. It should be formulated in sufficient time to allow for coordination with other staff members, for approval of the commander, and for subordinates to formulate adequate implementing medical plans. The time required depends upon the echelon of command. For example, a battle group might plan and initiate an operation within a few hours; a field army might require several months to plan an operation.

10. Modification of Medical Plans

The staff surgeon at each level must modify his plans to fit each situation as it arises. He must remain constantly abreast of the tactical situation and continue to plan for the next phase of operations while operating the medical service in the current phase. Current tactical concepts emphasize flexibility with diversification of planning and operations. Accordingly, all medical plans which

support tactical operations must be flexible and must remain constantly in that state. They must have alternatives which can be used during the course of combat to meet rapidly changing situations. Alternatives the commander is considering must also be considered by the surgeon. The surgeon must be in a position to receive information also from medical elements under his control so that he can direct changes and modifications in existing medical plans according to the requirements of the situation. Planning never ceases; it is a continuous process requiring alertness, adaptability, and cooperation. Only through experience and application can the complicated art of planning be mastered.

Section II. MEDICAL ESTIMATE OF THE SITUATION

11. General

After the operations plan has been approved by the commander assisted by his staff, the surgeon is directed to prepare estimates of requirements and descriptions of projects to be undertaken for establishing an adequate medical service to support the plan of the commander. The surgeon then makes a *medical estimate of the situation,* which is the basis for the medical plan. Actually, the surgeon and his staff have been engaged in preparing this estimate long before the directive is issued, because he and selected assistants have been participating in the operational planning. The *estimate of the situation* is a logical and orderly examination of all of the factors affecting the accomplishment of the mission to determine the most suitable course of action. The analysis must follow a logical sequence. Consideration must be given to all of the significant possibilities which can affect the accomplishment of the commander's mission. The medical estimate, along with estimates of other individual staff members, is used by the commander in the preparation of his own estimate.

12. Preparation of the Estimate

In preparing the medical estimate it is advisable to follow the format which has been standardized by all services within the Armed Forces. It provides an orderly arrangement of material and serves as a checklist to insure that no matters of importance are omitted. The format for the medical estimate follows the same form as that of the commander's estimate for several reasons: ease of understanding, standardization, and same sources of information utilized. Following this format in making the medical estimate facilitates straight clear thinking in arriving at a sound decision. The format for a medical estimate is found in

appendix II. This form is applicable to any echelon of command and under any operational condition. It is rather lengthy, and includes many more details than may be needed in the average situation. Each surgeon must vary it to suit his needs. In many situations the estimate is not written. In the field, for example, a rapid mental estimate is often made. The same thought process is followed, however, as that underlying the written estimate. Actually, there is no beginning or end to the medical estimate. It must be continuous and must constantly be revised as circumstances change so that a planned medical service can be offered to a command from the time it is mobilized until it is disbanded. The medical estimate format should be considered more as a tool to assist the medical planner than as a form to regiment or complicate the task. It is not intended to be a burden upon the surgeon, but a time-saving and integral part of providing medical support.

13. Mission

The mission of the command must receive primary consideration by the surgeon in formulating the specific medical mission and providing an adequate medical service to the command. The surgeon is responsible for analyzing the mission of the command both from the tactical and medical viewpoints and for enumerating the derived medical missions for subsequent planning. The medical mission is the basis for the medical estimate of the situation and is clearly stated in the first paragraph of the estimate. It is always stated specifically in conformity with the operations in which the supported troops are engaged. For example, the medical mission might be "to support the 7th Infantry Division in an assault upon a fortified position" or "to provide medical service for the 7th Division in a daylight withdrawal." Included in the first paragraph with the mission is also a statement of the types of medical service which must be provided the various categories of personnel supported.

14. Situation and Considerations

The medical situation may comprise few or many elements. Those facts, assumptions, and deductions which can affect the medical service for a particular operation are set forth in paragraph 2 of the medical estimate.

a. Enemy Situation. From his specialized point of view the surgeon must consider the enemy's situation and his attitude toward the provisions of the Geneva Conventions. He is concerned with the capabilities of the enemy to inflict physical damage upon

friendly troops and to impede or prevent the evacuation of casualties. These enemy capabilities depend upon many factors: (1) the strength and disposition of their forces; (2) their combat efficiency and capability; (3) their state of supply; and (4) their state of health. The surgeon is also interested in their state of health from the standpoint of planning for providing medical means for the treatment and evacuation of ill and injured prisoners of war. Furthermore, the existence of contagious disease among the enemy could be a source of infection of friendly troops. Immunization or other precautions would have to be included in the medical plan as a result of this situation. In addition to considering the enemy's use of conventional weapons, the surgeon should consider their possible use of nuclear weapons, as this would affect the types, location, and number of casualties.

b. Friendly Situation. An estimate of the friendly situation includes the relative combat power of friendly and enemy forces. It takes into account the tactical plan of the commander in order to determine the location of areas of casualty densities and advantageous placement of supporting medical units. The state of supply and the weapons to be used must also be considered.

c. Characteristics of Area of Operations. As with tactical planning, the characteristics of the area of operations are of great importance in making the medical estimate. They influence the number of casualties and their collection and evacuation.

(1) *Terrain.* Terrain has the same bearing upon medical planning as it does upon tactical planning. It directly influences the incidence of casualties as well as such factors as protection, shelter, and sources of water supply. Availability of roads, landing strips, railroads, and harbors must also be considered when determining the type of evacuation planned. Transfer of patients from shore to ship is largely dependent on the condition of the coastline, harbors, sea. Barriers such as mountains and swamps are also important to consider when making the medical estimate. Where possible, the surgeon or his representatives should make a personal reconnaissance over the area.

(2) *Climate and weather.* Climate often contributes to the incidence of casualties, such as frostbite, snow blindness, trench foot, sunburn, heat exhaustion, and an increase in nonbattle injuries. The result will be added requirements for medical facilities, supplies, and evacuation means. The type of evacuation, especially air evacuation, may be influenced by weather. Weather is also respon-

sible for the incidence of respiratory, fungus, and other related diseases. The deterioration of drugs and medical equipment is influenced by both weather and climate, and storage facilities must be estimated accordingly. Long-range predictions regarding weather conditions can now be made with reasonable accuracy. Since plans are drawn for future operations, predicted weather conditions are more important than those prevailing at the time of the estimate.

(3) *Civilian population.* As the commander's responsibility for the civilians within the area includes their medical care, the surgeon is often asked to cooperate with Civil Affairs concerning this matter. Information concerning the state of public health organization and procedure is useful to him in making plans for this group. Various diseases could be spread to the command by civilian sources. Exact medical statistics for the area, covering a period of several years, are required to make accurate estimates of the nonbattle casualties to be expected. Such statistics should include types of diseases, their sources, frequency, severity, preventive measures with the results obtained, and the treatments used and their effectiveness.

(4) *Flora and fauna.* Certain kinds of insects, animals, and vegetation encountered in the area may also contribute to the noneffective rate of the command. Insects are particularly important. Orientation of troops and safeguards against insects and, in some areas, against animals and vegetation may be necessary. Detailed information regarding types, numbers, distribution, habits, etc. of flora and fauna is essential.

(5) *Local resources.* The medical planner also needs information concerning the availability from local resources of such items as food, water, drugs, and oxygen. Although other agencies of the command are responsible for procuring food and water, the medical service is responsible for the sanitary supervision of food and water supplies from their sources to the consumers. Availability of drugs or oxygen in the area affects stock levels required for the operation.

d. Strengths To Be Supported. The strengths to be supported by the Army Medical Service are usually shown in a table in which the troop strength is broken down into categories indicating what types and amounts of support will be required. These categories

may include Army, Navy, Air Force, Allies, prisoners of war, civilians, and others, including partisans. Various experience rates (ch. 6) are applied against these strengths to estimate the patient load which may be expected. The detail in which the tabulation is prepared varies with the scope and type of the operation.

e. Physical Condition of the Command. One of the most important considerations in making the medical estimate is the physical condition of the command. Such factors as the origin of troops, the presence of disease, the status of immunizations, fatigue, morale, state of training, and adequacy of clothing and equipment affect casualty estimates and indicate medical measures which should be taken prior to the operation. Although many of these factors require command attention, the surgeon is expected to advise his commander.

f. Assumptions. An assumption is a supposition on the current situation or a presupposition on the future course of events, either or both assumed to be true in the absence of positive proof. Assumptions are sometimes necessary to enable the surgeon, in the process of medical planning, to complete his medical estimate of the situation and make a decision on his course of action. In addition to a statement of facts as known, logical assumptions are included in this paragraph as a basis for development of the estimate. Subsequently these assumptions may be deleted or modified as information becomes available. Assumptions are usually restricted to higher levels of planning and normally apply only to factors beyond the control of friendly forces, for example, enemy capabilities, weather, etc.

g. Special Factors. Under this heading are mentioned factors not listed elsewhere, or items of such importance to the particular operation that they merit special consideration. This subparagraph is usually omitted at lower levels.

15. Medical Analysis

The medical analysis (par. 3 of the medical estimate) is a logical comparison of the estimated medical requirements of the command and the medical means available for the operation.

a. Casualty Estimates. Estimates of casualties can be prepared from data compiled in paragraph 2 of the medical estimate. Casualties are estimated as to number, distribution in time and space, and areas of casualty density. The surgeon can consult experience tables, such as those in chapters 7 and 8, to assist him in determining medical requirements for the operation.

b. Medical Requirements. These are calculated from the esti-

mate of casualties and the data contained in paragraph 2 of the medical estimate. The surgeon should consider separately the requirements for the following: (1) medical supply; (2) hospitalization; (3) evacuation; (4) transportation (such as that additional transportation of all types to be required for evacuation or movement of medical units or supplies); (5) service (medical dispensary, intelligence, etc.); (6) preventive medicine; and such others as indicated. Neither the means available nor the allotment of specified units should be considered at this stage. This is merely an estimate of the medical means required.

c. Medical Means Available. Having arrived at the medical means required, the surgeon then considers the means at hand or readily available. Maximum use of such personnel and supplies promotes maximum effectiveness of Army Medical Service in caring for the command. To prevent confusion, the medical means should be divided into six categories—

(1) *Organic medical units.* The medical units that are organic components of the command are listed and under each is a statement describing its location, strength, and readiness for action.

(2) *Attached medical units.* Both the medical units already attached and those that may be readily available are considered ((1) above).

(3) *Supporting medical units.* Consideration is given here to the evacuation and other support furnished by higher echelons or Air Force or Navy support.

(4) *Civil public health.* Medical personnel and supplies reported by Civil affairs as available from civil public health must also be listed. Civilian medical facilities and personnel may in some cases be used to augment military facilities; in other cases, the surgeon may be requested to give support to them. He should be acquainted with their potential.

(5) *POW medical personnel.* Consideration must be given to the use of indigenous and prisoner of war medical personnel and supplies in providing medical care for their respective categories of personnel.

(6) *Medical troop ceiling.* The medical troop ceiling (applicable to commands such as the field army and higher) should be reviewed to determine the possibility of securing additional medical support units. This action should be effected as early as possible in order to insure the timely receipt of the required units.

d. Medical Courses of Action. By comparing the medical requirements with the means available, the surgeon can determine what his major problems will be. Based on these two elements, several available courses of action can be developed to provide the desired medical support. In this subparagraph the surgeon lists the general policies and precedures which will best accomplish the mission. Here he limits himself to such considerations as centralization versus decentralization of control of medical service, dependence upon evacuation by other components, extent to which civilian and prisoner of war labor will be utilized, and evacuation policies. A comparison of the various courses of action is made in paragraph 4 of the estimate.

16. Medical Evaluation

In paragraph 4 of the medical estimate, the surgeon evaluates the courses of action developed in paragraph 3 of the estimate. He lists the outsanding medical elements and the controlling limiting features. By comparing the courses of action in the light of these major medical elements he is able to note the advantages or disadvantages of each. He does not draw conclusions at this step, but defers this action until he completes his evaluation of all courses of action.

17. Conclusions

Conclusions made by the surgeon are stated in paragraph 5 of the medical estimate. This paragraph represents the end of the thought process of the estimate and is the basis for the development of the medical plan. It provides the general staff and the commander with a statement as to whether or not the operation, as envisaged, can be medically supported. If it cannot be supported, a clear outline of the reasons should be included. If it can be supported, the surgeon includes here a general statement of the course of action which best supports the commander's mission with the most economical utilization of medical means. He also includes a brief statement concerning any factors which might adversely affect the health of the troops. Furthermore, he outlines any unavoidable medical limitations or deficiencies which must be recognized by everyone associated with the medical service of the command. These statements represent the surgeon's "decision" and serve as a guide to subordinate surgeons in their planning. Further details regarding estimates of the situation are contained in FM 100–5 and FM 101–5.

Section III. THE MEDICAL PLAN

18. General

By the time medical estimate is completed, the surgeon is well on his way toward preparing his medical plan. As each problem is recognized and solved, a part of the medical plan is automatically formulated. These bits of fragmentary information should be disseminated as early as possible to surgeons of subordinate and higher commands to assist them in preparing their plans and estimates. After the estimate is completed with its calculations of requirements, allocation of means, and determination of policies and procedures, there remains only the assignment of specific responsibility, which is essentially the format of the medical plan (app. III).

19. Purpose and Scope of a Medical Plan

The medical plan varies in its purpose and scope according to the size and complexity of the operation which it supports. The medical plan of a battle group, for example, usually includes little more than the location of the company collecting points and the aid station; while the medical plan of a division must deal with more functions because of greater extent of the medical responsibilities, such as location of clearing stations and distribution and assignment of ambulances. The standard format (app. III) of a medical plan is detailed and all-inclusive to fit the most complex situation. Planners of simpler medical plans should consider it as a checklist and use only those portions which apply. Inappropriate subparagraphs may be omitted entirely and subsequent paragraphs numbered accordingly.

20. Preparation of Medical Plan

a. Responsibility. It is the responsibility of the surgeon to prepare the medical plan. If he has no assistants, he must prepare all the details himself, but in larger units he ordinarily indicates by a directive the general scheme of the plan to his assistants, who develop the details. The medical plan must be in consonance with the format of the operations plan. The security classification is designated by the command headquarters, and should be placed at the top and bottom of each page.

b. Heading. The designation of the plan varies with the nature of the document to which it is appended. Numbers and letters for identification and filing purposes are designated by the command headquarters. When reference is made to locations by map coordinates, maps are listed, including the sheets involved. If no maps are referred to, this portion of the plan is omitted.

c. Task Organization. In a medical plan the medical task organization is not included unless the document is the initial medical plan for a command or unless a major reorganization is to be effected. If the medical task organization is lengthy, it is usually attached to the plan as an inclosure, with an appropriate reference. In the medical troop list inclosure the command structure is indicated by appropriate indentations. This command structure is important because missions prescribed for subordinate elements of a medical unit are included in the overall mission of the major parent unit. If there are to be attachments for limited administration or control, this fact should be indicated. In amphibious or airborne operations, the task organization is usually shown even for corps and lower echelons.

d. General Situation. Paragraph 1 in the medical plan gives that information upon which the plan is based and that which is of value to subordinate planners in implementing the plan. For brevity, reference may be made to an appropriate intelligence annex, but information of definite medical importance should be repeated here for emphasis. Enemy capabilities bearing on medical planning are given. The medical responsibilities and functions of higher and adjacent echelons of command are included to assist subordinate planners. Directives, other than from the Department of the Army, which amplify the plan or clarify its provisions are listed, rather than quoted, to preserve brevity. The published plan contains few or no assumptions. Assumptions were limited to factors beyond the control of the commander (such as enemy capabilities, weather, and terrain) and have been progressively ruled out or confirmed as the planning has proceeded.

e. Medical Mission. The overall medical mission of the command is stated in paragraph 2 of the medical plan, and appropriate subparagraphs describe specific medical responsibilities for each different category of personnel. This paragraph serves as an overall guide to subordinate medical planners and focuses their attention as they prepare the details of the operation. It is the basis of the policies and procedures contained in the remainder of the plan. In the second major portion of this paragraph are included general policies and precedures under which the plan is to be executed. They contribute to an understanding of the plan.

f. Execution. Specific medical responsibilities are assigned in paragraph 3 to major subordinate commanders. The responsibilities prescribed reflect the medical means available to these subordinate commanders. Tasks for medical units are not listed in this paragraph, but are covered in subsequent paragraphs in conjunction with specific medical activities. A separate subpara-

graph is devoted to each subordinate command. The last subparagraph lists those responsibilities common to two or more subordinate units.

g. Material and Service. The first three paragraphs of the medical plan follow the format of the operations plan. They contain information of advantage in logical planning, they are of assistance to subordinate medical planners, and they insure conformity within the medical plan. Having served their purpose, these paragraphs are usually omitted if the plan is published as an annex to the administrative order. In such case, the remaining paragraphs are renumbered and published in sequence. Paragraph 4 of the medical plan (or paragraph 1 if the first three paragraphs have been omitted) includes instructions regarding general and medical supply, and may be cross-referenced with paragraph 1 of the administrative order, if one is published. The general supply subparagraph contains appropriate instructions to medical units regarding such matters as supply priorities for medical units, handling of hospital patient ration supplements, and special distribution instructions for medical units. The medical supply subparagraph is devoted to medical supply installations and gives locations, This subparagraph may be simplified by making reference to SOP's. All phases of medical supply are considered. A separate subparagraph is devoted to medical supply installation and gives locations. mission, hours of opening and closing, and troops supported. Medical service use of various means of transportation is considered in another subparagraph. The final subparagraph deals with service: (1) service to medical units and installations; (2) medical equipment maintenance; (3) dispensary service; (4) preventive medicine; (5) dental service; (6) veterinary service; and (7) medical intelligence.

h. Evacuation and Hospitalization. Paragraph 5 of the medical plan deals with medical evacuation and hospitalization. It is commonly cross-referenced with paragraph 2 of the administrative order. The evacuation subparagraph states the evacuation policy (in days) for the command. In complicated operations, such as amphibious and airborne assaults, the evacuation policy is given by phase of the operation. Responsibility of the command for other military components, allied civilians, and prisoners of war is included as applicable. An estimate of patient evacuation requirements including percentage evacuated by air or ocean transportation may also be included. A separate subparagraph is devoted to each major subordinate evacuation unit, giving location, mission, and attachments. The hospitalization subparagraph delineates the specific hospitalization policies of the command for this operation.

These include policies regarding hospitalization of civilians and prisoners of war. A separate subparagraph is used for each hospital, giving location, mission, hours of opening or closing, and attachments (unless shown in task organization). If a hospital is in direct support of specific tactical units, the fact is stated. If the mission is normal, it is only necessary to list and locate the hospital; the mission is assumed to be normal, unless otherwise stated. This procedure promotes brevity.

i. Miscellaneous. Miscellaneous medical matters are covered in paragraph 6 of the medical plan. Such details as claims, supply economy, and special reports, if not included in paragraph 3*c* of the medical plan, are discussed here.

j. Ending. The ending of the medical plan contains the signature, a list of inclosures (if any), the distribution, and the authentication. When the plan is published as an annex to the administrative order, the signature is that of the commander or his chief of staff. Inclosures or appendixes may include the task organization (unless included in the plan), medical overlay, preventive medicine or professional appendix, or similar data. The distribution is usually the same as that of the plan or order to which the medical plan is appended. The authentication is by the G4, since technical services appendixes are normally attached to the logistic plan or administrative order, both of which are authenticated by the G4. It normally bears the same classification as the document to which it is appended.

Section IV. BASE DEVELOPMENT PLANNING

21. General

a. A *base* is a locality from which activity is, or is to be, projected. It varies in size and in type ranging from a lone radio or radar station to a base with complete ship repair facilities and cantonment facilities for the training and staging of several divisions of troops. The most complex type of base is one where Army, Air Force, and Navy share an area which was recently the scene of intensive combined amphibious combat and, where they rapidly develop, while still subject to enemy attack, major facilities for the support of offensive operations. A base area is often considered as confined to the vicinity of ports, beach landing areas, and airfields. A broader view, however, would include a territorial subdivision of a communications zone such as a base section or advance section. The Army and Air Force frequently use the same facilities, thus expanding the joint aspects of base development (FM 31–8).

b. Base development is the setting up of facilities for the primary purpose of supporting the operations of air, sea, or land forces, or a combination thereof. It includes the provision of personnel and facilities which will be required for construction, port operations, transportation, hospitalization, maintenance, communications, and all other activities involved in base operations. It provides the framework for the logistical support of the combat forces deployed in accordance with strategic war plans. The logistics (or administrative) plan for a particular operation contains instructions as to what is to be done in support of combat operations, but does not include much information as to the means for accomplishing these ends. The base development plan provides that foundation and framework.

c. A base development plan is a plan published at the theater or major task force level to coordinate the development and operation of an oversea military base which provides for (1) the utilization of existing logistical facilities, (2) the priority construction of new facilities, and (3) the schedule for the arrival of service troops, equipment, and supplies. The base development plan is prepared well in advance of operations. Full consideration must be given to the proper dispersion of installations and facilities and for their replacement in the event they are destroyed by nuclear attack. It must provide for nuclear contingencies that may affect the operation.

d. The purpose of the *base development plan* is to inform all concerned of the intent of the theater commander in the construction and operation of bases. This plan is a basis for determining the number, kind, and dates of arrival of troops required to construct and operate installations in the base. It is the theater directive to the theater supply agencies to prepare requisitions and to ship supplies, equipment, and troops in the proper amount and priority to build and equip the base. As it is also the theater directive to undertake the construction of the base area, it precludes the dissipation of effort on low priority areas. It fixes the dates by which commanders may expect to have certain facilities, such as airfields, hospitals, harbors, and air depots available for operation. A base development plan also allocates space on the ground to the various agencies and installations in a manner best suited to the plan of overall operation of the base.

e. Much of the strategy of war is the strategy of bases—the seizure and holding of areas in which bases could be developed to permit further operations against the enemy. Experience in World War II showed that in no case was a major blow struck until a large advanced base was developed. New weapons and

techniques have been developed, but there appears to be no immediate prospect of winning a major conflict without the establishment of advanced bases. The efficiency of base development is directly proportional to the care exercised in the planning process. A carefully prepared base development plan must be flexible, but must also be detailed enough that commanders and staffs of units assigned the technical task of base development can obtain a prior knowledge of the overall mission of the base and can gain an understanding of the problems facing the commanders of other units. Good base development planning is one of the most effective ways of obtaining the required support of all three services with the minimum expenditure of effort and material. The best preventive measure, therefore, for avoiding the development of a base that is out of balance with operating requirements is sound background knowledge and recognition of the importance of planning.

22. Responsibility for Base Development Planning

a. The theater commander is responsible for base planning and for base development. He reconciles any conflicting requirements of various agencies and insures that adequate means are available to implement the plan. Lower echelon planning is carried on concurrently under the coordination and direction of the theater commander. Detailed planning is the responsibility of lower echelon of command. The theater commander may delegate the responsibility to the Theater Army, Navy, or Air Force Commander in instances where the interests of one of these components are exclusive or predominate. Normally, and even in such instances as these, the *base commander* will be "joint" in order to have the authority to control the diverse interests, capabilities, and activities of the component forces.

b. The base commander is responsible for the accomplishment of the base development plan. He should be familiar with the plans of the unilateral commander so that he may anticipate and meet changing conditions. Normally, control of common facilities (such as major road nets, electric power, water supply, area transportation, communications, and the allocation of real estate) is vested in the base commander.

c. Early in base development planning, the *theater surgeon,* the *theater army surgeon,* the *theater army logistical command surgeon,* and the *base surgeon* should be included. The coordination of combat plans with administrative (including medical) plans and operations is essential. As soon as possible, strategic and tactical planners must provide administrative planners with in-

formation on operation plans and must keep them advised on all alternate plans and changes. Concurrent and coordinated planning is essential. It is the responsibility of the commander to see that this coordination exists. Only by combining the skill and judgment of a large number of planners working together can the theater commander foresee requirements. Theater headquarters should not issue a base development plan that does not give full cognizance to experience and to the problems of execution of the plan. Every consideration should be given to the use of personnel in the planning who will later be involved in the execution of the plans. Accordingly, inclusion of the surgeon and his selected assistants in the early stages of base planning is of great importance.

23. Development Periods

a. General. Base development in joint operations, particularly amphibious operations, proceeds through four general periods or phases: (1) assault and consolidation, (2) exploitation, (3) development, and (4) base operation. The first two periods are found only in advance base development. The development of bases in areas already controlled starts with the third period. During each of these periods medical service must be planned for and operated.

b. Assault and Consolidation Phase.

(1) *Explanation of assault phase.* The assault phase consists of that period during which assault forces move into a combat area and seize it. Initially, support is provided by one or more beach support areas, each operated by a shore party under the control of a landing force commander (app. X). Some elements of the base command are attached to the tactical units and arrive early in the operation to assist in initiating the development.

(2) *Provision of medical support.* Medical support is needed simultaneously with the landing of the assault troops and the need becomes increasingly greater as the operation progresses. Medical planning for the assault phase consists principally of the provision of medical units to support the battle groups. These medical units are equipped to be self-sustaining for a limited period of time until additional support is available. Amphibious operations require a special evacuation procedure during the early stages, as patients must be evacuated to ships offshore for treatment. (Refer to FM 60–5 for details of this procedure.) Information and instructions worked out by medical planners concerning this type of evacuation

are contained in the Medical Annex of the Base Development Plan. This annex includes:

(*a*) Designation of landing for offshore evacuation.

(*b*) Designation of transport ships and Landing Ship Tanks, Hospital (LSTH's) as temporary hospital ships (LSTH's must be fitted and equipped for this mission, and transport ships that are designated to receive patients must also be fitted and augmented with additional medical personnel.)

(*c*) Additional medical elements to be attached in support of the operation.

(*d*) Location of proposed medical installations ashore.

(*e*) Instructions for the use of any special medical supplies or equipment.

(*f*) Shore-to-ship evacuation plans.

(*g*) Instructions for sanitation and disease control, both aboard and after landing.

(3) *Preparation for assault.* Equipment and supplies selected for the assault are based on the TOE's of the participating medical units, but are varied to suit terrain and probable rate of casualties. Before the ships are loaded, aid station packs are prepared and individual medical kits restocked and waterproofed. Provision is made in the planning for the echeloning of medical personnel and equipment. Company aid men are embarked with their assigned units. Other attached medical elements are phased during the assault to best support the evacuation and treatment of patients and in conformance with the medical plan. The battle group/battalion surgeon coordinates with the ship's embarkation officer as to the loading of all medical supplies and equipment aboard ship. Medical personnel are embarked with their assigned boat teams. The senior medical Naval officer is responsible for medical supplies and equipment for use on board ship. Army Medical Service personnel assist or supplement ship medical personnel as required, but their unit medical equipment and supplies are not used during the water movement phase.

(4) *Ship-to-shore operations.* In ship-to-shore operations, company aid men are boated with the platoons to which they are assigned. Casualties occurring in the landing craft are treated by the aid men or Navy medical personnel and returned to ship without being unloaded at the beach. Litter bearer squads are boated according to phases and are dispersed for landing. Their duty is to

assemble casualties on the beach for evacuation and to move inland, searching for other casualties and evacuating them to the beach evacuation station or the battle group aid station. These litter bearer squads maintain contact with the companies they support.

(5) *Battle group aid station.* The battle group aid station personnel are divided into two echelons. The advanced echelon, under the operational control of the battle group surgeon, lands as scheduled by the embarkation team commander. The rear echelon, commanded by the battle group medical platoon leader, lands with or immediately following the battle group landing team reserve. The forward echelon of the battle group aid station section establishes the aid station in the preselected site and sets up minimum equipment needed for treating patients. The aid station is kept mobile for early forward displacement. The rear echelon of the battle group aid station section moves to the site of the forward echelon and is consolidated with it. If the assault is rapid, however, it may pass through the forward one and establish an aid station in close support of the assault units.

(6) *Site selection of the battle group aid station and clearing stations.* Factors which enter into site selection for the battle group aid station are cover, concealment, and camouflage; protection of patients against enemy air attacks and against artillery and mortar fire by construction of foxholes and varied shelters consistent with the tactical situation; utilization of abandoned enemy installations; protection against enemy infiltration; and local security furnished by the units which the aid station serves. The site should be selected by the battle group surgeon. As he moves forward, he observes the terrain and makes tentative selections of sites suitable for establishing the aid stations. Alternate sites should also be chosen and marked. Selection of exact sites for clearing stations (unless described in detail by the division medical battalion order) is a responsibility of the clearing company commander. Number of clearing stations to be established and general location are elements of the division medical plan. (For essential features of the site, refer to FM 8–10.)

(7) *Evacuation of patients.* Before the beach evacuation station is established, patients are placed on landing craft for immediate evacuation to the ship. After the battle group aid station is established, patients are evacu-

ated to the beach evacuation station. Here they are prepared for evacuation seaward and are then evacuated by landing craft, or by helicopter.

(8) *Patient evacuation control.* Patient evacuation control is important to effective medical service afloat and must be planned for. It prevents the inequitable distribution of patients by number and type to the ships receiving patients. During the landing phase, small craft that are carrying patients report to a *casualty evacuation control ship*, which is between the beach and the ships receiving patients. Evacuation is frequently aided by helicopters, which must operate under a planned type of control also.

(9) *Consolidation phase.* The consolidation phase is the organizing and strengthening of the newly captured position so that it can be used against the enemy. During this period hospital units land, and evacuation from the beach slows down. Early in the planning for base development the operating forces should determine the dates on which each phase of medical support will be required. The medical planners can then develop a schedule for the arrival of medical service forces, supplies, and material. During the assault and consolidation phase, logistical requirements are characterized by those peculiar to amphibious or airborne operation. (For details refer to FM 57–30, FM 60–10, and FM 60–30.) As soon as practicable after the initial landing, the base commander establishes advanced headquarters ashore. As the base command elements become operative, and at times mutually agreed upon by base commander and the shore party commander and approved by the ground forces commander, the base commander relieves the shore party commander of responsibility for the operation of the beach support area and such base development as may have been initiated.

c. Exploitation. The exploitation phase consists of that period in which full advantage is taken of the position gained with resultant expansion of the area gained. It covers the time between the establishment of the combat forces in the objective area and the time that tactical operations have progressed to such a degree that the base area is relatively secure from ground attack. During the exploitation phase, the surgeon makes an early reconnaissance and analysis of the medical situation, and modifies his plans for the construction of medical installation and for the use of medical troops to meet the local conditions. In this phase of base develop-

ment, medical requirements tend to become more stable, centralized, and predictable. The base commander gives high priority to the development of improved unloading facilities and storage areas in order to terminate over-the-beach operations as quickly as possible.

d. Development of the Base. This is the principal period for base development. It extends from the time the base area is relatively secure from ground attack until the cessation of tactical operations or until roll-up begins. In the development phase installations are completed, streamlined, and balanced to produce an efficient, operating base. In organizing the construction force, a joint construction command is usually established. This command functions directly under the base commander. Certain other construction forces may also be assigned to the local service commanders and to joint commanders within the base (fig. 2). Construction of general or station hospitals integrated into the base establishment is normally the responsibility of the joint construction force. In areas which include elements of two or more services, the base commander usually designates one service to provide the required medical facilities for all forces. The evacuation policy for the base command is established by higher authority. Transportation of patients is performed by the services designated in the theater logistical plan. Sanitation and preventive medicine, including the health and living conditions of the civilian population, are continuous functions of the command. A rear boundary is established for the combat forces, and the base commander is given complete control of the area to the rear of this boundary. The shore party commander continues to turn over his functions to the base commander.

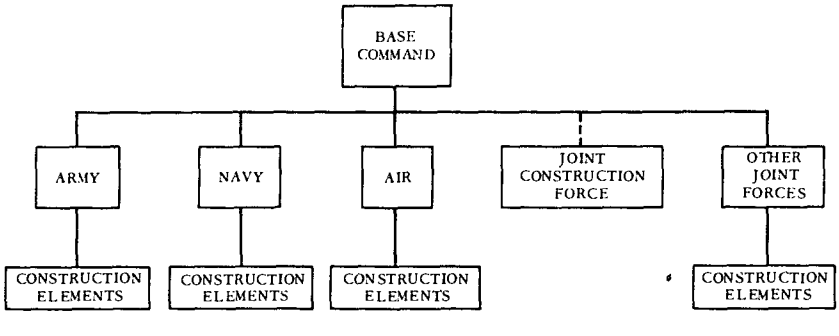


Figure 2. Organization of construction forces in a base area.

e. Base Operation. This is the period of full operation. The base commander proceeds with full authority and responsibility for accomplishing the mission of the base. Construction required to complete or expand medical facilities is continued during this period. Any medical facility construction planned for but not needed under current conditions will be cancelled.

24. Elements of Base Development Planning

It is impossible to list all elements to be included in base development planning, but the ones in *a* through *q* below are essential and should be checked by the planners.

a. Basic Planning Considerations. These considerations are explained in paragraph 26. They include the mission assigned to the advanced base; the degree of permanency of the base; limitations on personnel, supplies, or equipment; estimated phase population; natural and local resources; areas available for development; priority of development; unloading of base development personnel, supplies, and equipment; and base development problems for any future operation.

b. Command and Administrative Organization, Assignment of Forces, and Command Relationships. The original base development plan should include preliminary organization charts. The base commander should maintain an up-to-date functional chart or functional manual for the base. Command and coordination lines should be clearly shown so that all members of the staff and all subordinate commanders and units will clearly understand their responsibilities and where they fit into the organization as a whole. The organization chart for the Medical Service should include the local civilian government or institutions that are responsible for the development and operation of the medical and sanitation activities of the base.

c. General Layout Plans. Areas allocated to services by the theater commander are shown in the general layout plans which accompany the theater base development planning directive. When these plans are modified to include the recommendations of the separate services, they are issued as an annex to the base development plan. Layout plans for the Medical Service, for example, would be issued as the medical annex. Functional layout plans are obtained from the Office of the Corps of Engineers. The layout plans should clearly define area boundaries but show only the governing features. This method gives local commanders sufficient freedom of action to permit maximum exploitation of conditions they find within the allotted areas. Tentative sites should be indicated, however, when certain known desirable features exist.

Layout plans should also include topographic maps or overlays to topographic maps including offshore hydrography. Facilities required for the medical care of the civil population should be indicated on the layout plan.

d. General Supply and Maintenance Organization and Installations.

e. Utilities, Roads, and Natural Resources.

f. Port and Beach Facilities.

g. Transportation.

h. Signal Communication.

i. Airfields.

j. Navy Installations.

k. Medical Facilities.

l. Miscellaneous Facilities.

m. Recapitulation of Troops by Phases.

n. Pertinent Directives and Publications. Reference should be made here to policy directives which cover such matters as general priorities, construction standards, responsibilities for control of construction, and prohibitions or restrictions on the use of critical resources. If there is a possibility that units concerned may not have copies of these directives readily available, they should be reproduced as tabs to the base development plan.

o. Instructions Relative to Reports To Be Submitted.

p. Instructions Relative to Means for Accomplishing Change of Plans.

q. Construction Priority Schedule. The construction program must be geared to meet the established priorities and the deadline dates for the use of facilities. The priority of one project or class of projects over another is determined largely through compromise and reconciliation of conflicting needs of users. With the required dates of operational readiness of given facilities indicated, plans must insure that construction forces, supplies, and materials arrive in the objective area in sufficient time, strength, and quantity to meet those dates. Available shipping may limit the early arrival of service personnel and materials in the objective area, thereby resulting in compromise of operational readiness dates. Partial use of incomplete facilities is usually necessary even though construction efficiency is thereby lowered.

25. Procedures and Sequence

Although the nerve center of base development planning is at

the theater level, extensive ground work of long range planning, procurement, and assembly of personnel and material must have been done in the zone of interior by high level Army, Navy, Air Force, and Joint agencies to make it possible to supply the requirements of the theater commander, once they are made known. Plans prepared at this level are broad in scope and long range in character They include Strategic Concepts, Operation Studies, Outline War Plans (Short-Range, Mid-Range, and Long-Range), and Mobilization Plans. These plans usually indicate the number and types of bases to be developed and their approximate locations. Information included in the Mobilization Plans forms the basis for procurement requirements. Actual allocation of equipment, materials, and personnel results from requirements generated by the approved campaign plans. The details of the planning procedure may vary from one theater to another, but the sequence is usually made up of three phases (*a*, *b*, and *c* below). Each of these phases culminates in a specific document.

a. Base Development Study. During the early or strategic phase of planning, the theater headquarters studies potential areas for base development. When the instructions are received to implement a specified operation, the theater headquarters prepares one or more of these studies in more detail. The form for the study is not prescribed, but must be tailored to fit the requirements in each case. The study usually includes a statement of the concept of the operation as it affects base development, a list of the forces involved, the target dates, and the broad logistical requirements and implications of the proposed base development. (See appendix IV for a suggested outline for a base development study.) The base development study considers enemy capabilities in terms of troops, disposition, terrain, relationship with local population, and epidemiology. It lists physical aspects of the area such as geography, geology, climatology, natural and man-made resources, hydrography of the surrounding water, harbors, tides, and similar items. With this study in hand, decisions can be made and actual planning started. Every shred of information must be carefully evaluated, every possible need foreseen, and every contingency planned for. Much information for this study can be obtained from the intelligence estimate. (Refer to FM 30–5 and FM 110–101 for details of information contained in the intelligence estimate.)

b. Base Development Planning Directive. When detailed planning for the operation is to be undertaken, the theater commander issues a *base development planning directive.* This directive may transmit, in some cases, copies of the base development study to

the uni-service commanders and to the commanders of joint forces. The directive includes preliminary estimates and instructions by which specific planning data are developed for inclusion in the base development plan. There is no prescribed form, but the directive may—

(1) Allocate responsibilities for specific projects and functions to the respective services.

(2) Specify completion dates and priorities for projects.

(3) Promulgate construction policy specifically applicable to the contemplated operation.

(4) Designate areas allocated for specific purposes for inclusion in the general layout plan.

(5) Indicate the command structure and designate major commanders charged with base development.

(6) Indicate applicable standing operating procedures and directives which govern preparation of the plan.

(7) Establish dates for conferences.

(8) Direct that data and recommendations be submitted by lower echelons for inclusion in the plan. Data are required on storage, hospital bed requirements, transportation, construction, and communications. The commanders concerned prepare estimates of requirements on a standard form. Here they list information needed for the planning of shipping: unit or functional component description, number of personnel, measurement tons, data on heavy lifts, equipment requiring special handling, mounting points for units, and indicated successive shipping echelons for units and components. (Guides to assist the medical planner to determine these requirements are included in chapters 3, 4, and 5.) These estimates are each commander's bid for personnel, material, equipment, and lift, and are submitted well in advance of the *echeloning conference.* The echeloning conference is presided over by the Assistant Chief of Staff G4, Theater Headquarters, and all commanders concerned should be present. Dates and tonnages are adjusted to best support the overall plan. As a result of the conference, the echeloning schedule is formulated and published so that all commanders will know what units and what material they will have and when it will arrive.

c. Base Development Plan. This plan, accomplished with the planning directive, is a product of concurrent planning by uni-service commanders and commanders of joint forces. Compiled

and published by the theater headquarters, the plan may be issued as an annex to the operations plan, as an appendix to the logistical plan, or separately in parts to facilitate concurrent planning. It sets forth clearly the base facilities to be provided and the operating and service functions to be performed. The use of a standard form for the base development plan helps to insure comprehensive coverage of essential elements, makes easier the preparation and distribution of amendments, promotes familiarity of all echelons with the plans, and makes greater use of the experience of both the planners and the using elements. (See appendix V for format of a base development plan.) The contents should be modified, reduced, or expanded to meet the needs of a given operation. Implementation of the plan by the commanders is directed, but in most cases each commander has already been working on the job assigned to him.

26. Basic Planning Considerations

In planning the medical portion of base development the surgeon and his assistants should consider the following basic factors:

a. Mission. The mission assigned to an advanced base serves as the basis for establishing the extent of development and the schedule of readiness for the medical facilities which are included in such development. Only those medical installations which are essential for fulfillment of the medical mission to support the operation shoud be authorized.

b. Degree of Permanency. Plans should provide for only the minimum medical facilities necessary for fulfillment of the medical mission consistent with safety, health, and morale of the using forces, and protection against elements. Bases located in primitive areas require most careful consideration in this respect. If ultimate peacetime utilization of the base is anticipated, initial development is planned for later incorporation into permanent base development.

c. Limitations on Medical Personnel, Supplies, or Equipment. The theater commander usually has at his disposal only limited resources in manpower, supplies, and equipment; and because unloading capacities in objective areas are limited, strict control of shipping is established. All base development planning, including medical, should conform to those limitations which are established by overall tactical and logistical considerations. In planning the most efficient prosecution of base development with the available resources, it should be appreciated that men, supplies, and equipment are closely related. Although all medical means at the

disposal of the medical planners should be exploited, the possible effect on future operations should not be overlooked.

d. Estimated Phased Population. To prepare the base development program, it is necessary to make estimates of troop population at successive stages in the development of the base. These estimates should list the major units and accompanying special units, and include both combat and service troops of all services concerned. Initial estimates are revised to conform to troop lists as they become known; the recapitulation of troops is stated in the final plan.

e. Natural and Local Resources. Every effort is made to develop natural and local resources of an area to provide maximum effective support of military operations. Any exploitation which conserves medical personnel, supplies, equipment, or time must be given due consideration by the surgeon. All estimates (including medical) should, so far as possible, be based on fact. Utilization of local civilian and prisoner of war labor is included in this consideration. Planning for the use of local resources should be based on reliable information preferably supported by on-site reconnaissance.

f. Areas Available for Development.

(1) Areas suitable for the medical installations in the objective area, particularly in the immediate landing area and in the vicinity of ports and beaches, are usually restricted in size and number. If the base development involves more than one service, consideration must be given to the allocation of areas to each service for support of the activities for which it is responsible. If the requirements of the services are in conflict, the theater commander reevaluates the requirements of each service and allocates areas so as to insure the most effective overall development of the base area.

(2) When information of the objective area is incomplete and the location of certain highest priority installations, such as airfields, cannot be indicated definitely, the base development plan and general layout plans should provide that all suitable sites found be reserved for the use of the service concerned until they are released for other use. As a corollary, each service, including the medical, makes early reconnaissance and releases all unsuitable sites at the earliest possible date.

(3) The possibility of the need for future expansion should be considered by the surgeon in studying available areas and in selecting sites.

g. Priority of Development.

(1) The determination of priorities for the development of bases is an intricate task which involves compromise and reconciliation between operational and logistical considerations. After dates of operational readiness have been established, the base development planners insure that construction forces and supplies are provided in the objective area in accordance with requirements. Partial use of incomplete base facilities is usually necessary even though construction efficiency is thereby lowered and there is attendant delay in final completion. Priority for the development is established by balancing operational requirements against the construction program. While flexibility should be provided for contingencies, decision on major changes should be reserved to a command level; this procedure will avoid hasty changes based on limited consideration of the factors concerned. The senior commander ashore must have authority to make necessary changes in the base development plan, in conformity with the tactical situation and physical conditions present in the objective area.

(2) Factors which may govern development priorities include urgency of meeting special operational requirements; ease or difficulty of accomplishing individual construction tasks for reasons other than enemy opposition; and anticipated interference from enemy operations to certain construction efforts.

h. Unloading Base Development Medical Personnel, Supplies, and Equipment. Estimates of terminal capacity available for unloading base development medical personnel, supplies, and equipment are essential in determining the extent of the development possible in any given time. The surgeon must give further consideration to the availability of facilities to accommodate these medical personnel, supplies, and equipment.

i. Base Development Problems for Future Operation.

(1) Those problems which are essentially geographical.

(2) Requirements arising from international law, treaties, agreements, and United States policy.

(3) Problems posed by development of new weapons.

(4) Problems arising out of a new concept of time. The tempo of modern war will demand speed-up in operations.

(5) Development of new engineering techniques, new high speed construction methods, new materials, and improved design.

(6) Development of new-type of transportation and materials handling techniques.
(7) Major problems related to the mobilization and training of manpower to insure the availability of technical abilities for base development.

27. Construction Planning

a. General. Planning for construction of a base must proceed concurrently with echelon planning. After the major elements of the base development plan are reasonably firm (i.e., operating and service units to be assigned, the facilities required, area allocations, and target dates for completion), the planners can analyze the construction task. Although construction is the function of the engineer service, using services are responsible for making known their general requirements for the construction of facilities and installations and for assisting with plans for construction. The surgeon, for example, coordinates with the engineer in the construction of all medical facilities. The theater commander establishes the policies under which construction is performed within the theater. Medical planners of subordinate commands are responsible for furnishing the theater surgeon and his staff the details necessary for the medical portion of the base development plan. (Refer to appendix V for the medical section of the base development plan.) Much of the difficulty encountered by construction forces is often due to lack of complete planning as to requirements. As changes in the situation develop, revisions in plans must be made so that actual needs are met, rather than those outlined in an outdated plan.

b. Responsibility of Medical Service. The medical service is responsible for both supply and service. Medical supply includes the determination of requirements for medical, dental, and veterinary supplies and equipment; the procurement, storage, and issue of these supplies; and the exchange of property. Service includes collection, sorting, evacuation, and care of the sick and wounded; prevention of disease; veterinary service; dental service; direction and supervision of public health measures only so far as they affect the military forces (FM 100–10). In order to render this service the Medical Service needs installations of various types and is responsible for planning for them and for coordinating with the engineers and other services in their construction. It is responsible also for coordinating with the engineers and with the commander, theater army logistical command; with the commander, theater army Civil Affairs command; and with the theater army transportation officer regarding suitable sites for medical installations.

c. Medical Facilities in Theater of Operations. Principal field installations operated by the Army Medical Service in a theater of operations are aid stations; clearing stations; mobile army surgical hospitals; evacuation hospitals; convalescent centers; medical laboratories; medical holding facilities; medical supply depots and supply points; dispensaries; field, station, and general hospitals; central dental laboratories; and dental clinics (app. IX). (See FM 8–5 and FM 8–10.)

d. Estimating Requirements for Construction of Medical Facilities.

(1) *General.* In the assault phase of base development, all medical service is performed by medical service TOE units of the combat units or beach landing teams. Any construction necessary is usually done by the units themselves and is temporary in nature. With the establishment of the base command the exploitation phase develops, and a base medical service is organized under the control of the base commander. By the time the development phase is reached, special construction units have been assigned to the various services. During this phase, construction of medical service facilities of a more permanent nature is effected in accordance with the echeloning schedule and the plans approved in the base development plan. Determination of the number, type, location, and mission of various installations for medical service has already been made. The base commander is responsible for the completion of this construction. Medical supply installations, laboratories, hospitals, and other medical service facilities must be constructed, supplied, and staffed. The theater surgeon is responsible for carrying out the plans which he has helped to make at Theater Headquarters. Assisted by his staff and subordinate commanders, he coordinates his plans with other technical and administrative services.

(2) *Fixed hospital bed requirements.* Fixed hospital bed requirements for a theater of operations are computed in terms of expected patient load and not in terms of the number and type of medical units. These requirements are computed as outlined in chapter 8, and the result is known as "the theater fixed bed allotment." This allotment is then translated into terms of TOE hospital units required, both in number and size. Normally, the types

considered for this purpose consist of general and station hospitals, and in some instances field hospitals. Convalescent centers, when required, are not included as chargeable to the theater fixed bed allotment. Furthermore, evacuation and mobile army surgical hospitals are primarily used in the combat zone and their patient capacity is considered as "nonfixed beds."

(3) *Standards of construction.* In a theater of operations, the following standards of hospital construction are used (table I.):

(*a*) *Standard 2.* All facilities in organic and class IV tents, hospital tents floored and framed, personnel tents pitched by using troops with no engineer materials or assistance. Water piped from central storage tank to necessary facilities; roads improved, but unsurfaced; pit latrines.

(*b*) *Standard 4.* Buildings for all facilities except recreational facilities and housing for male personnel for which tent frames and flooring are provided. Estimates do not provide for ice plants, refrigerated warehouses, or laundries. Estimates include stabilized roads, water and electric distribution, plumbing, and waterborne sewage, but do not include sewage disposal plants.

(*c*) *Standard 6.* Buildings and utilities complete for all facilities as described in TM 5–302. Bituminous surfaced roads are included.

e. Principles Governing Construction. Medical facilities will be constructed in accordance with the general principles governing military construction:

(1) Existing facilities must be used to the utmost before initiating new construction.

(2) Materials and labor locally available must be exploited as supply economy and manpower conservation measures.

(3) Only the minimum facilities consistent with military necessity can be provided.

(4) Economy of construction is most important.

Table I. Construction Requirements for Various Types Hospitals

	1	2	3	4	5	6	7	8
1	Standard	Size (beds)	Electric (KW)	Water M gal/ day	Site area (acres)	Materials		Man-hours
						Short tons	Meas tons	
2	2	100	40	5.0	10	45	55	4,700
3		200	60	10.0	15	70	85	5,800
4		300	90	15.0	20	110	130	7,000
5		500	130	25.0	30	170	200	10,300
6		750	200	37.5	40	250	280	12,500
7		1,000	250	50.0	50	320	360	15,000
8	4	100	135	8.5	10	591	1,196	45,900
9		200	195	17.0	15	808	1,763	60,700
10		300	286	25.5	20	1,128	2,433	79,835
11		500	411	42.5	30	1,552	3,414	108,355
12		750	540	63.7	40	2,057	4,642	138,520
13		1,000	660	85.0	50	2,426	5,460	165,840
14	6	100	144	8.5	10	817	1,650	54,465
15		200	208	17.0	15	1,125	2,371	70,980
16		300	302	25.5	20	1,572	3,310	96,720
17		500	435	42.5	30	2,166	4,679	131,995
18		750	575	63.7	40	2,794	6,165	168,595
19		1,000	698	85.0	50	3,296	7,196	198,395

(5) Using services must express their requirements well in advance of actual needs to permit procurement of the necessary construction material and supplies.

(6) The permanency of any structure erected should be only that consistent with military necessity at the time.

(7) The design for each project will allow for possible future expansion.

f. Real Estate Requirements. Requirements for site area for the various size hospitals are given in *d*(3) above. Detailed layout information, typical layouts and plans, and bills of material for buildings and utilities are given in TM 5–302 and FM 8–10. Real estate requirements are influenced by the dispersion required. Dispersed layouts decrease vulnerability and are particularly desirable if the use of nuclear weapons is indicated. Due to the fact that dispersion increases construction time, effort, and materials required, careful consideration must be given to the degree of protection of this type to be provided. (For data concerning this, see TM 5–302 and FM 5–35.) Recommended space between buildings containing wards is 60 to 100 feet with firebreaks 150 feet wide at 1,000 foot intervals. Distances between buildings are gov-

erned by (1) degree of dispersion required, (2) general characteristics desired, (3) fire prevention, (4) terrain (size and shape of area available, drainage, and grade), (5) location of existing facilities, and (6) natural cover or ease of concealment. Plans for general hospitals include barracks, quarters, and mess halls for the assigned personnel as well as the wards, infirmaries, clinics, surgery, pharmacy, patients' mess, administration, storage, and morgue. Typical area layouts assist planning as much as typical structures speed construction. These layouts are only guides, however, and must be adapted or modified to fit particular conditions. A suggested procedure for setting up a field hospital is given in appendix VI; a suggested layout plan for a 400 bed evacuation hospital is given in appendix VII; a sample layout and SOP for a decontamination and treatment station may be found in appendix VIII.

CHAPTER 3
PERSONNEL AND TROOP PLANNING

Section I. PERSONNEL PLANNING

28. General

The command surgeon is responsible for the planning and implementation of an adequate medical service for the command. To achieve this adequate medical service, his plans must include consideration of three essential factors: personnel, equipment, and real estate (AR 40–2). This chapter is concerned with the personnel who, in essence, utilize the equipment and real estate required to fulfill the mission of the Army Medical Service in a theater of operations. The chapter will cover aspects of personnel and troop planning, to include procurement of personnel by means of Tables of Organization and Equipment (TOE), Tables of Distribution (TD), and replacement procedures in accordance with policies established by the theater Army commander. Discussed in paragraphs 29 through 34 are individual personnel requirements; the processing and assignment of personnel to include replacements, indigenous personnel, and prisoners of war; and personnel records and reports pertaining to all categories of individuals. Paragraphs 35 through 41 are devoted to troop planning for TOE and TD units, while paragraphs 42 through 48 contain data pertinent to Army Medical Service personnel losses, with emphasis on experience factors of recent wars. Reference to Department of the Army publications is indicated where appropriate.

29. Personnel Requirements

In computing Army Medical Service personnel requirements, primary consideration is given to the mission of the command, which must be supported by an adequate medical service. The personnel required to render an adequate medical service are provided through the media of TOE units, TD units, and replacements required for these units.

a. TOE Units. Personnel requirements for units of this type are prescribed in the TOE for each type of unit. These requirements are based upon the mission and capabilities prescribed for each unit, and the proper types of personnel are included therein

both quantitatively and qualitatively. Consideration is then given by the medical service planner to the number of each type of TOE unit required to provide a balanced medical service to the command.

b. TD Units. The medical service planner must give consideration to those functions to be performed by the Army Medical Service and for which there is no prescribed TOE. He should analyze these functions and determine primarily the types of individuals required to include their MOS and the quantities of each. The result is then formulated as a TD unit and submitted to the G1 (through G4 and G3) of the command as a bulk personnel requirement. Approval of the requirement by G1 and the subsequent activation of the TD unit will provide the command surgeon with the proper type of unit to perform these specialized functions.

c. Replacements. Army Medical Service requirements for replacements are based upon the actual and/or anticipated losses in the TOE and TD units of the command's medical service. Actual losses are reflected through the medium of routine personnel status reporting procedures. Computations of anticipated losses should include therein adequate provisions for the replacement by MOS of those individuals essentially required for the rendition of an adequate medical service to the command.

30. Personnel Procurement and Assignment

Normally, the procurement and assignment of Army Medical Service personnel are effected in accordance with the procedures established by the theater Army commander. The procurement by requisition of this type of personnel should be initiated early enough to insure the timely arrival in a theater of operations of those individuals who, by their professional or technical qualifications, are essentially required in the operation of an adequate medical service. The primary factor to be considered in assigning Army Medical Service personnel is the economical utilization of professional and technical personnel.

31. Replacements

As staff supervision of all matters pertaining to individual replacements is exercised by G1, the command surgeon must coordinate with him all details regarding the procurement and assignment of Army Medical Service personnel replacements for the command. In addition, statistical data compiled by a command surgeon may be utilized by a G1 in the development of more valid loss estimates.

32. Personnel Records and Reports

Accurate and timely personnel reports enable a commander to evaluate the personnel status of his command. The personnel status of the command is one of the factors considered by the commander in preparing his operational plans. It also provides him with a basis for preparing his estimate of personnel replacement requirements. These records and reports pertain primarily to individual personnel and units. Examples of individual personnel records and reports are those incident to individual assignments, transfers, promotions, awards, discipline, pay, temporary duty, leave, the health record, and dental record. Unit records and reports contain information regarding the personnel status of the command as a whole. Examples of unit records and reports are the personnel daily summary, periodic personnel report, battle and nonbattle casualty reports, morning reports, personnel requisitions, and disciplinary reports. In addition to the records and reports submitted by all elements of the command, the staff surgeon is responsible for transmitting to the staff G1 the daily reports of all patients admitted and disposed of by medical installations of the command. The utilization and maintenance of individual health and dental records for all members of the command are of particular interest to the staff surgeon as they represent a factual record of treatment rendered to each individual. Detailed information regarding individual records and reports may be found in AR 330–10, AR 345–5, FM 101–1, and FM 101–5.

33. Utilization of Indigenous Personnel by Army Medical Service

a. Utilization of non-United States civilians in a theater of operations may be an effective method of supplementing available military manpower. Procurement sources of such personnel include civilian nationals of the allied, co-belligerent, and enemy countries in which the United States Armed Forces may be operating, and also the nationals of neutral countries who may be in the theater. Maximum practical utilization of the services of these individuals should be exercised consistent with operational requirements and the essential needs of the local economy. Conformance to this policy can be effected at installations and activities operated by the Army Medical Service by utilizing these types of individuals in positions for which they are qualified or in which they can be trained in a relatively short period of time. Examples of positions in which such persons may be used are cooks, drivers, plumbers, electricians, carpenters, switchboard operators, litter bearers, ward attendants, laboratory technicians, gardeners, supply clerks, warehouse laborers, and occasionally physicians and dentists.

b. Utilization of indigenous personnel in Army Medical Service TOE units can be effected by the reorganization of these units in accordance with the type "B" column of each unit's TOE. This procedure authorizes each unit a reduced military strength as delineated in the type "B" column of the TOE. The resultant military vacancies existing in the unit strength may be filled by indigenous personnel; however, the number of indigenous personnel allocated to the unit is determined and authorized by the commander of the major command to which the unit is assigned. Determination of this number depends upon the availability of indigenous personnel and upon local conditions. The reduced strength of military personnel authorized the unit in the type "B" column of the TOE, represents the minimum considered essential for the supervision of the non-United States citizen personnel authorized for employment by the unit. For further details regarding the employment of indigenous personnel, see FM 100–10 and FM 101–1.

34. Utilization of Prisoners of War

Staff supervision of all matters pertaining to prisoners of war is exercised by G1. During combat operations many prisoners of war become patients and require medical care and treatment. To assist in satisfying this requirement, maximum use can be made of captured enemy medical personnel, units, supplies, and facilities. In order to do this, the command surgeon should estimate his bed requirements for prisoner of war patients. This estimate of bed requirements enables the surgeon to estimate the prisoner of war personnel and facilities required for the rendition of medical care and treatment of prisoners of war captured by the command. The surgeon's estimate of prisoner of war personnel required by the Army Medical Service for the care and treatment of prisoners of war is submitted to the staff G1, who effects their procurement in coordination wtih the Provost Marshal of the command. Further details regarding the utilization of prisoners of war are contained in FM 27–10, FM 100–10, FM 101–1, and FM 110–10.

Section II. TROOP PLANNING

35. General

In order to discharge its assigned mission, the command must be provided with troops of an adequate quantity and type. The number and type of units required by the command are determined by the mission; the character; the disposition and capabilities of the enemy; the terrain; the availability of transportation; and the

availability of supplies and equipment. Within the troop ceiling authorized the command by higher authority, troop unit requirements are determined. Based upon these requirements a troop list is formulated which includes the designation of all the units required by the command for the performance of its mission. The numbers and types of medical service units included in this troop list must be balanced in order to provide an adequate medical service in all respects. For details regarding formulation of a troop list and for Army Medical Service units available for inclusion in it, see FM 8–5, FM 100–10, FM 101–10, and the TOE 8-Series.

36. Army Medical Service Troop Requirements

The determination of quantitative requirements for specific types of medical service units is effected by the formulation of the requirements troop list. This troop list is a planning document which indicates the troop requirements of a command by numbers and types of units and the strength of each. The total strength of all medical service units included in this list must be within the personnel ceiling prescribed by higher headquarters. When this troop list is approved by higher headquarters, it constitutes authority for the requisitioning from the next higher headquarters of personnel and equipment for the units listed therein. In the formulation of this medical service requirements troop list, consideration is given to the mission, strength, and composition of the force to be supported; to the nature of the operation; to the extent and geographical location of the area to be utilized in the operation; to the types and quantities of medical service units needed; and to the capabilities of each type of unit. The availability of indigenous personnel should also be considered in conjunction with the possible utilization of medical service TOE units organized with the strengths stipulated in the type "B" column of each of their respective TOE.

37. Formulation of Troop Unit Factors for Planning Purposes

Planning medical service troop requirements is normally effected in three phases: estimation, calculation, and modification.

a. Estimation. During this phase the medical service planner develops factors for each type of unit that he considers will be required to support the operation. A basic component of the force is used as a basis for computing the total number required of each type of medical service unit. Normally, the component used is either a division or corps. Development of these factors should be based upon capabilities of the Army Medical Service TOE units available and the best personal experience of the planner. Factor

values determined by an analysis of each TOE should be maintained unless the planner has valid reason to make a change. Under these circumstances, if the number of combat divisions to be employed is the basic component of the force to which medical service units were to be keyed, the following example would apply: 5 ambulance companies for use by a field army consisting of 10 divisions will provide a field army troop unit factor of 0.5, and 10 ambulance companies for use by the theater army logistical command supporting a field army of 10 divisions will provide a theater army logistical command troop unit factor of 1.0.

b. Calculation. Upon determining separate factors for each type of medical service troop unit, the medical service planner proceeds to develop the medical service troop requirements list. This is done by applying each troop unit factor to its respective TOE unit in relation to the total number of basic force components upon which the factor is based. Thus, if the troop unit factor is keyed to a division, then the total number of divisions comprising the force is multiplied by the factor, giving the planner the number of each type of medical service troop unit required, by type and total strength. Completion of the requirements troop list provides the medical service planner with the aggregate strength of the medical service requirements troop list. Prior to submitting this troop list for approval, the planner should review it thoroughly in order to assure himself that it represents the minimum essential requirements to perform adequately the medical service mission and support the operation.

c. Modification. Modifications, adaptations, or alterations of the medical service requirements troop list may have to be made by the medical service planner in accordance with directions received from higher headquarters. These revisions may result from changes made in the mission of the command, in the tactical situation, or in the establishment by higher headquarters of an arbitrary troop ceiling figure for the medical service portion of the command's troop list, etc. For planning guidance in formulating a medical service troop requirements list, reference may be made to the content of part III, FM 101–10, which includes planning factors for medical service TOE units.

38. Review of Medical Service Requirements Troop List

The medical service requirements troop list is submitted by the surgeon to the commander's staff for review. In reviewing this troop list, the members of the commander's staff give primary consideration to the conservation and economical utilization of military personnel and to any possible use of United States civilians, indigenous personnel, and prisoners of war.

39. Phasing Army Medical Service Units Into a Theater of Operations

On receipt of approval by higher authority of the medical service requirements troop list, it is essential that the medical service planner prepare a plan outlining a balanced flow, within a specified period of time, for the units to be phased into the theater of operations. Phasing into the theater of these units should be in consonance with the flow of combat troops for which medical service support is to be provided. Concurrently, plans specifying the assignment of these medical service units upon their arrival in the theater should also be formulated. The assignment of these units to either a field army or the theater army logistical command should be predicated upon the same basis on which the troop unit factors were initially developed and used in formulating the medical service requirements troop list.

40. Typical Army Medical Service Troop List

A typical troop list containing the numbers and types of medical service troop units required to support a type field army and a theater army logistical command is contained in part III, FM 101–10.

41. Troop Unit Data

Each medical service planner should develop and maintain current a chart containing reference data pertinent to TOE units of the Army Medical Service. This chart should include for each type unit its full and reduced strength, capabilities, and normal allocation and assignment. Availability of this chart would obviate the necessity of the planner's having to refer constantly to the various TOE 8-Series and would enable him to expedite his planning functions.

Section III. ARMY MEDICAL SERVICE PERSONNEL LOSSES

42. General

In order to compute the number of Army Medical Service personnel needed to support an operation, loss estimates of the units to be supported must be considered. Overall loss estimates (ch. 7) directly affect the scope of the medical support. Losses within the Army Medical Service must be estimated in order to determine probable replacements needed to provide continuous and effective medical support. This section contains estimates of losses of Army Medical Service personnel, compiled from data obtained from

World War II and the Korean War. The data from World War II, presented for all oversea theaters combined, are by type of casualty and by type of disposition of the wounded in action within each corps of the Army Medical Service. Some variation exists, however, among the three major theaters.

a. Casualties by Type of Casualty. The percentage distribution for the European Theater follows closely that shown in table IV for all oversea theaters combined. In the Pacific, largely due to loss of the Philippine Islands in 1942, there is a higher percentage of captured than that shown for all oversea theaters combined, but it is offset by a smaller percentage of wounded in action. When compared with the combined data, the Mediterranean Theater has a higher percentage of wounded in action offset by a smaller percentage of captured; this is the reverse of the Pacific distribution.

b. Type of Casualty by Corps. The percentage distribution for the European Theater, although closely approximating that shown in table VIII for all oversea theaters combined, shows slightly smaller percentages for the Army Nurse Corps and Medical Corps and a corresponding increase among enlisted personnel. The largest variation, however, is for the Pacific Theater, where the shift in the percentage distribution is just the opposite with marked higher percentages for the Army Nurse Corps and Medical Corps offset by a smaller percentage for enlisted personnel. Except for a slightly higher percentage among Medical Corps personnel, the percentage distribution for the Mediterranean Theater is not unlike that shown for all oversea theaters combined.

c. Army Medical Service Personnel Wounded in Action by Type of Disposition. The percentage distribution for the European Theater is approximately the same as that shown in table VI for all theaters combined. In the Pacific there is a slightly higher percentage for the died of wounds and evacuees, and a smaller percentage returned to duty. In the Mediterranean Theater only 3.0 percent died of wounds and 25.2 percent were evacuated among Army Medical Service personnel, with a high of 71.8 percent returned to duty in the theater.

d. Type of Disposition Within Theater by Corps. Both the European and Pacific Theaters have a percentage distribution similar to that shown in table X for all oversea theaters. The Mediterranean Theater has a slightly higher percentage of died of wounds for the Army Nurse Corps and a slightly lower percentage for the Medical Corps, offset by corresponding shifts in the percentages for these two Corps evacuated to the United States.

43. Percent Army Medical Service Battle Casualties Are of Total U. S. Army Casualties by Type of Casualty, World War II and the Korean War

World War II and Korean War data (table II) indicate that of all casualties suffered by the United States Army, 2.9 percent during World War II and 3.0 percent during the Korean War were medical service personnel (officer and enlisted). This marked similarity between the two wars follows almost the same pattern for the separate categories of battle casualties. The largest difference exists in the KIA category: 2.5 percent of all United States Army killed in action during World War II were medical service personnel, whereas 3.0 percent of all United States Army killed in action were medical service personnel during the Korean War. These data further indicate (table III) that the various types of disposition of wounded in action follow the same pattern in the two wars, with the exception of the died of wounds. During World War II, 2.9 percent of all United States Army died of wounds were medical service personnel, whereas during the Korean War 3.5 percent were medical service personnel.

44. Percentage Distribution of Army Medical Service Battle Casualties by Type of Casualty and Wounded in Action by Type of Disposition

a. In tables IV and V the total number of battle casualties (100 percent) in each Corps of Army Medical Service, Enlisted Personnel, and Total Army Medical Service are shown distributed among the categories: Killed in Action (KIA), Wounded in Action (WIA), Missing in Action (MIA), and Captured.

b. Available data (tables IV and V) indicate that the highest percentage of Army Medical Service battle casualties in World War II and the Korean War occurred in the WIA type of casualty with a slightly greater percentage for the Korean War over World War II (70.6 percent to 66.7 percent). Of this WIA group, the data in tables VI and VII indicate that 64.8 percent in World War II and 67.7 percent in the Korean War were returned to duty within the theater. In World War II and the Korean War only 30.7 percent and 29.4 percent, respectively, were evacuated out of the theater, and 4.5 percent and 2.9 percent, respectively, died of their wounds.

(1) *Killed in action.* For the KIA type of casualty (tables IV and V) a higher percentage occurred among the total casualties of the Medical Corps, Dental Corps, and Enlisted Personnel in the Korean War than in World War II. Among total casualties of the Medical Service Corps, KIA

Table II. Army Medical Service[1] Battle Casualties as Percent of Total U. S. Army[2] Casualties, by Type of Casualty, World War II and Korean War

Theater	Percent of all KIA	Percent of all WIA	Percent of all MIA	Percent of all Captured	Percent of Total Battle Casualties
World War II					
All oversea theaters [3]	2.5	2.8	2.9	4.5	2.9
European Theater	2.4	2.7	2.7	4.2	2.8
Pacific Theaters	3.4	3.4	5.2	6.0	3.8
Mediterranean Theater	2.0	2.6	1.9	2.9	2.5
Korean War	3.0	3.0	2.7	4.3	3.0

[1] Includes all personnel of the Army Medical Service (officer plus enlisted).

[2] Excludes Air Corps personnel and flight officers in World War II and U. S. Air Force personnel in the Korean War.

[3] Includes battle casualties incurred in Africa-Middle East, Caribbean Defense Command and South Atlantic, Alaskan Department, Burma-China-India, theater unknown, and those incurred while enroute and not chargeable to any command. These theaters are not shown separately above.

Table III. Army Medical Service[1] Wounded in Action as Percent of Total U. S. Army[2] Wounded in Action, by Type of Disposition in the Theater, World War II and Korean War

Theater	Died of wounds	Returned to duty in theater	Evacuated to U.S.	Total wounded
World War II				
All oversea theaters [3]	2.9	2.8	2.8	2.8
European Theater	2.9	2.7	2.6	2.7
Pacific Theaters	3.3	3.4	3.4	3.4
Mediterranean Theater	2.2	2.5	2.7	2.6
Korean War	3.5	2.9	3.0	3.0

[1] Includes all personnel of the Army Medical Service (officer plus enlisted).

[2] Excludes Air Corps personnel and flight officers in World War II and U. S. Air Force personnel in the Korean War.

[3] Includes battle wounds incurred in Africa-Middle East, Caribbean Defense Command and South Atlantic, Alaskan Department, Burma-China-India, theater unknown, and those incurred while enroute and not chargeable to any command. These theaters are not shown separately above.

showed a higher percentage in World War II than in the Korean War.

(2) *Wounded in action.* For the WIA type of casualty (tables IV and V) a higher percentage occurred among the total casualties of the Medical Corps and Medical Service Corps in World War II than in the Korean War; but among the total casualties of both the Dental Corps and Enlisted Personnel, a higher percentage were WIA in the Korean War than in World War II.

(3) *Missing in action.* For the MIA type of casualty (tables IV and V) a higher percentage occurred among the total casualties of all Army Medical Service Personnel during the Korean War than during World War II.

(4) *Captured.* For the captured type of casualty (tables IV and V) a higher percentage occurred among the total casualties of the Medical Corps, Dental Corps, and Enlisted Personnel during World War II than the Korean War; the Medical Service Corps had a higher percentage of captured among its total casualties in the Korean War than in World War II.

c. Personnel of Army Medical Service who were wounded in action (tables VI and VII) are shown distributed under the dispositions of Died of Wounds, Returned to Duty Within the Theater, and Evacuated out of the Theater.

(1) *Died of wounds.* A higher percentage of wounded Army Medical Service Personnel died of wounds overseas in World War II than died of wounds in the Far East during the Korean War.

(2) *Returned to duty within the theater.* The Medical Corps and the Dental Corps had higher percentages of their wounded personnel returned to duty within the theater in World War II than in the Korean War, but the Medical Service Corps and Enlisted Personnel had higher percentages in the Korean War than in World War II.

(3) *Evacuated out of the theater.* The Medical Service Corps and Enlisted Personnel had higher percentages of their wounded personnel evacuated out of the theater in World War II than in the Korean War, but the Medical Corps and the Dental Corps had higher percentages in the Korean War than in World War II.

Table IV. Army Medical Service Battle Casualties, All Oversea Theaters, World War II: Percentage Distribution of Total Casualties Within Each Corps of Army Medical Service, Enlisted Personnel, and Total Army Medical Service by Each Type of Casualty

Percent of casualties	KIA	WIA	MIA	Captured	Total
Medical Corps	14.6	55.7	1.4	28.3	100.0
Dental Corps	15.4	51.2	0.9	32.5	100.0
Medical Service Corps	17.5	59.4	1.5	21.6	100.0
Army Nurse Corps	10.4	25.4	11.2	53.0	100.0
Veterinary Corps	10.0	10.0	0.0	80.0	100.0
Enlisted Personnel	15.4	67.5	2.3	14.8	100.0
Total Army Medical Service	15.4	66.7	2.3	15.6	100.0

Table V. Army Medical Service Battle Casualties, Korean War: Percentage Distribution of Total Casualties Within Each Corps of Army Medical Service, Enlisted Personnel, and Total Army Medical Service by Type of Casualty

Percent of casualties	KIA	WIA	MIA	Captured	Total
Medical Corps	20.0	51.2	4.4	24.4	100.0
Dental Corps	22.2	66.7	11.1	0.0	100.0
Medical Service Corps	14.3	52.3	4.8	28.6	100.0
Enlisted Personnel	17.2	71.0	3.6	8.2	100.0
Total Army Medical Service	17.2	70.6	3.6	8.6	100.0

Table VI. Army Medical Service Wounded in Action, All Oversea Theaters, World War II: Percentage Distribution of Total Wounded in Action Dispositions Within Each Corps of Army Medical Service, Enlisted Personnel, and Total Army Medical Service by Type of Disposition Within Theater

Percent wounded	Died of wounds	Returned to duty within theater	Evacuated to U.S.	Total wounded
Medical Corps	6.7	59.6	33.7	100.0
Dental Corps	8.3	58.4	33.3	100.0
Medical Service Corps	2.6	55.7	41.7	100.0
Army Nurse Corps	5.9	61.7	32.4	100.0
Veterinary Corps	0.0	0.0	100.0	100.0
Enlisted Personnel	4.5	65.0	30.5	100.0
Total Army Medical Service	4.5	64.8	30.7	100.0

Table VII. Army Medical Service Wounded in Action, Korean War: Percentage Distribution of Total Wounded in Action Dispositions Within Each Corps of Army Medical Service, Enlisted Personnel, and Total Army Medical Service by Type of Disposition Within Far East

Percent wounded	Died of wounds	Returned to duty within the Far East	Evacuated to U. S. & Hawaiian Islands	Total wounded
Medical Corps	0.0	47.8	52.2	100.0
Dental Corps	0.0	50.0	50.0	100.0
Medical Service Corps	0.0	63.6	36.4	100.0
Enlisted Personnel	2.9	68.1	29.0	100.0
Total Army Medical Service	2.9	67.7	29.4	100.0

45. Percentage Distribution of Army Medical Service Battle Casualties and Wounded in Action Dispositions by Army Medical Service Personnel Categories

a. Battle casualties for World War II and the Korean War (tables VIII and IX) are divided into four types. The total percentage (100 percent) of casualties in each type is broken down to show the percentage of the total which was received by each corps of the Army Medical Service and Enlisted Personnel.

b. Available data (tables VIII and IX) indicate that of all Army Medical Service battle casualties, the highest percentage was in Enlisted Personnel in both World War II and the Korean War (94.4 percent and 97.7 percent), with the next highest percentage of KIA, WIA, and Captured being in the Medical Corps. For MIA type of casualty, the second highest percentage in the Korean War was in the Medical Corps, but in World War II, in the Army Nurse Corps.

c. The total percentage (100 percent) of each type of disposition made of the wounded in action (tables X and XI) is shown distributed under each corps of Army Medical Service and Enlisted Personnel.

(1) *Medical Corps.* A higher percentage of Army Medical Service WIA occurred among Medical Corps Personnel during World War II than in the Korean War (3.1 percent to 1.0 percent).

(2) *Dental corps.* The percentage of Army Medical Service WIA that occurred among Dental Corps Personnel was almost identical for both World War II and the Korean War (0.4 percent and 0.3 percent, respectively).

(3) *Medical service corps.* The percentage of Army Medical Service WIA that occurred among Medical Service Corps Personnel was 0.7 percent in World War II and 0.5 percent in the Korean War.

(4) *Enlisted personnel.* The percentage of Army Medical Service WIA that occurred among Enlisted Personnel was higher in the Korean War than in World War II (98.2 percent to 95.6 percent).

d. Of all Army Medical Service Personnel who died of wounds in oversea theaters during World War II, 94.0 percent were Enlisted Personnel, leaving the other 6.0 percent distributed among the corps of the Army Medical Service. In the Korean War, however, the total percentage (100 percent) of Army Medical Service Personnel who died of wounds in the Far East consisted entirely of Enlisted Personnel.

Table VIII. Army Medical Service Battle Casualties, All Oversea Theaters, World War II: Percentage Distribution of Total Casualties and of Each Type of Casualty by Separate Corps of Army Medical Service and Enlisted Personnel

Type of casualty	Medical Corps casualties	Dental Corps casualties	Medical Service Corps casualties	Army Nurse Corps casualties	Veterinary Corps casualties	Enlisted personnel casualties	Total Army Medical Service casualties
KIA	3.5	0.5	0.9	0.4	0.0	94.7	100.0
WIA	3.1	0.4	0.7	0.2	0.0	95.6	100.0
MIA	2.2	0.2	0.5	2.7	0.0	94.4	100.0
Captured	6.7	1.0	1.1	1.9	0.2	89.1	100.0
Total	3.7	0.5	0.8	0.6	0.0	94.4	100.0

Table IX. Army Medical Service Battle Casualties, Korean War: Percentage Distribution of Total Casualties and of Each Type of Casualty by Separate Corps of Army Medical Service and Enlisted Personnel

Type of casualty	Medical Corps casualties	Dental Corps casualties	Medical Service Corps casualties	Enlisted personnel casualties	Total Army Medical Service casualties
KIA	1.6	0.4	0.5	97.5	100.0
WIA	1.0	0.3	0.5	98.2	100.0
MIA	1.7	0.8	0.8	96.7	100.0
Captured	3.9	0.0	2.1	94.0	100.0
Total	1.4	0.3	0.6	97.7	100.0

Table X. Army Medical Service Wounded in Action, All Oversea Theaters, World War II: Percentage Distribution of Total Wounded and of Each Type of Disposition Within Theater by Separate Corps of Army Medical Service and Enlisted Personnel

Type of casualty	Medical Corps WIA	Dental Corps WIA	Medical Service Corps WIA	Army Nurse Corps WIA	Veterinary Corps WIA	Enlisted personnel WIA	Army Medical Service WIA
Died of wounds	4.6	0.7	0.4	0.3	0.0	94.0	100.0
Returned to duty within theater	2.8	0.3	0.6	0.2	0.0	96.1	100.0
Evacuated to U. S.	3.4	0.4	1.0	0.2	0.0	95.0	100.0
Total wounded	3.1	0.4	0.7	0.2	0.0	95.6	100.0

Table XI. Army Medical Service Wounded in Action, Korean War: Percentage Distribution of Total Wounded and of Each Type of Disposition Within the Far East by Separate Corps of Army Medical Service and Enlisted Personnel

Type of casualty	Medical Corps WIA	Dental Corps WIA	Medical Service Corps WIA	Enlisted personnel WIA	Army Medical Service WIA
Died of wounds	0.0	0.0	0.0	100.0	100.0
Returned to duty within the Far East	0.7	0.2	0.4	98.7	100.0
Evacuated to U. S. and Hawaiian Islands	1.7	0.4	0.6	97.3	100.0
Total wounded	1.0	0.3	0.5	98.2	100.0

46. Percentage Distribution of Army Medical Service Nonbattle Deaths (World War II)

Data on Army Medical Service nonbattle deaths are available from World War II experiences only. These data (table XII) reflect that of the total Army Medical Service nonbattle deaths 5.3 percent were Nurses, 0.1 percent were Physical Therapists, 10.1 percent were Medical Corps officers, 1.7 percent were Dental Corps officers, 1.6 percent were Medical Service Corps officers, 0.3 percent were Veterinary Corps officers, and 80.9 percent were Enlisted Personnel of the Army Medical Service.

47. Nonbattle Hospital Admission Rates (World War II and Korean War)

Available data on the total United States Army nonbattle hospital admission rates for World War II and the Korean War (table XIII) indicate that during World War II the nonbattle hospital admission rate was 552 per thousand per year. During the Korean War, the nonbattle hospital admission rate was 295 per thousand per year.

48. Estimating Losses

Estimates of losses in MOS categories within the combat zone, communications zone, and the theater can be effected as outlined in FM 101–10. The medical planner is cautioned that the loss estimate computed according to the experience tables given in this

Table XII. Nonbattle Deaths, Army Medical Service, All Oversea Theaters, World War II, Percentage Distribution of Each Type of Nonbattle Deaths by Corps

Corps of the Army Medical Service	Disease	Nonbattle injury	Total nonbattle deaths
Army Nurse Corps	3.1	6.6	5.3
Physical Therapists	0.0	0.2	0.1
Medical Corps	9.9	10.1	10.1
Dental Corps	2.2	1.3	1.7
Medical Service Corps	1.7	1.6	1.6
Veterinary Corps	0.3	0.3	0.3
Enlisted Personnel	82.8	79.9	80.9
Total	100.0	100.0	100.0
Percent Army Medical Service Deaths is of Total Oversea Nonbattle Deaths*	5.7	5.3	5.5

* Excluding Air Corps Personnel and Flight Officers.

section must be adjusted to allow for the varying circumstances of each situation. For information concerning computation of AMEDS losses in nuclear warfare, refer to chapter 7.

Table XIII. Nonbattle Hospital Admission Rates [1] and Percentage Evacuated, U. S. Army [2] World War II and Korean War

	Nonbattle Hospital Adm. Rate			Percent of Hosp. Adm. Evac.		
	Total	Disease	NB Injury	Total	Disease	NB Injury
World War II [3]						
Total U. S. Army[2]	552	489	63	X	X	X
Total Overseas	467	403	64	3.2	3.0	4.6
Continental U. S.	610	547	63	X	X	X
Korean War [4]						
Total U. S. Army	295	----------	----------	X	X	X
Total Overseas	264	----------	----------	6.6		
Continental U. S.	319	----------	----------	X	X	X
Japan and Korea	287	----------	----------	7.6		

Note. Data not available for disease and nonbattle injury separately.

[1] Rate expressed as cases per thousand average strength per year.

[2] Includes Army Air Force.

[3] Includes the period January 1942 through December 1945.

[4] Includes the period July 1950 through July 1953.

CHAPTER 4
MEDICAL SUPPLY

Section I. POLICY AND RESPONSIBILITY FOR MEDICAL SUPPLY

49. Army Medical Service Supply Responsibility

The theater Army surgeon as head of the theater Army Medical Service is responsible to the theater Army commander for providing adequate medical supply support. Under general staff coordination of the theater Army G4, the theater Army surgeon is charged with the responsibility for integrating the medical logistical support effort of the theater Army to secure its maximum effectiveness.

50. Responsibility for Other Services and Groups

In accordance with Department of Defense directives and desires to minimize procurement stockage, to avoid duplication of effort, and to utilize material assets to the fullest, the Army Medical Service may be responsible in a theater of operations for providing common-user medical supplies to other military and nonmilitary services. When directed by higher headquarters, surgeons at all levels of command within the theater Army are responsible for providing medical supply support for Navy and Air Force troops, for United States and indigenous civilians, and for prisoners of war who are located within their respective areas of responsibility. Requirements for these groups must be incorporated into all planning and programming of medical supplies.

51. Civil Affairs

The oversea commander may be responsible for providing medical supplies for the prevention and treatment of diseases among the civilian population in liberated and occupied areas. The theater Army commander's Assistant Chief of Staff G5, is responsible for estimating requirements, recommending allocations, and planning for method of distribution of Civil Affairs medical supplies to civilians.

52. Medical Supply, Theater of Operations

The theater Army commander is responsible for establishing the entire supply system based on Department of the Army policy.

Considering his mission, he determines the system to be employed, the days of supply to be maintained within each major subordinate command in the theater, and the stock accounting procedures to be effected. This duty is delegated to the commander of theater army logistical command who, in turn, assigns such functions to the chiefs of the administrative and technical services of theater army logistical command. The theater army logistical command surgeon develops a medical supply system which will insure adequate provision of medical supplies for the theater army forces and other groups. He determines the number of medical supply units required for providing adequate and timely medical supplies for the theater. He is responsible for maintaining close and continuous liaison with the Oversea Supply Agency (OSA) on technical matters concerning medical supply for the theater. Depending upon the theater organization, the geographical features of the theater, and the nature and extent of the contemplated military operations, the delegation of functions is altered to meet the need for flexibility. The authority for medical supply activities is, in turn, normally delegated to the surgeon at each level of command. The theater army logistical command surgeon is responsible for the provision and distribution of medical supplies to troops and agencies within the communications zone, for determining the number and type of medical supply units, and for providing complete medical supply support to the theater Army area. A field army surgeon controls the input and output of medical supply stockage within the field army. The foregoing control is accomplished through the central medical stock control point, which is under his supervision and operational control. The receipt, storage, and distribution of medical supplies within a field army area are the responsibility of the appropriate depot commander.

Section II. LEVELS OF SUPPLY

53. General

Levels of supply express the quantities of supplies authorized or directed to be on hand or held in anticipation of issue demands. Levels of supply for a theater of operations may be expressed in terms of days of supply or in specified quantities of items. Theater levels of supply are prescribed by Department of the Army on the basis of recommendations of the theater commander and Joint Chief of Staff instructions (AR 711–16). Levels are established on Department of the Army replacement factors based on usage experience and anticipated needs. It is essential that the surgeons at all levels ascertain and study the needs to support the medical

mission and make recommendations to the appropriate command headquarters as to the desired levels of medical supply to be maintained. Close coordination must exist at all levels of command to accomplish maintenance of recommended levels, and to insure establishment of realistic quantities consistent with issue experience. This coordination also insures having medical supplies where they are needed without the need for transshipment.

54. Considerations Incident To Determining Levels

a. Mission. The more important factors to evaluate and consider in ascertaining levels of medical supply are terrain and climatic conditions, enemy strength and capabilities, supported strengths (to include degree of responsibility for supply support of other departmental United States and Allied forces), estimated casualties, evacuation policy and capabilities, number and type of medical treatment facilities, and sources of availability of medical supplies.

b. Development of Levels and Time Factors.

(1) *Definitions.*

(*a*) *Operating level.* Quantity of material required to sustain medical operations in the interval between requisitions or the arrival of successive shipments.

(*b*) *Safety level.* Quantity (in addition to the operating level) of material required to permit continued medical supply operations during minor interruption of normal replenishment or unpredictable fluctuations in supply demand.

(*c*) *Stockage objective.* Maximum quantities of material to be maintained on hand to sustain current medical supply operations. It will consist of the sum of stocks represented by the "operating level" and "safety level."

(*d*) *Order and shipping time.* Time elapsing between the initiation of stock replenishment action for a specific medical activity and the receipt by that medical activity of the material resulting from such action.

(*e*) *Requisitioning objective.* Maximum quantities of material to be maintained "on hand" and "on order" to sustain current medical supply operation.

(2) *Formula.*

$$\text{Operating level} + \text{Safety level} + \text{Order and shipping time} = \text{Requisitioning objective}$$

(3) *Computations.* In the absence of actual issue experience

factors, Department of the Army SB 8–39 rates are normally used in the computation of quantitative levels.

c. Strength Factors. In medical supply planning it is of paramount importance that supported personnel strengths be ascertained to include medical supply support provided other United States forces and/or Allied forces. In addition, the time phase must be known, so as to program for medical supplies sufficiently in advance to insure their availability and yet not overtax the transportation capability nor exceed the handling capability.

d. Equipment Density. To insure adequate medical replacement supply and/or repair parts, the population of major items of medical equipment must be known. The aforementioned permits the requisitioning of only those specific repair parts required to maintain in an operable condition, those medical supply items in the hands of troops.

e. Replacement Factors and Consumption Rates. A replacement factor is a number which when multiplied by a total projected quantity of an item will give the quantity of that item expected to be replaced during a given period of time. The consumption rate is the average quantity of an item consumed, expended, or used to repair an item during a given time interval expressed in quantities per applicable basis, i.e., quantity per 1,000 men per month. In the absence of experience demand data for the actual operation, published data are used as a guide for establishing safety and operating levels for computation of task force medical supply requirements and in editing requisitions for medical supplies intended for replacement and consumption.

f. Shipping and Storage Factors. The principles of efficient use of transportation and of minimizing unnecessary shipment, transshipment, and rehandling of medical supplies indicate the necessity for supply movements as far forward as possible by one means of transport, and for bypassing intermediate supply installations, when practicable. Whenever the situation permits, the most economical transportation means available should be used; but when necessity dictates, all available means of transportation which will satisfy the movement requirements for medical supplies are utilized. The reduction of ordering and shipping time is very important in order to effect a decrease in the quantities of medical supplies in transit in the pipeline. In addition to the above, the reduction of ordering and shipping time makes nonstocked medical supply items more readily available to the user. Storage facilities should be located to make maximum use of existing transportation facilities. The requirement for flexibility dictates that the bulk of reserve medical supplies be held

in rear areas, and that limited quantities of fast moving medical items be stocked at supply points located well forward in the combat zone. The characteristics and nature of medical supplies require that approximately 90 percent be stored in covered storage. Special storage conditions are required for whole blood, biologicals, freezables, temperature and humidity control items, and security cargo. Special care must be exercised for deteriorating and potency items. Medical stocks must be properly documented and stored to permit their effective rotation. Dispersion, duplication, and protection of storage facilities are essential to provide passive defense against the enemy's use of mass destruction weapons. Economical and efficient storage procedures will assist materially in the accomplishment of the medical supply mission.

g. Seasonal Items. Particular attention must be given to seasonal medical items. Seasonal items are those items of supply whose consumption increases appreciably during certain seasons of the year. Normally, supply levels for these items are not maintained continuously but must be based on factors such as those explained in *b* above.

h. Patient Evacuation Items. Quantities required for the property exchange system utilized in patient evacuation should be considered when determining levels of supply. Moreover, because of the tactical situation and other varying conditions, there will be occasions when property exchange cannot be efficiently employed. These circumstances will place a greater demand for litters, blankets, splints, casualty evacuation bags, and other items accompanying patients who are being evacuated. Property exchange items must be included in all medical supply planning.

55. Realistic Levels

The establishments of minimal but adequate medical supply levels for the accomplishment of the mission is necessary to maintain any degree of mobility and concurrently to offset the stockpiling of large quantities of medical supplies which might present a profitable enemy target. In the establishment of levels, the effect of nuclear warfare on medical supply levels must be considered and provision made for sufficient reserve stocks in order to meet the requirements generated from such warfare. The stockpiling of reserve stocks of medical supplies should, for the most part, be effected in the rear of the communications zone. Sufficient quantities of emergency medical treatment units for both phase I (self aid/buddy aid supplies) and phase II (supplies needed for professionally directed medical care) should be made available

within areas of probable usage to provide initial medical support pending the arrival of additional medical supplies from the depots located in the rear of the communications zone.

Section III. PHASING MEDICAL SUPPLIES

56. General

a. Basic Principles. Planned phasing of medical supplies must be accomplished at all levels of command. Only those medical supplies which are required for a particular operation or for a designated period of time should be stocked in a given area. Emergency medical treatment supplies must be phased in earliest and before the more definitive treatment type of supplies. Accumulation of nonessential medical supplies should be avoided as it only increases the demand for storage, movement, and handling. Air transportation should be used intensively when necessary, but medical supplies are not always in the higher priority group for movement by air. The number of situations calling for immediate and urgent demands may be minimized by a systematic, orderly phasing of medical supplies, thus insuring that the right items arrive in the right quantities at the right place.

b. Methods of Supply. Medical supplies are phased into a theater of operations by one or a combination of the following methods:

(1) *Automatic supply.* Automatic supply is a system whereby medical supplies are phased into a theater of operations automatically by prearranged planning at Department of the Army level. This method of supply utilizes the most rapid means to insure receipt of supplies. It consists of automatic shipment through the use of the medical maintenance units (MMU), augmented as deemed necessary by prior planning. These medical maintenance units are preassembled units containing those items of medical supplies necessary to sustain a given number of troops for a given period of time. Automatic supply is the best known method of providing medical supplies in the early stages of operations.

(2) *Semiautomatic.* As control of operations is progressively achieved, the theater commander furnishes Department of the Army with all available medical supply stock status information as a basis for modifying the automatic flow of medical supplies and for acquiring a more balanced stock position. The semiautomatic supply

system provides for the furnishing of medical supplies through both the automatic and the requisition systems.

(3) *Requisition.* The requisition system consists of submitting requisitions for all items required to sustain medical operations. Normal requisitioning procedures should be established as soon as possible to preclude and minimize the accumulation of excess medical supplies and to provide an efficient and adequate supply. The requisitioning system assists materially in the establishment of a balanced stock position.

c. Types of Medical Supplies. Classification of medical supplies is as noted in Department of the Army Supply Manuals, SM 8-Series. All medical supplies are classified as Class II or Class IV supplies. Class II items are those items prescribed in applicable TOE, TA, and letters of authorization. Class IV items are those for which allowances have not been established and for quantities of items over and above authorized allowances.

57. Timely Receipt of Supplies

Close coordination with the Oversea Supply Agency (OSA) within the zone of interior is essential to insure timely receipt consistent with transportation and depot handling capabilities. Through use of all available communication means, continuous liaison is effected between the OSA and the requisitioning agency in all matters relative to nonavailability, substitutions, and other factors incident to medical support of the theater.

58. Review of Requirements

Present and anticipated medical requirements must be continuously reviewed to insure an adequate flow of medical supplies into the theater, and to avoid accumulation of unnecessary stocks. The situation and stock position of medical supplies must be current and must be adjusted constantly to significantly increased or reduced requirements consistent with operational demands. In reviewing and formulating theater medical supply requirements, stocks at medical supply points are not considered as assets.

59. Coordination

To insure effective phasing of medical supplies, it is essential that all medical supply facilities establish close coordination with the next higher level of command. A theater of operations is allocated shipping space from the zone of interior. In turn, the Director of Services, theater army logistical command, allocates shipping space for technical service supplies. For proper alloca-

tion of shipping space, the theater army logistical command surgeon must make known to the Director of Services, theater army logistical command, the tonnage of medical supply requirements for the period indicated so that proper allocation of transportation requirements may be effected. The theater army logistical command surgeon must coordinate with the terminal port to insure that medical supplies are properly received and transshipped to designated storage facilities.

Section IV. MEDICAL UNIT ASSEMBLAGES

60. General

Equipment and supplies for field medical units entering a theater of operations are shipped as a single entity, namely, a unit assemblage. Unit assemblages must be functionally complete when delivered to the using medical unit. They should include all technical service TOE equipment and supplies, less motor vehicles, training equipment, and minimum essential equipment (MEE). Component packages comprising the assemblage must be preserved intact and loaded as a unit in a single vessel for an oversea destination and subsequent transshipment stages. Care must be exercised to insure inclusion of security, refrigerated, and flammable cargo supplies at each movement stage (FM 8–10, FM 101–10, AR 700–845, AR 730–83, and AR 746–80). To insure original completeness, split-loading or separation of packages must be avoided at all movement and handling points.

61. Responsibility

The Surgeon General is responsible for the assembling, marking, and initial issue of all medical unit assemblages except motor vehicles, minimum essential equipment, and individual equipment. Consignee combination numbers are assigned by The Surgeon General to each field type major unit assemblage: evacuation, field, station, general hospital, etc. (AR 730–83). Each medical unit assemblage within a consignee combination group is numbered consecutively for appropriate individual unit identification (e.g., General Hospitals, 1,000-bed, are numbered SGA–1, SGA–2, SGA–3, etc.). The Surgeon General is responsible for furnishing necessary data and for directing the responsible medical depot to include the required assemblages (medical materiel portion) in the depot assemblage-building program. He forwards requisitions to other technical services chiefs for those items which comprise their respective portions of the unit assemblage. These items are shipped to the assembling medical depot for appropriate marking and

assembling. When the other technical service items are received, they are assigned the respective unit assemblage consignee combination number. This procedure facilitates assembling and shipping functionally complete units. When assemblages are moving through medical supply channels, surgeons at all commands are responsible that medical supply installations insure completeness of unit assemblages.

62. Receiving Units

During the unit training phase in the zone of interior or overseas, issues to medical service units are normally limited to training equipment, minimum essential equipment, and motor vehicles. Unit assemblages are issued complete in the zone of interior, if the unit is to perform its intended mission in the zone of interior. Complete organizational equipment (including that of all technical services) is issued as a complete unit assemblage at or near the site of actual unit employment in either the zone of interior or overseas. Zone of interior army commanders and oversea commanders prescribe the criteria and locations for storage of field and evacuation hospital assemblages under and within their respective areas of jurisdiction. Receiving units are responsible for immediately reporting all shortages to the appropriate agency, for necessary action to fill existing shortages.

63. Functional Packing

Field army medical unit assemblages are functionally packed. All medical equipment and supplies for any section of a field army hospital (such as the operating room, pharmacy, and ward) are packed for the respective hospital section and marked with appropriate identification. All functional type unit assemblages are packed in reusable containers. Functional packing and marking facilitate a rapid and orderly segregation of material, and permit easy assembling for partial or full unit operation with a minimum of confusion and time. The list of medical items which require functional packing is in Department of the Army Supply Manuals, 8–4 Series. For logistical planning data for assemblages refer to FM 101–10.

64. Documentation

Medical assemblages are documented by the assembling depot or supply facility in Federal stock number sequence, as indicated in Department of the Army Supply Manuals, 8–4 Series. Complete sets of documents (property copies of Army Shipping Documents) are included with each assemblage. All documents and packages are marked with the unit consignee combination number. Original

packages and miscellaneous packages are normally documented and boxes numbered consecutively. Copies of Army Shipping Documents ~~(ASD)~~ listing contents of miscellaneous packages are placed both inside and outside the container to readily identify the contents. Field army medical unit assemblages, in addition to the above, are documented and packaged according to the functional section (i.e., operating room, pharmacy, wards). Accompanying documents should be utilized fully in checking components, ascertaining requirements, preparation and movement, etc. Documentation and packing must be in strict accordance with cargo classification of medical supplies for storage and shipment.

65. Surveillance of Assemblages

During the storing period of medical assemblages, it is essential that constant and diligent surveillance of all medical supplies and equipment be exercised. The use of good storage procedures insures constant serviceability of all items. Rotating those items of a deteriorating nature should be effected to insure maximum use of the items prior to expiration of life expectancy. Care must be exercised that all medical supplies are properly stored and serviceable.

Section V. REQUIREMENTS

66. Types of Requirements

To insure the availability of sufficient quantities of medical supplies suitable to satisfy the type of missions supported, it is necessary that the tactical and strategic requirements for medical supplies be known as far in advance as possible. The medical supplies carried by units and organizations into a theater of operations are normally sufficient for the initial or early periods of an operation. To provide adequate medical supply support for any operation, all using units and each echelon of command must consider and plan for the initial, replacement and consumption, reserve, and special projects requirements for medical supplies. It is essential that planned medical supply requirements be accomplished far in advance because of the long procurement lead time required due to certain essential military characteristics, minimum sources of manufacture, and the large quantities of medical supplies involved.

a. Initial. Initial requirements are for a first time issue to a unit to fill existing TOE shortages or to satisfy initial Table of Allowances, special authorization, or items announced as newly standardized.

b. Replacement and Consumption. These requirements are other than those of initial issue. Replacement quantities are medical supply items consumed or expended, including those lost incident to enemy action or items requiring special consideration.

c. Reserve. Medical supplies in excess of immediate needs (operating levels) are accumulated to meet anticipated demands which cannot be accurately determined in advance.

d. Special Projects. Special projects requirements are for medical supplies not associated with authorized allowances, but required for Department of the Army approved operational, development, and maintenance projects and intended for a specific use (e.g., stockpiling of medical supplies to support special military operations, civilian assistance programs, hospital equipment remodeling, etc.).

e. Medical Supply Pipeline. The procuring activity (Military Medical Supply Agency—MMSA) instructs the contractor to ship medical supplies to CONUS depots or ports of embarkation as indicated by the stock control center of the activity. (Medical supplies are shipped from contractor plants directly to the port of embarkation (POE) when such supplies are not immediately available at CONUS depots and when procurement and shipment from contractor plants can be effected to satisfy required dates at POE's.) On receipt of the theater of operations' requirements at the Oversea Supply Agency (OSA), requisitions are placed on CONUS depots for shipment of medical supplies to the oversea command. All pertinent markings and shipping data are furnished to insure proper receipt of medical supplies at oversea depots. Shipments are effected by air or water means to the theater of operations for subsequent storage and further movement to forward depots and for issue to using units.

67. Computing Requirements

Medical supply requirements must be calculated on the above factors to support satisfactorily the commander's mission. Computations must be timely and accurate. Care must be exercised that initial issues are not reflected as replacement issues, and that quantities for special projects are not reflected in operating levels (AR 710–60). In computing medical supply requirements special consideration must be given to the following items:

a. Seasonal Items. Medical supply requirements must be calculated far in advance to permit procurement and shipment of those items used during various seasons of the year. Such items as foot powder, chloroquine, and casualty evacuation bags must be available when demand is made. Consideration must also be

given to the vaccines necessary to implement and support the immunization programs.

b. Repair Parts Supply. All concerned should ascertain that proper stockage of repair parts is effected. This, in the case of major items of medical equipment, will require the equipment density (manufacture, model, serial number, etc.) of items supported to insure that proper repair parts will be available to maintain end items in a serviceable condition.

c. Reserve–Assemblages. In formulating total medical supply requirements, consideration must be given to the replacement requirements for those quantities of items of a deteriorating nature and of a limited potency period which, because of great quantities, cannot be totally rotated through the operating level stocks. If normal issues are not sufficient to rotate all quantities prior to expiration of life expectancy, those quantities disposed of as unserviceable must be replaced.

d. Dated Items. At times, some of the dated medical supply items making up the authorized levels are not used before their expiration date. These large levels must be maintained, nevertheless, to sustain anticipated periods of combat operation. Replacement must be made of all items nearing their expiration date.

e. Deteriorating Items. These items, such as rubber goods and certain drugs, must be given the same consideration as indicated in *d* above.

f. Nonstandard Items. Normally, requirements are not determined for nonstandard items of medical supply. Consideration should be given to temporary requirements, however, because of certain specialty items required in unusual situations.

68. Consumption Rates

In the absence of actual operating issue experience, a guide for computing medical supply requirements for peace and war may be found in SB 8–38 and SB 8–39. These bulletins include consumption rates for principal items of medical supply. The consumption rates indicate quantities required per thousand men per 30 days.

69. Consumption Rates of Items Required for the Prevention and Control of Communicable Diseases

The Army Medical Service is responsible for the supervision of all activities in controlling animal reservoirs and vectors of disease; for the preparation of specifications; and for the procurement, storage, and issue of all Army Medical Service items used in the

investigation and control of animal reservoirs and vectors of disease. The Army Medical Service is also responsible for providing assistance to quartermaster and engineer supply units in establishing requirements and control levels and in determining effectiveness of insecticides, rodenticides, and dispersal equipment (AR 40–578).

70. Tonnage and Shortage Requirements

Success of an operation is dependent upon good planning. Medical supply planning includes computing supply tonnage and storage requirements by using available logistical factors which are based on historical data for specific locations and specific types of combat, principally from World War II experience. These factors do not include the initial equipment of troop units, but do include project supplies which are required to support troops (except civilian or other relief supplies). Data presented in this manual should be applied to future medical supply planning only with judgment and discrimination. Whenever a known factor is available, it should be used. For logistical planning data pertaining to weight, cubage, and storage requirements of medical supplies, refer to FM 101–10.

See Ch 3

71. Cross Servicing

When directed by higher headquarters, the Army Medical Service has logistical responsibility for providing adequate medical supplies to the Navy and Air Force units on a nonreimbursable basis, with the exception of initial issues and certain replacement items. Transfer of stock on a reimbursable basis, from one service to another may be accomplished at any time deemed necessary. The issuing agency or service must exercise sound judgment in determining its ability to transfer supplies from its operating stocks to another agency or service. Preparation and appropriate certification of documents are accomplished at the issuing level and forwarded through channels for proper reimbursement at Department of Defense level. Policies and procedures on transfers are outlined in AR 700–4. Supply assistance on a reimbursable basis may be furnished (when essential) to non-Government groups or individuals who are assisting in the commander's mission.

Section VI. ACQUISITION OF SUPPLIES

72. Local Acquisition

Medical supplies for a theater of operations are acquired from sources outside or within the theater, or both. Resources within

a theater include procurement, confiscated and captured material, and reclamation programs (AR 715–830). Normally, procurement from Allied or friendly countries is utilized fully and is conducted in accordance with Department of Defense instructions. Utilization of local resources as a means of supply minimizes shipping requirements and reduces the ordering and shipping time.

a. Procurement. With certain restrictions, items and categories of items of medical supply indicated in AR 715–835 are authorized for local procurement within the theater. Procurement of certain medical supplies from non-United States sources in oversea areas is not authorized unless specific prior approval of The Surgeon General is obtained.

(1) Consideration should be given in the procurement of medical items from local sources to include manufacturer technical know-how, sterility techniques, raw materials availability, and production capabilities. Because of the nature of most medical items (mainly drugs and surgical instruments), sound judgment must be exercised. The high standards maintained by American drug manufacturers make it difficult to consider the use of manufacturers in many areas of the world as possible sources of drug supplies. Other considerations in planning for local procurement are indicated in FM 8–10.

(2) Locally procured material will be identified and segregated from similar items of United States manufacture.

b. Confiscated and Captured Material. Medical supplies confiscated and captured from the enemy are utilized by combat units when necessary or are turned in to medical supply installations. Medical supplies should be collected, identified, inspected, segregated, and properly stored. Compliance with standing operating procedures of the command with respect to captured enemy materiel is vital. Captured medical supplies are of particular value for use by prisoners of war in treating their sick and wounded and/or in the fulfillment of Civil Affairs requirements.

c. Reclamation. Utilization of local resources in the reclamation of medical supply items should be effected for the conservation of manpower and economy, and for reduction of the demand and transportation requirements.

73. Requisition From Zone of Interior

As soon as the military situation permits, the theater commander directs that all requirements for items be met by periodic requisitions to the zone of interior, and concurrently automatic supply from the zone of interior is terminated. Subsequent to

termination of automatic supply, requisitions are submitted periodically by the theater army logistical command medical supply officer to the zone of interior for replacement of theater stockage.

74. Other Sources of Medical Supply

a. Other Theaters. The phasing out of troops from a theater normally creates an excess of medical supplies. Whenever possible, lateral transfers are made to other theaters having a requirement for this excess of medical supplies. Department of the Army regulations relative to the disposition of excess supplies must be consulted to insure proper and appropriate disposition.

b. Other Technical Services.

(1) Certain items included in the Armed Services Medical Stock List are procured by the Army technical service having procurement responsibility for these items (such as Quartermaster for blankets and textiles). Requirements are submitted by the medical procurement activity to the appropriate technical service having procurement responsibility.

(2) Technical service supplies, other than medical, which are required by medical service units must be planned for in the same manner as for medical items. To assist each technical service in its planning, the Army Medical Service should maintain close liaison with each technical service and provide requirements data for anticipated operations, phasing in of medical units, TOE shortages, special and other project requirements. Furnishing supply data information in advance will tend to insure that the Army Medical Service will be provided with the needed supplies at the time required for use in performing its mission.

Section VII. STORAGE AND DISTRIBUTION

75. General Principles

Storage includes the functions of receiving, storing or warehousing, maintaining, and shipping medical supplies in accordance with distribution instructions. Coordination of storage and distribution, through depot location and mission assignment, is essential to insure that facilities are adequate to handle the load imposed. After missions are assigned, the storage section of a medical supply facility continues to make studies of expected loads, and to recommend allocation of space, equipment, and labor necessary to perform the essential operations.

a. Location. The general locations of a medical depot or a group of medical depots, are chosen along the proposed axis of advance with due consideration given to the tactical and strategic effort, the location of the ports, and the major usable transportation facilities. When selecting specific locations, however, one must consider such factors as adequate dispersion, defensibility of installations, local roads and rail sidings, hardstandings, adequacy of local communication facilities, existing buildings and structures, utilities, and the availability of local labor.

b. Transportation. Medical supply installations should be near railheads, ports, airfields, and highways to minimize hauling. As transportation means are always at a premium, economical and full use of available transportation is essential. Bulk medical supplies for long hauls should be moved by rail. Plans are developed for using the most efficient and economical transportation means. Air transportation is normally utilized for shipping whole blood more than 50 road miles.

c. Facilities. Storage facilities for medical supplies must provide a minimum of 90 percent covered storage. Existing buildings should be utilized to the greatest extent possible to provide adequate covered, open, refrigerated, security, flammable, and controlled humidity and temperature storage. Requirements for utilities such as electricity, water, and gas must also be considered.

d. Handling Medical Supplies. Efficient methods must be employed to minimize unnecessary shipments, transshipments, and rehandling of medical supplies. So far as possible, shipment of medical supplies should be accomplished in one move and as far forward as possible. Movement of supplies through successive supply installations should be avoided.

e. Physical Inventory Procedures. An inventory is a physical count of all items of stock located within an installation. There are three methods of accomplishing inventories: (1) complete shutdown inventory whereby the counting of all items located within an installation as of a particular date is accomplished; (2) cycle inventory whereby items are counted at a prescribed period on a selective basis; and (3) special inventory whereby selected items are counted for a specific purpose. Inventories should be taken, if possible, by teams of trained men, having that as their primary job. Inventories must be systematic, accurate and, above all, should not interfere with the fulfillment of supply requirements to supported units for the accomplishment of their missions.

f. Coordination. Close coordination should be maintained between medical supply installations and other agencies or services.

Notification should be given far in advance to the transportation officer concerning movement requirements, and to the military police for the protection of security cargo. Close coordination with the port commander is essential for the proper receipt and clearance of medical supplies from the port facility.

g. Dispersion. The devastating characteristics of nuclear warfare have emphasized the importance of increased dispersion within a theater of operations. The number of medical supply installations to be in a field army or communications zone and the degree of dispersion between them are dependent on enemy capabilities, nature of terrain, disposition of friendly troops, capability of TOE units, availability of civilian labor, degree of inefficiency acceptable, and the calculated risk the commander is willing to accept. Factors to be considered relative to the echelonment of medical supplies are—

(1) Levels for theater Army as prescribed by the Department of the Army.

(2) Theater army logistical command and combat zone supply levels authorized by the theater Army commander.

(3) Location and mission of supply installations.

(4) Quantities of medical supply actually on hand and their adequacy for distribution, based on issue experience and anticipated needs including maximum emergency demands.

(5) Adequacy of the transportation net.

(6) Proximity of the medical supplies to related activities such as ports and other depots.

(7) Number and types of organizations and installations to be served.

(8) Vulnerability of any considered storage area to enemy action.

(9) Order and shipping time.

(10) Port availability and capacity.

h. Flexibility. Medical supply installations must remain flexible to meet changing situations. The threat of nuclear attacks and the rapidly changing military situation make it necesary that alternate medical supply plans, procedures, and operations be formulated. In certain instances it may be advisable to establish duplicate operations such as a central stock control point with appropriate records, procedures, reports, etc. Medical supply levels of installations in forward areas must be kept at a minimum to permit relocation of such installations whenever necessary to provide adequate medical support to the mobile supported units.

i. Care and Preservation. Employment of proper medical supply practices requires that continuous care be exercised in the surveillance of all medical supplies, and in particular of the deteriorating type items. Items must be stored and cared for according to cargo classification. Deteriorating and potency type items must receive special consideration in the rotation of stocks. Special storage must be provided for items requiring humidity and temperature control, refrigeration, or security precautions. Supplies must be treated and packaged to prevent corrosion, breakage, and deterioration. Periodic inspections should be accomplished and appropriate records maintained to provide a satisfactory schedule for care and preservation.

76. Storage Considerations

a. Responsibility. The commander of the theater army logistical command is responsible to the theater Army commander for logistical support of all army forces in the theater and for such support of Navy, Air, Allied Forces, and civilians as directed. Operations to discharge this responsibility are carried out by the technical services. Medical supply installations may have the responsibility of procuring, storing, and distributing medical supplies to other departmental forces, Civil Affairs, and other agencies, as may be directed.

b. Storage Requirements. Overall space requirements are determined from supply control data and from experience factors for handling medical supplies. Detailed space requirements must be based on specific assignment of depot missions, supply levels to be carried, area and troops served, and types of supplies. Medical service unit commanders and staff officers must have an appreciation of storage problems, particularly those pertaining to covered storage, if they are to establish intelligent policies covering storage of medical supplies. Consideration must be given to large volume, to special handling, and to documentation. For logistical planning factors pertaining to medical supplies, refer to FM 101–10.

c. Allocation of Area and Facilities. Acquisition of real estate and facilities is accomplished through the G4/Director of Services of the command. Only by coordination with the G4/Director of Services and the engineer officer can adequate medical supply facilities be satisfactorily acquired. Maximum utilization of existing facilities should be exploited prior to requesting construction of new facilities.

(1) *Mission.* Medical supply installations may perform one or more of the following missions:

(*a*) Key—responsibility for the receipt, storage, and docu-

mentation of specified medical supply items or categories of medical supply items not appropriate for storage at multiple points, and issue to units and installations located within an extensive geographical area.

(*b*) Reserve—responsibility for receipt, storage, documentation, and issue as appropriate of specified medical supply items or categories of medical supply items for a specified purpose; e.g., theater or strategic reserve or reserve for another depot.

(*c*) Distribution—responsibility for receipt, storage, and documentation of specified medical supply items or categories of medical supply items, and issue to units and installations within a limited geographical area or to specified commands.

(2) *Location.* Medical supply installations are located throughout the communications and field army zones. As pointed out in paragraph 75*a*, numerous factors must be considered prior to selecting a site for a medical supply installation. An additional factor that affects the location of a medical supply installation is the relative stability of the tactical situation.

(3) *Phasing into a theater of operations.* Medical supply units are phased into a theater of operations in sufficient numbers to accomplish the medical supply mission. Normally, after the initial beach landing, one or more medical supply units follow the assault troops. When sufficient territory has been occupied, an advance logistical command is established in the communications zone. At such times additional medical supply units accompany other incoming service and support units into the theater. As the combat forces advance and the line of communications are extended, a base logistical command is established in the communications zone. Additional medical supply units are then phased into the theater in order to accomplish adequate medical supply support to forces therein.

(4) *Handling of medical supplies.*

(*a*) *Use of material handling equipment.* The maximum utilization of material handling equipment such as fork-lift trucks, roller conveyors, and handtrucks, substantially reduces manpower requirements and effects increased efficiency.

(*b*) *Utilization of prisoner of war and indigenous labor.*

Maximum employment in depots should be made of civilian personnel, prisoners of war, and 8–500 Series cellular units. This action insures efficiency, economy of military personnel, and the release of military personel and units for the performance of other duties. Civilians must be screened before employment. Prisoners of war may be used in rear areas, but must be closely supervised and guarded.

(5) *Storage management.* Maximum utilization of storage space must be effected to accomplish the degree of economy desired. Such factors as accessibility of stored medical supplies and maximum protection from deterioration, fire, weather, theft, rodents, enemy action, etc., must be considered in ascertaining efficient storage procedures. Proper depot storage procedures require a locator system having two elements: first, a locator card for every line item stocked; and second, a master chart of the depot showing the location of every numbered storage space, both open and covered. These two elements, when used together, provide the means of locating an item. These locators are primarily records which show where medical supplies are located in a depot or other supply point.

(6) *Packing and crating material.* Because of certain characteristics of medical supply items in general, it is essential that good packaging and packing procedures be used. Medical supplies must be properly packed at all supply levels to insure protection from damage and deterioration due to rough handling and conditions of storage. Methods and specifications are outlined in joint Army-Navy specifications, *Packaging and Packing for Overseas Shipment*, JAN–P–116. Necessary materials are obtained from the Quartermaster Corps and Corps of Engineers.

d. Stock Control and Documentation.

(1) Proper documentation is the first requisite of efficient storage and distribution of medical supplies. An item that cannot be located or identified is as unavailable for supply needs as though it did not exist. During World War II, urgent requests were frequently forwarded to the zone of interior for emergency shipments of particular items for which there were no records, even though the items were already in theater depots or in theater ports awaiting discharge. A carefully planned standing operating procedure for documentation must be developed

well in advance of initial operations. Subsequent changes should be held to a minimum. Advance information of shipment must be received by theater army logistical command from the port of shipment well in advance of the expected date of arrival of the shipment. This is important, as it is essential to the formulation of timely plans for receiving and distributing the shipment. Advance information is forwarded in the form of copies of all shipping documents plus radio or dispatch information.

(2) Stock control provides the means for maintaining the best possible balance between anticipated demand and projected availability. It is a system of records and of data used as the basis for requisitioning on the zone of interior and for local procurement in a theater of operations. These records reflect requisitioning objectives, dues-in, dues-out, and available balances of medical stocks on hand. Data contained in the stock control records are used for many additional purposes such as planning for storage space, planning distribution, making estimates of items available for a proposed operation, or determining excesses. Data relative to stock control are maintained at the central stock control point operated by each technical service. For detailed data, refer to FM 100–10.

77. Distribution

a. General. The main objective of medical supply distribution is to get the supplies to the ultimate consumer at the place, at the time, and in the quantities needed. There are two general methods of distributing medical supplies to using units, distinguished by the point at which supplies are delivered to them.

(1) *Supply point distribution.* Delivery is made to the using unit at the supply point, and medical supplies are hauled to the unit distributing point in transportation furnished by the using unit.

(2) *Unit distribution.* Delivery is made to the using unit in transportation furnished by a higher level of command, such as the communications zone depots delivering medical supplies to field army depots.

b. Field Army. Within a field army, unit distribution of medical supplies is made to divisional units. The method of effecting supply distribution to medical treatment facilities such as evacuation hospitals and mobile army surgical hospitals will be as prescribed by the proper authority. Maximum utilization of empty

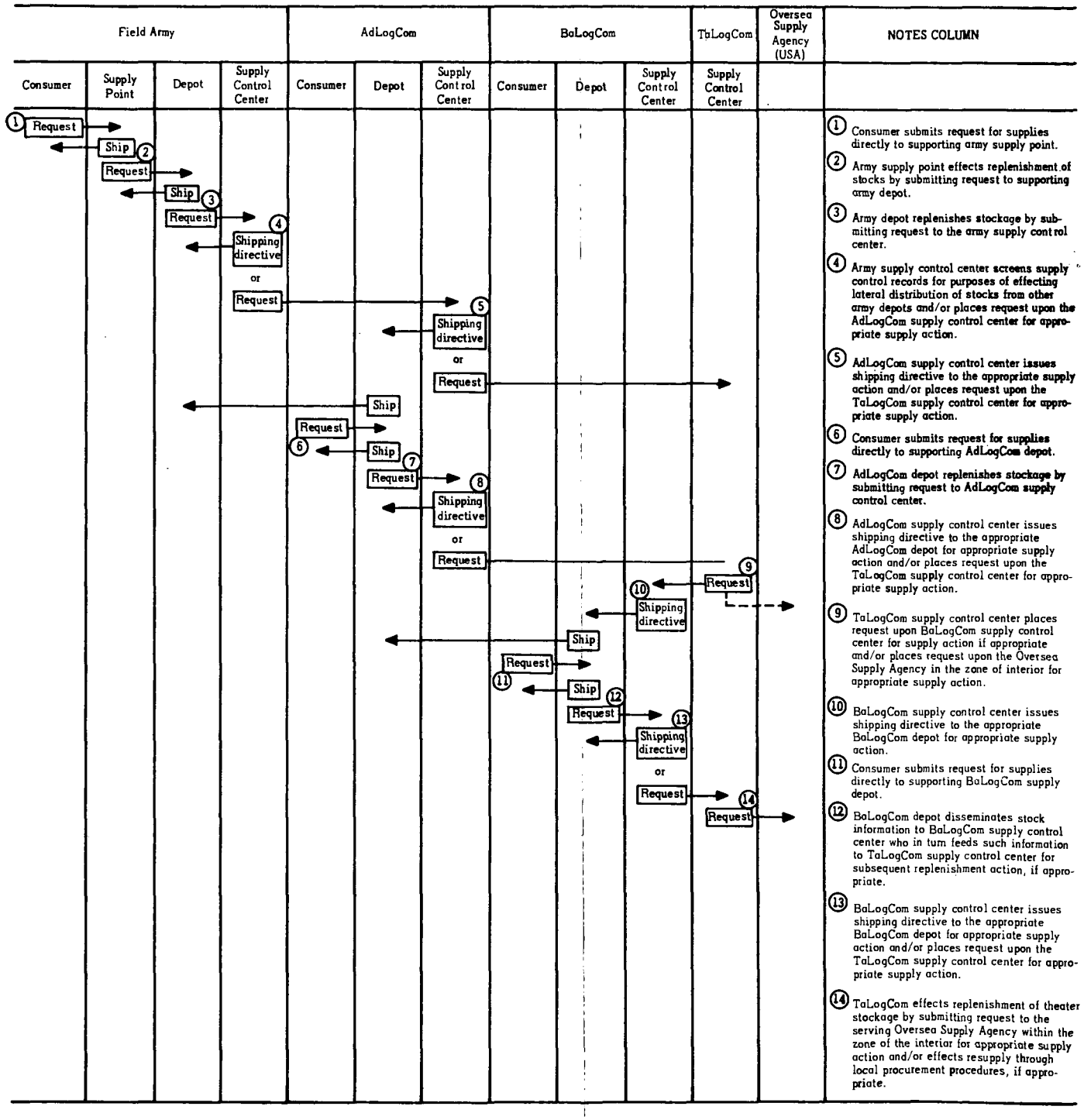


Figure 3. Supply demand and distribution flow.

ambulances moving forward is an excellent means of effecting "unit distribution" of medical supplies to consuming activities.

c. Communications Zone. Within the communications zone, the method of effecting distribution of medical supplies to consuming activities will depend upon the transportation means available, but usually "supply point distribution" to consuming activities is utilized.

d. Theater of Operations. Medical supply demand and distribution within a theater of operations follow the flow as shown in figure 3.

e. References. Applicable distribution procedures references are found in FM 8–5, FM 8–10, FM 100–10, and FM 101–10.

f. Movement of Medical Supplies. To effect efficient movement of medical supplies, close liaison must be maintained between the Medical Supply Officer and the Transportation Officer, who should be kept informed as to the daily and anticipated movement requirements. Forecasting, programming, and scheduling supplies for shipment will effect maximum utilization of the limited means of transportation. Accurate time and distance factors must be included in planning for supplies to arrive at the designated place and time. Medical supplies must not be permitted to accumulate in quantities greater than will be required at a given point, and arrivals of such supplies must be timely. Movement of supplies must be consistent with the supply requirements, movement capabilities, and established priorities.

g. Coordination Between Field Army and Advance Logistical Command. To provide effective medical supply support, surgeons of both these commands must maintain close coordination in all supply and operational matters.

h. Coordination Between Base Logistical Command and Advance Logistical Command.

(1) The base logistical command surgeon coordinates and maintains constant liaison with the advance logistical command surgeon to determine and solicit the services which he can perform, and also arranges for the assumption of responsibility to provide these services.

(2) Advance logistical command medical supply units must be mobile with the capability of simultaneously relocating and establishing new installations while closing out former sites. Shipments from the base logistical command leapfrog an installation which is being phased-out; shipments are delivered to a new installation or issue point. Supplies in a former supply installation are not

moved back to base logistical command, but are retained on site for issue until stocks are exhausted. The rehandling of supplies must be held to a minimum.

i. Priorities and Allocations. It is necessary to establish priorities and allocations on medical supply items in short supply to insure maximum utilization of an item by placing it in the hands of the most needy user. The surgeons at each level of command establish and assign priorities and allocations to organizations according to the greatest need and the supply situation.

78. Direct Shipment

To minimize the rehandling and reshipping of medical supplies, it is desirable that shipments from debarkation ports or beaches be effected directly to forward areas whenever possible. This is consistent with good supply practices, and it effects economy. Care must be exercised that proper documentation of such shipments is accomplished. This is particularly desirable for medical supply items in short supply and items needed immediately by field army troops. Bulk quantities of medical supply items can easily be assembled at the port or beach area, documented, marked, and loaded for shipment to forward supply installations. Shipments should be effected by the best available means.

79. Disposition of Medical Supply Installations

The number and disposition of medical supply units employed to acomplish the mission of the Army Medical Service are dependent upon mission, terrain, troop strength, proximity to transportation means, and capabilities of the medical supply units.

a. Combat Zone. Medical supply units operate within depot complexes and supply point complexes and must be readily accessible to all medical service units in the field army area. Field army supply points are located well forward in the corps area to provide direct support to division medical battalions, evacuation and mobile army surgical hospitals, and other units in the area.

b. Communications Zone (ComZ). Definitive medical treatment units (field, station, and general hospitals) in the communications zone are supplied from the nearest medical supply unit located in the advance logistical command and base logistical command depot complexes. Medical supply installations are located in close proximity to other technical service supply installations to facilitate movement of supplies, security, services, labor, and assistance.

80. Intraservice Supply Support

The Army Medical Service will be able to perform its mission more effectively by fully utilizing the supplies and services of other technical services. Relationships should be developed early in order to obtain assistance in various supply, service, and maintenance support activities. Engineer services and assistance are available in the planning and construction of a hospital or unit area and in the refilling of medicinal gas cylinders (at depot level) ; Transportation Services, in the movement of medical units and supplies; and Military Police, in guarding prisoners of war and intransit security cargo medical supplies and area protection. Many other services and supplies are available from the technical and administrative services. For logistical responsibilities of the technical services, refer to FM 100–10 and SR 700–51 Series.

Section VIII. DISPOSAL OF MEDICAL SUPPLIES

81. Excess and Surplus Supplies

Excess medical supplies are those quantities in possession of a unit, supply installation, activity, or area which exceed the quantity required or authorized for retention by that component. Surplus medical supplies are any that are not required for the needs or the discharge of the responsibilities of all Federal agencies, including the Department of Defense, as determined by the General Services Administration. For specific instructions pertaining to disposition of Army Medical Service items required in Continental United States, items of American Red Cross origin, strategic materials, whiskey, ethyl alcohol, narcotics, precious metals, and other medical items of supplies and equipment, refer to AR 755–7 and AR 730–890. Excess medical supplies are normally generated as a result of inadequate supply control procedures. Measures to prevent the generation of excess supplies include the periodic review of consumption rates to insure that authorized levels established are realistic and that they do not produce excess quantities. Requisitions by units should include only those quantities of medical supplies required for the issue period. Command action to eliminate such deficiencies as hoarding of medical supplies and improper storage procedures does much to produce a sound medical supply system.

82. Salvage

Salvage within the theater consists of recovered materiel to be used for the original purpose either with or without repair and materiel which can be converted to a substitute use or which has

value as scrap. Salvage operations place in use materiel which would otherwise be lost, and concurrently relieve the entire supply system of the burden of making available duplicate replacement items. The prompt collection of medical equipment which has been abandoned on the battlefield and in bivouac areas and the subsequent utilization of this materiel are important measures in the conservation of military resources and are the responsibility of all commands and personnel. Salvage of medical materiel within a theater of operations is performed by medical supply installations engaged wholly or in part in the collection, evacuation, classification, reclamation, and disposition of waste materials, abandoned property, and unserviceable medical supplies. Empty vehicles moving to the rear are utilized to transport recovered materiel. Army Medical Service personnel at supply installations inspect and sort salvage property. Serviceable items are returned to supply points or installations for redistribution. Repairable items are evacuated to the appropriate depot or medical equipment maintenance shop for repair and are returned to stock. Materiel which has been classified as scrap and any other items which have no value except for their basic materiel content are turned over to the activity designated by the theater commander as responsible for the disposition of surplus property.

83. Destruction

a. Imminent Capture by Enemy. When imminent capture by enemy forces is expected, medical supplies must not be purposely destroyed. The Geneva Convention precludes willful destruction of medical supplies. When the commander, because of military necessity, has decided to abandon patients, it is essential that sufficient and adequate medical personnel and supplies be left for the care of the sick and injured personnel. Under all other conditions every attempt is made to evacuate all medical supplies. Priority requirements for medical items should indicate the order of evacuation. It is a command decision to abandon supplies. The destruction of supplies, other than medical, is also a command decision. Medical units should have a standing operating procedure for the evacuation and destruction of their own supplies and equipment (other than medical) based on command procedures. Definite methods to accomplish destruction of supplies and equipment, other than medical, should be incorporated in the unit's standing operating procedures.

b. Destruction of Materiel for Reasons Other Than Its Imminent Capture by the Enemy. Destruction of materiel for reasons other than its imminent capture by the enemy is effected in accordance with appropriate disposition procedures. Unsafe

drugs and biologicals (except narcotics) which have been designated to be unsafe or unsuitable for further use, or certain dated items whose storage beyond a specified date is not recommended, are destroyed locally in accordance with appropriate Army supply bulletins, instructions from the Office of The Surgeon General, or other approved directives. Disposition of narcotics no longer suitable for intended purpose is in accordance with instructions contained in AR 755–7.

CHAPTER 5
MAINTENANCE

Section I. ARMY MEDICAL SERVICE RESPONSIBILITY FOR EQUIPMENT MAINTENANCE

84. General

a. Army Maintenance System. The increasing complexity of war materiel since World War II and the Korean War is having considerable impact upon the development of the Army of the future. The importance of this impact and the inevitable changes that must be reflected in the doctrine as it applies both to tactics and to logistics are of paramount concern to the military planner, who today must be a tactician, a logistician, and a financier. Modern warfare demands a highly systematic approach both to tactics and to logistics. No better example of this systematic approach can be found than the Army maintenance system (AR 750-Series).

b. Meaning and Importance of Maintenance. Maintenance is the care and work done, including minor repairs, to keep any item of material or equipment in a specified standard condition. Its objectives are (1) prevention of equipment failure by timely and adequate preventive maintenance service in using organizations; (2) the early detection and correction, at the lowest practical echelon of maintenance, of beginning or actual equipment failures; and (3) the maximum reduction of the requirements for new equipment, consistent with the tactical situation and the economical use of manpower, supplies, and transportation. Preventive maintenance, performed principally at organization level, is the heart of the maintenance system. It is the systematic care, servicing, and inspection of equipment for the purpose of maintaining it in serviceable condition, and for detecting and correcting beginning failures before they develop into major defects or malfunctions. Maintenance includes inspection, testing, servicing, classification as to serviceability, repair, rebuilding, approved modification, and reclamation.

c. Relation to Supply. Maintenance planning must be concurrent with supply planning as the two are closely interrelated. An inadequate maintenance organization will impose an increased re-

quirement on the supply system; inability of supply to replace unserviceable items of equipment will require greater maintenance effort within a theater in order to effect the return of a greater portion of these items to the distribution system. The flow of supplies is from the rear to the front; evacuation of unserviceable equipment is from the front to the rear.

d. Principles of Maintenance. Direct maintenance support must be rendered as far forward as possible. No echelon neglects its properly assigned functions in order to perform the work of a higher echelon. The policy of making repairs as far forward in the combat zone as the tactical situation permits eliminates time-consuming evacuation measures and effects the return of the equipment to the using unit much more quickly. Equipment that is beyond the maintenance capability of any organization or that requires repairs of such nature that an excessive amount of time would be consumed is evacuated promptly to the next higher maintenance organization unless local disposition of it has been authorized. Unserviceable material should be evacuated to the rear as fast as a unit requires that its supplies be brought forward. Each unit is authorized a supply of repair parts commensurate with its maintenance responsibilities (pars. 85–89). The stock of repair parts to be carried within the unit is based on a prescribed load list published by the Army Medical Service. Applicable repair parts manuals should be consulted for each major item of equipment.

e. Maintenance Publications. The head of a technical service who is responsible for the research and development of an item of equipment is also responsible for preparing a technical manual on the equipment. These publications must be available in sufficient quantities at the level where they are actually used. Technical and supply publications should not be kept on shelves or in bookcases in the headquarters when the lack of these publications might hamper some supply or maintenance operation.

f. Inspections and Reports. Command and technical inspections within the theater army logistical command are performed by medical service units under the supervision of the appropriate advance and base logistical command and separate area command medical staff officers. Commanders of medical service units are responsible for ascertaining periodically the serviceability of all medical equipment and the efficiency of its maintenance. Two kinds of inspections are the means by which this is accomplished: command maintenance inspections and spot check inspections. Serviceability standards for classification of medical equipment are delineated in SR 742–607–1. Details concerning reports of

spot check and command inspections may be found in AR 750–8. For Preventive Maintenance Record for Medical Equipment, refer to AR 750–808.

85. Categories of Maintenance

a. The theater Army surgeon determines the medical maintenance support requirements of a theater Army, recommends the allocation of maintenance units to major subordinate commanders, formulates broad plans for the provision of support, and provides staff supervision over the execution of these plans. Overall coordination and supervision of maintenance is the responsibility of the theater Army G4. The Medical Service staff officers of the theater Army, under the general staff supervision of the G4, recommend broad plans, policies, and procedures for the maintenance and repair of equipment issued by the Medical Service. After approval by the theater Army commander, these plans are usually published in the form of theater Army maintenance directives. Medical Service staff officers exercise staff supervision over the execution of the theater Army maintenance directives and insure that they are followed. Every Medical Service staff officer charged with a responsibility for maintenance must continuously balance requirements against resources. The decision of when to evacuate an item and to whom it is to be evacuated must be prescribed for every unit. The *when* and *to whom* can be determined by use of an automatic data processing system on a recurring basis as to equipment densities, maintenance support strength, parts availability, and variations of the tactical situation. Medical maintenance units are responsible for determining the need for evacuation or movement of medical equipment. Actual movement of material is a function of the Transportation Corps.

b. In maintenance, the chain of command responsibility from the top commander to the user of the equipment is accomplished by a system of maintenance categories, maintenance echelons and command and technical inspections employed to plan, organize, control, and evaluate all maintenance operations. Maintenance operations performed on any item of material must be assigned to specific levels of command in accordance with the primary mission, the character, and the mobility of the command involved. Four broad categories of maintenance have been defined and are basic to the Army maintenance system: (1) organizational maintenance, (2) direct support maintenance, (3) general support maintenance, and (4) depot maintenance.

86. Organizational Maintenance

a. *Organizational maintenance* is that maintenance which is

authorized to be performed and is the responsibility of the organization using the equipment. It includes preventive maintenance and minor repairs performed (1) by individual users and crews (first echelon maintenance), and (2) by specially trained personnel of the using organization (second echelon maintenance). It is a direct responsibility of unit commanders. Technical advice and assistance are provided by medical service units responsible for direct support (third echelon) maintenance.

b. First echelon maintenance (preventive maintenance performed by the user) must be regular and systematic; inspection and servicing must be continuous. At the first indication that equipment is failing or is showing signs of possible failure, the operator must take steps to remedy the situation or turn to the organizational mechanic for help. Control of handling and operation of equipment by the individual operator is the key to effective operation. Most failures would not occur if this control were effective.

c. Second echelon maintenance of medical equipment is the maintenance performed within the organization by specially trained personnel. Appropriate publications authorize additional tools, necessary parts, supplies, test equipment, and the personnel to perform this function. If maintenance at this echelon is performed conscientiously, the burden on higher maintenance echelons is substantially reduced. Correction of minor operating difficulties before more serious trouble develops is the most economical maintenance that can be performed. The value of training and discipline in the use and care of equipment is as important to the officer as is the tactical training of his troops. He must consider both when he considers the combat readiness of his troops. Third or fourth echelon maintenance may sometimes be performed by the organization with the approval and under the supervision of the direct and general supporting maintenance units. In such cases, the parts required to perform the maintenance repairs will be issued to organizational units from the direct or general support activities (AR 750–5).

87. Direct Support Maintenance

Direct support maintenance (*third echelon*) of medical equipment is that maintenance performed by specialized medical service maintenance units operating in close support of using organizations. This type of maintenance is performed with the objective of effecting the immediate repair and return of equipment to the users. A third echelon unit normally provides maintenance support to a number of using organizations. It supports lower eche-

lons by providing maintenance assistance, mobile repair crews, and repair parts, as required. Direct support maintenance is performed as far forward as is consistent with the tactical situation, the time available, the capabilities of available personnel, and the availability of repair parts and tools. As it is often more desirable to move maintenance personnel to the equipment rather than to move the equipment to maintenance personnel, on-site repair service is provided by mobile repair parties consisting of trained mechanics provided with repair parts and special equipment. The employment of mobile repair parties constitutes a departure from the evacuation procedure. When time is essential and where personnel, tools, and equipment are available, these mobile repair crews may be sent forward to make on-the-spot repairs. When a direct support maintenance unit cannot repair an item within a reasonable period of time, a replacement item should be immediately issued to the using organization on a direct exchange basis. Direct support maintenance units carry a small stock of replacement exchange items for this purpose. Items requiring maintenance beyond the capabilities of direct support units are evacuated to the nearest general support facility of the appropriate medical service unit. Direct support units give technical assistance and instruction to the personnel of using units in the performance of organizational maintenance. This service makes it possible for commanders to maintain their equipment in acceptable standards of serviceability and materially reduces the workload of higher echelons of maintenance. Provision of direct support maintenance is the responsibility of major field commanders. Within the theater army logistical command it is the responsibility of commanders of advance and base logistical commands.

83. General Support Maintenance

General support maintenance (*fourth echelon*) of medical equipment is that maintenance performed by specialized medical service maintenance units operating in support of direct support maintenance units. The principal function performed by these units is the repair of equipment for return to the user or to the maintenance float stock. General support maintenance of medical equipment for theater army logistical command units and for designated units and installations of other commands located in the communications zone is provided by the appropriate medical service units of the base and advance logistical commands. General support maintenance units of an advance logistical command receive unserviceable medical equipment which is beyond the repair capabilities of field army maintenance units. Equipment requiring

fourth echelon repair is assembled in collecting points, classified, and assigned to general support maintenance units for repair. Fourth echelon repair for return to user is performed only in special cases involving critical operational requirements. Medical equipment maintenance organizations of the field army evacuate to the advance logistical command of the communications zone all medical equipment that is beyond their repair capabilities unless the situation dictates that the equipment be left in place for advancing support units to repair. Medical service maintenance units performing fourth echelon maintenance normally operate out of semimobile or fixed installations giving service within designated areas.

89. Depot Maintenance

Depot maintenance (*fifth echelon*) of medical equipment is that maintenance performed by specialized medical service maintenance units. It consists of the complete reconditioning of equipment for return to depot stocks. This echelon of maintenance will not be performed in oversea areas in time of war (AR 750–4). When authorized to be performed in a theater of operations, it is a responsibility of the base logistical commands and is performed by medical service depot maintenance units assigned to the base logistical commands, or by contractual arrangements with civilian concerns, or both. Material of a highly technical nature, the repair of which requires skills and facilities not available in the theater, is evacuated to the zone of interior in accordance with policies established by the Department of the Army. If equipment is economically unreparable, it is scheduled for regulated cannibalization (pars. 96–98) or for salvage.

Section II. ARMY MEDICAL SERVICE EQUIPMENT MAINTENANCE FACILITIES

90. General Considerations

a. Location and Types of Maintenance Facilities.

(1) Medical maintenance facilities are organic to the medical depot (communications zone), TOE 8–187, which is allocated to the base logistical command of the theater army logistical command. This depot provides medical supply, optical, and medical maintenance support in the base logistical command for approximately 200,000 troops in the theater. Augmentation of this depot is possible whereby its capabilities can be increased and the unit provide this type of support for approximately 400,000

or 600,000 troops in the theater. The maintenance capabilities of the organic maintenance section of this depot can be increased by utilization of cellular teams of TOE 8–500. The maintenance section of this depot provides direct support, general support, and depot maintenance, when authorized, for medical equipment located in the base logistical command. In addition, the base logistical command will provide general support maintenance, if required, for the advance logistical command of the theater army logistical command.

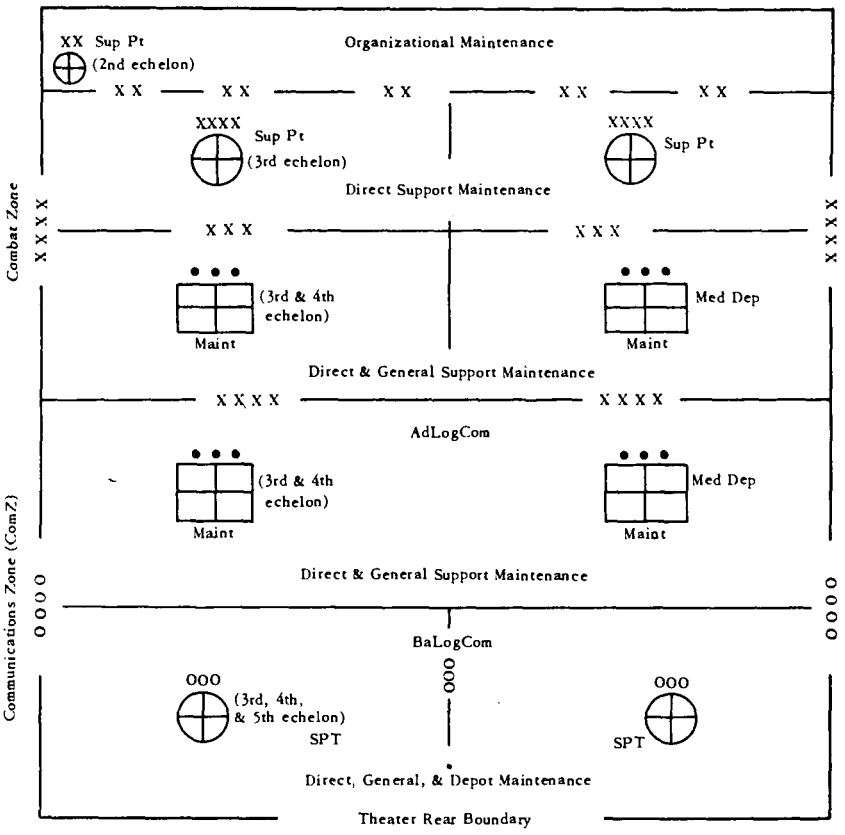
(2) Direct support and general support maintenance facilities for medical equipment in the combat zone and advance logistical command in the communications zone will be provided for by cellular teams of TOE 8–500 and/or medical maintenance organizations for which tables of organization and equipment are non-existent at the present time. The surgeons of the field army and the advance logistical command of the theater army logistical command are responsible for the provision of adequate medical equipment maintenance facilities to sustain the combat operations of the supported field army and to furnish logistical support other than issue of supplies to the units within their respective areas.

b. Use of Indigenous Personnel. The table of organization for the Medical Depot (ComZ), TOE 8–187, has been designed with "Type B" columns whereby a lesser requirement of United States military personnel is indicated. For details concerning use of civilian labor, refer to paragraph 33.

c. Medical Equipment Maintenance Detachment Teams. TOE 8–500 includes Teams GC, GD, and GE, each capable of performing field maintenance or base maintenance for a force of a specific size or of augmenting maintenance capabilities of the Medical Depot (ComZ). These teams are normally assigned to the theater army logistical command on the basis of requirements established by the theater Army commander. Team GC is capable of performing field medical equipment maintenance for approximately 50,000 troops; team GD for 100,000 troops; and team GE is capable of performing base medical equipment maintenance functions as required. (For details of personnel and capabilities of these teams, refer to TOE 8–500.)

91. Deployment of Medical Equipment Maintenance Organizations

Details on developing the Army Medical Service Troop List and for the phasing of medical service units may be found in chapter 3.



*Depot maintenance will not be performed in oversea areas in time of war.

Figure 4. Normal deployment of medical equipment maintenance units, theater of operations.

Figure 4 is a schematic diagram showing the normal deployment of medical equipment maintenance organizations within a theater of operations. These units are disposed laterally and in depth to offer the best possible service to the equipment being supported, consistent with the dispersion required by the threat of enemy nuclear attack. Medical equipment maintenance units providing direct support must remain sufficiently close to units they are supporting to provide adequate support. General maintenance facilities are located as far to the rear as possible, consistent with the overall availability of replacement items and the maximum efficient use of transportation. Such displacement and dispersion to the rear of medical equipment maintenance facilities providing general support is necessitated by the threat of enemy nuclear attack and the vulnerability of such installations to destruction by nuclear

weapons. As a rule, base maintenance shops, once established, remain in operation in the same locality as long as practicable without sacrificing service to the supported units.

Section III. MODIFICATION OF EQUIPMENT

92. Purpose

Material may be modified to increase safety of personnel, reduce excessive maintenance, or increase combat or operational effectiveness.

93. Responsibility

The chief of the developing agency having responsibility for the maintenance planning of the item to be modified will designate, in the modification work order itself, the establishments and categories of maintenance which are authorized or required to perform the modification and may prescribe time limits within which the modification will be accomplished. Modifications which will affect the working parts of materiel will not be made without the prior approval of the responsible developing agency, except that modifications which are vital to safety or essential operations may be made within an oversea command or by a task force with the approval of the commander of the oversea command or task force. The responsible developing agency will be informed of such modification at the earliest practicable date.

94. Procedure

Any individual or agency may submit suggestions for modifications through proper command channels. Use of DA Form 468, Unsatisfactory Equipment Report, for this purpose is encouraged. The head of the technical service having logistic responsibility for an item of material evaluates the need for a modification from a technical viewpoint and initiates action necessary for the accomplishment of modifications which he deems to be necessary and desirable. Policies and procedures for initiating and approving research and development modifications are prescribed in AR 705–5. The format for a modification work order is prescribed in AR 310–3.

95. System of Classifying Modification Work Orders

Modification work orders are classified as *urgent* or *normal*. The *urgent* classification requires that modification be accomplished on all items in the field immediately, and on items in depot stock prior to their being issued. The *normal* classification requires that the

modification be accomplished as soon as practicable in the field within current resources and the time limit prescribed by the head of the developing agency. Reports of progress are made to the responsible developing agency in accordance with AR 335–15. Technical services preparing modification work orders will insure that sufficient parts and materials are available in the supply system to support the modification. Captured enemy materiel may be modified according to the same procedure described above.

Section IV. CANNIBALIZATION OF EQUIPMENT

96. Definition of Term

Maintenance by "cannibalization" of equipment is the removal of serviceable parts of one item of equipment for use in repairing another item of equipment.

97. Authorization and Responsibility for Control

Cannibalization of equipment is prohibited except in forward areas where contact with the supporting units cannot be established quickly, and except as may be specifically authorized by the heads of the responsible technical services. Normally, the standing operating procedures of a command establish and prescribe the conditions under which serviceable parts from unserviceable items may be removed and utilized to restore similar items to a serviceable condition. There must be a control in order to eliminate the adverse effects which accompany ill-advised transfer of parts from an unserviceable item to a serviceable one. Normally, authority to transfer repair parts from an unserviceable item to a serviceable like item is ~~grantd~~ only when all of the conditions cited in *a* through *d* below are met.

a. When the major component or assembly from which the parts are to be removed is also inoperable because of the nonavailability of parts or is undergoing extensive time-consuming maintenance or modification.

b. When every possible supply action, including lateral supply, has been taken and an extensive delay is indicated.

c. When the failure to authorize an item transfer would adversely affect the mission of the unit.

d. When the man-hours required are not excessive and the item can be made completely serviceable.

98. Hazards

Stripping one piece of inoperable equipment to provide the repair parts for another is always a subject of considerable con-

troversy. Very often a commander will reason that it would be better to make one piece of equipment operational by taking a part from another, rather than to have two inoperable. Actually, cannibalization of equipment almost invariably results in reducing that equipment to a "skeleton," and the "victim" never again recovers completely. Normally, cannibalization is detrimental to a unit's overall preventive maintenance effort, except in those cases which are duly authorized.

CHAPTER 6

RATES: DEFINITIONS AND METHODS OF COMPUTATION

99. General

a. Rate, as most frequently used in military medicine, is a numerical expression of the number of times a particular event occurs in a specified population during a given period of time. Types of rates determined are Admission Rates, Mortality Rates, Incidence Rates (Specific Diseases), Prevalence Rates, Medical Noneffective Rates, and Case Fatality Rates. Rates and ratios are always dependent upon numerator and denominator relationships; therefore, *numerical data for both must be reliable* (AR 325–10).

b. Ratios express relationships between frequencies of occurrence of more or less related events. They may be expressed in terms of percentages when the relationship is between a part of and all of a particular class, such as the ratio of head injuries to all injuries (which include head injuries). When the relationship is between separate classes or components, such as the ratio of killed in action to wounded in action, the ratio is expressed in terms of the number of occurrences of the one in relation to a single occurrence of the other (1 KIA to 4 WIA, etc.).

c. Through the use of rates it is possible to make direct, ready, and meaningful comparisons of events related to different time periods and/or different populations. The computation of rates is a device by which absolute frequencies are reduced to relative frequencies with a common denominator to facilitate evaluation and comparison. This is accomplished by expressing both sets of events to be compared in terms of what the frequencies would have been had the time periods been of standard lengths and had the populations been of standard sizes. The number of occurrences of an event in two or more groups which differ in size of population or duration of experience may be accurately compared when these influences of population or time period are equalized by reduction of the data to rate form.

d. In order to calculate a rate, the elements needed are (1) frequency of the event, (2) length of the time period required to generate this frequency, and (3) size of the population in which

the frequency occurred. In addition, standards with respect to (4) time period and (5) population size must be decided upon. The formula thus derived is

$$\text{rate} = \frac{f \times \frac{T}{t}}{\frac{s}{k}} \qquad \text{or} \qquad \text{rate} = \frac{f \times T \times k}{t \times s}$$

in which f stands for the observed frequency (number of admissions, deaths, etc.), t for the observed time period, s for the observed strength or population, T for the standard time period (per day, per month, per year), and k for a standard unit of population (per 100, per 1,000, per 10,000, per 100,000).

e. A rate may also be calculated in which the time factors, t and T, are not included. Instead, the number of times a specific event occurs is related to a particular population *at one time*, or as though all of the cases occurred at the same time (par. 104*d*).

f. In addition to a rate being expressed as "rate per time period per standard unit of population" it may also be expressed as "rate per time period" in which the standard unit of population k has been omitted from the computation. This "rate per time period" is of value in Operations (S–3 or G–3), where it is of most importance to have the facts as to how many events (deaths, casualties, diseases) are occurring per designated time period (i.e., a death rate of 5 per day; a casualty rate of 20 per week; a hospital admission rate of 120 per month); but such a rate would be of little or no significance in making comparison. However, in using "rate per time period per standard unit of population" it would be possible to compare one rate with another with significance and understanding (i.e., a death rate of 5 per day per 10,000; a casualty rate of 20 per week per 10,000; a hospital admission rate of 120 per month per 10,000).

g. Suppose, for example, the following information were known about each of two particular military posts:

	POST "A"	*POST "B"*
Average strength (population)	21,000	15,000
Injuries incurred (frequency)	630	410
Time period	6 months	4 months

To determine which post had the greater risk of injury, it would be necessary to find the rate per a standard population for each. In both instances the standard time period T might be "per year" (12 months or 1 year) and the standard population k, "per 1,000 persons." By substituting these known values in the formula given in *d* above,

$$r = \frac{630 \times 12 \times 1{,}000}{6 \times 21{,}000} \qquad r = \frac{410 \times 12 \times 1{,}000}{4 \times 15{,}000}$$

$r = 60$ injuries/1,000/year $\qquad r = 82$ injuries/1,000/year

the rates would be 60 and 82 respectively and the comparison could be made.

100. Factors of the Rate

To prevent complications in the use of the elements of the rate, time period (observed and standard), strength or population (observed and standard), and frequency are considered separately in the following paragraphs.

101. Time Factor in Rates

a. The time period t over which the specific event occurred may be of any length and may be recorded in any of the various units of time. The standard time period T to which it is arbitrarily desired to reduce the experience (event) in computing a rate is most frequently taken as a year; although, for certain purposes daily rates are used. The value for T must always be expressed in the same unit as is used for the value of t. Thus, if what is desired is a *rate per year*, and if t (observed time period) is expressed in months, the value of T (standard time period) must be 12; if t is expressed in weeks, the value of T must be 52. Although both time periods must, of necessity, be expressed in the same units, these units may be per year, per month, per week, or per day. When it is necessary to be precise in computing an annual rate based upon a particular month's experience, the value of T will be 365 with the observed time period t as the specific number of days in the specific month (31, 30, 29, or 28).

b. When dealing with rates used in military medicine, the most frequently used standard time period T is one year, which gives annual rates as the number *per year*. This time period is used largely as a convenience so that various rates will have been prepared on the same standard. For some purposes, such as in planning and casualty studies, T is commonly used as one day, and the resultant rate is a daily one or the number *per day*.

c. In interpreting rates, it is important to be aware of what standard time period T was used and what the observed time period t actually was. A certain artificiality sometimes exists in an annual rate which is based on observations made over a much shorter time period, such as a month. An annual rate expresses the number of times an event would occur (per specified unit of population) during a year if that event took place throughout the entire year at the same rate as during the observed time period t. If the

t over which period the frequencies occur were a month in which, due to seasonal variation, the event is considerably different from that which occurs over the rest of the year, this artificiality is obvious since the annual rate which is represented by that month will be quite different from the rate which would be expected if the time period of observation were the entire year.

d. Two computational shortcuts which may be used in handling the time factor in calculating rates are as follows:

(1) If the observed time period t over which the frequency occurred is of the same length as is the standard time period T in which the rate is to be expressed, the calculation is simplified. For example, if the number of admissions to medical treatment facilities for disease over a particular *year* is known, the factor t is 1, and if this frequency is to be expresed as an *annual* rate, the factor T is also 1. Since the t and T may be cancelled out, the formula for determining rate may be written as follows:

$$\text{rate} = \frac{f \times \overbrace{1}^{1}}{\frac{s}{k}} \quad \text{or} \quad \text{rate} = \frac{f \times k}{s}$$

(2) When a reported frequency is for a report month of four or five weeks, the expression $\frac{T}{t}$ becomes either $\frac{52}{4}$ or $\frac{52}{5}$ which may be changed to 13 or 10.4 respectively. For example, for a four-week report month the formula may be written as follows:

$$\text{rate} = \frac{f \times 13 \times k}{s}$$

102. Strength Factor in Rates

a. The rate takes into account the observed strength or population s in which a particular event occurred. This is, ideally, the population which was actually exposed to risk or the total group to whom the event could happen. The *average* (or mean) strength s of the time period t in which the frequency of the event occurred should be used where practicable in order to have a more accurate measure. Particularly, where marked changes in strength or population s are occurring, the use of the strength "as of" a specific time (e.g., end of period) could distort the resultant rate. Average strength is usually computed by summing up the daily strength and by dividing this sum by the number of days in the period.

(See AR 40–417 for details on this computation in connection with the Morbidity Report.)

b. Most frequently, in the rates used in military medicine, the standard unit of strength or population k is taken as 1,000. This again is done largely as a convenience since the use of the same standard unit in most rates facilitates comparison. The use of a fairly large population unit reduces the extent to which it is necessary to deal with decimal fractions in the result. By selecting a power of ten, such as 1,000, the calculation is greatly simplified. In cases where the magnitude of the frequency is extremely small, it is customary to express the rate as a rate per 100,000 since the use of a standard unit of population k that is too small results in rates which are awkward to handle because they require differentiation among small decimal fractions. For example, the death rate for a particular disease of .025 deaths per 1,000 strength per year is more easily understood and used if it is expressed as 2.5 deaths per 100,000 strength per year. Other standard units of population may be used in particular situations.

c. Rates based on cases derived from very small strengths or populations s are subject to a high degree of variability and are usually very unreliable. It is not feasible, however, to set a rigid minimum size for the population s since this determination is largely a question of statistical judgment based upon the general level of magnitude and the stability of the data in each individual case.

d. Sometimes a computational shortcut may be taken in connection with the average strength factor s in the rate. In a situation where a *daily casualty rate* is desired and in which the time period t over which the observations were made is 19 days, the number 19 will enter in the formula as the factor t and will also be used to obtain the average strength (the sum of the 19 daily strengths divided by 19). Thus, if the sum of the 19 daily strengths is designated as Σs, the formula is written as follows:

$$\text{rate} = \frac{f \times \frac{1}{19}}{\frac{\Sigma s}{19}} \qquad \text{or} \qquad \text{rate} = \frac{f \times 1}{\Sigma s}$$

103. Frequency Factor in Rates

a. The frequency factor f in rate computation is the number of the specified kinds of events which occur during the observed time period t. It represents that particular event which is being measured (admissions, cases, deaths, etc.), and the frequency of its occurrence which is to be expressed in rate form in order to make

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annual all causes admission rate per 1,000 strength for this particular week is as follows:

$$\text{admission rate} = \frac{448 \times 52 \times 1{,}000}{1 \times 18{,}645} =$$

1,249.5 per 1,000 per annum

(Note that the rate during this particular week exceeds 1,000 in its numerical value expressed as number of admissions per 1,000 average strength per year.)

(3) During the period of 21 days, an infantry division with an average strength of 16,462 experienced 1,003 admissions to medical treatment facilities for treatment of battle injuries and wounds. Computation of a daily battle injury and wound admission rate is as follows:

$$\text{admission rate} = \frac{1{,}003 \times 1 \times 1{,}000}{21 \times 16{,}462} =$$

2.9 per 1,000 per day

(4) Among the various other kinds of events which may be computed in a manner similar to that used for admission rates are included rates of outpatient treatment, various kinds of casualties (died of wounds, wounded in action, etc.), disability separations, and malaria attacks. The last named event is mentioned because it is customary to compute a malaria attack rate rather than a malaria incidence rate. The difference is that instead of counting all new cases of the disease, as is done for the incidence rate, all new cases plus all readmissions are combined and used as the frequency for the malaria attack rate because of the difficulty in differentiating between new and readmission cases.

b. Mortality Rates. The mortality, or death, rate differs from the admission rate only in that the event which it measures is the number of deaths, rather than admissions, of patients. Since the magnitude of the frequencies is less, a large standard unit of population k is used (10,000 or 100,000) more frequently than in the case of admission rates. The standard time period T will usually be a year.

c. Incidence Rates. In an incidence rate, the event which is counted usually is the occurrence of cases of some specific disease. The frequency of incidence here may differ from the frequency of admission due to this same disease since some cases so diagnosed may come from patients whose admission to a medical treatment facility has been due to some other condition. For example, the incidence rate for influenza would be calculated by using the frequency f which would include all cases of individuals admitted

for this disease, as well as such cases as were diagnosed for patients whose causes for admission were not influenza. It is important to remember that what are ordinarily called disease incidence rates are based on observing the frequency of a specified event as reported among patients who are excused from duty. Thus, cases which are so mild as to require treatment on an outpatient basis are generally not included. In the case of certain conditions, such as common respiratory disease or some of the neuropsychiatric disorders, this may have a distinct bearing on the rates and on their interpretation.

d. Prevalence Rate. Prevalence rates measure the relative number of cases of a specified kind among a designated population at a particular time. They express the number of such cases per standard unit of population, usually per 1,000. They differ from the rates previously discussed in that the events so related are not occurring *over a period of time,* but rather the number of cases *at one time.* Suppose that at a particular post at which the strength is 3,115, all personnel are examined in an attempt to locate all cases of dermatophytosis (fungus infection of skin), and it is found that 112 persons have this condition. The prevalence rate is the expression which shows the equivalent number of cases per 1,000 strength; in this instance, 36 per 1,000 strength. The formula used in calculating the prevalence rate per 1,000 is

$$\text{prevalence rate} = \frac{f \times k}{s}$$

in which f stands for the number of cases of the specified kind found in the observed strength or population s, and k for the standard population (1,000). In actual practice, all of the observations on which a prevalence rate is based will sometimes not be made at one time or on the same day. Thus, over a period of 6 months, there may be 110,200 persons examined at Armed Forces Examining Stations in connection with possible induction. Suppose that out of this group 132 persons are found to have a psychosis. A prevalence rate of 1.2 per 1,000 may be computed by use of the above formula exactly as if all of the persons had been examined on the same day. The assumption made is that the actual prevalence rate has not varied throughout that period and the number of cases detected by the examinations spread throughout the period is the same as would have been found if all the examinations had been made at the same time.

e. Medical Noneffective Rate. The noneffective rate, a measure very frequently used in military medicine, may be regarded as a special case of the prevalence rate discussed in *d* above. This rate measures the prevalence of noneffectiveness with noneffectiveness being defined as "excused from duty for medical reasons."

(1) The noneffective rate may be computed for all patients excused from duty for all causes, or it may be computed for particular groups, such as all cases excused from duty due to disease (disease noneffective rate). Similarly, as was seen in connection with admission rates, the noneffective rate may pertain to all patients excused from duty as patients in any medical treatment facility (hospital and quarters), or it may be computed solely on the basis of patients excused from duty as hospital patients (hospital noneffective rate). These rates may be computed for any command or area; however, in interpreting them, it is necessary to keep in mind the possible effect on the rate resulting from the evacuation of patients for further treatment out of or into the command or area. Thus, the noneffective rate for a particular oversea area must be interpreted in the light of knowledge concerning the evacuation back to the United States of patients who would otherwise be included in the count of noneffective in the area. If in a particular command of 11,315 strength, there are at a particular time 249 persons who are excused from duty for medical reasons ("excused-from-duty patients" due to disease, nonbattle injury, or battle injury and wound), the noneffective rate of excused-from-duty patients is 22 per 1,000 and is called the "All Causes" noneffective rate.

(2) The noneffective rate may be computed by using the same formula as shown for computing the prevalence rate but in which f stands for the number of persons noneffective in the particular group being studied.

$$\text{noneffective rate} = \frac{f \times k}{s}$$

An alternate method of computation is frequently used, however, which is based on the number of noneffectives on the average day during a particular period rather than on a count of the number of noneffectives as of one particular day. The Beds and Patients Report (see change 1, AR 40–418) gives the total day on census during the period, and the Morbidity Report (see AR 40–417) gives the total number of days lost in the period. In both instances the total number of days ("on census" or "lost") may be devided by the number of days in the specific month to obtain the number of hospital patients or the number of excused-from-duty patients, respectively, on the average day of the month. The use of a daily

average number of noneffectives during a period, such as a report month, has the advantage over the use of a one day observation of that period in that it will be a more stable statistic, less susceptible of meaningless variations. Thus, the f in the formula will frequently be taken as the average daily number of noneffective during a particular period, and the resultant noneffective rate will be said to represent the average daily noneffective rate during the period. When the number of days lost in the period is used rather than the number of patients on the average day of the period, the formula will appear as follows:

$$\text{noneffective rate} = \frac{\textit{days lost} \times 1{,}000}{\textit{days in the period} \times \textit{average strength}}$$

This is merely another expression of the same relationship. Still another relationship involving the noneffective rate may be expressed by combining the above formula with that for the daily admission rate. This gives the following relationship:

$$\text{noneffective rate} = \frac{\text{daily admission rate} \times}{\text{average days per patient}}$$

f. Case Fatality Rate. The case fatality rate, also called case fatality ratio, is a measure of mortality for a particular disease, injury, condition, or group of conditions. It shows the relationship of the number of deaths due to a particular cause to the number of cases of that particular condition among which the deaths occurred. This rate is ordinarily expressed as a percentage, i. e., the number of deaths per 100 such cases.

(1) The formula used in calculating the case fatality rate is:

$$\text{case fatality rate} = \frac{f \times k}{c}$$

in which c stands for the number of cases of the kind studied, f for the number of these cases which resulted in death, and k for the standard population (100). As an example, a medical officer finds that in a particular series of 283 cases of meningococcal meningitis there were 11 cases where the outcome of the case was death of the patient due to the cause. The case fatality rate for this disease is found, through using the above formula, to be 3.9 percent.

(2) Approximations of the case fatality rate are somtimes obtained by relating the number of deaths due to a particular cause in a particular population over a given time to the number of cases of that same disease or other

condition which occurred in that same population during that same period. This is not a precise determination since the f factor does not represent all of the deaths but only those which result among the particular group of cases c. The method assumes that the number of deaths from this group of cases which occur after the period during which the cases and deaths were counted is exactly counterbalanced by the number of deaths occurring during (and counted in) the period from among the cases which occurred prior to the period. The degree to which this method produces a correct case fatality rate will, therefore, depend upon the length of the time period observed and the rapidity with which death ordinarily follows the occurrence of the particular condition, as well as upon the magnitude of the number of cases. The last named factor will also affect the reliability of the case fatality rate when it is computed in the conventional manner.

(3) Case fatality rates may be computed for groups of conditions in the same manner as for specific diseases. One such frequently used measure is the case fatality rate for wounded or injured-in-action cases. This measure indicates the chances of survival among those casualties who reach medical treatment. For the Korean War, on the basis of AGO data now available, there were among United States Army personnel 79,630 wounded or injured-in-action cases, and 2,034 of this number died of their wounds or injuries. Thus, for this war,

$$\text{case fatality rate} = \frac{2{,}034 \times 100}{79{,}630} \text{ or } 2.6 \text{ percent}$$

This figure is sometimes presented in another way by saying that out of every 1,000 wounded or injured-in-action cases (excluding the KIA), 974 survive.

CHAPTER 7

EXPERIENCE FACTORS: DISEASE, NONBATTLE INJURY, AND BATTLE CASUALTY

Section I. GENERAL CONSIDERATIONS

105. General

This chapter is intended to supply basic principles, definitions, and data for diseases, injury, and casualty estimation to be used in medical planning. It is believed that in any major conflict the threat of nuclear weapons with their resultant mass destruction will be continuous. Until these weapons are used and data collected, however, the experience factors derived from past wars will be helpful in formulating plans for medical service.

106. Strength

Strength, actual or planned, is a most important factor in estimating medical requirements. It is represented by the "*s*" in the formulas given in chapter 6. Average strength is the average daily strength of a command or other group. It is computed by adding the strength on each day of the period under consideration and dividing the sum by the number of days in the period (par. 102). Military strength, especially in war, varies from day to day and, in smaller commands, within wide limits. In estimating military requirements there must be added to the United States Army strength the strength of all other elements of the population for which medical service must be provided by the Army Medical Service. Unless otherwise specified, military strength includes all active duty military personnel of the United States Army, but none other. The strength of the United States Army for World War II includes the strength of the United States Army Air Force, then a part of the United States Army; but for the Korean War, the strength of the United States Army does not include strength of the United States Air Force.

107. Admissions

As used in this chapter, admissions refer to those cases which are excused from duty for medical reasons (disease, injury, or

battle injury and wound). Admissions may be estimated for all excused-from-duty patients, both hospital and quarters. They may also be estimated for only those patients who are excused from duty in connection with admissions to hospitals, thus excluding cases treated in quarters only, in dispensary beds, etc. All of the admission rates exclude those patients who are treated on a duty status, as outpatients, except so far as some "carded for record only" may be included in hospital and quarters rates (AR 40–400). Outpatient cases must, however, be taken into account in making estimates for medical personnel and supply.

108. Classifications of Patients

a. General. Patients are classified according to the primary cause of initial admission to a medical treatment facility and are reported to The Surgeon General in one of three major classifications: disease, nonbattle injury, or battle casualty. When a patient is admitted for unrelated conditions simultaneously necessitating admission (for example, disease and nonbattle injury), the most serious condition present is used as the primary cause of initial admission, and is used in determining the classification. When a patient is admitted for several related conditions simultaneously necessitating admission, the condition that is first in the chain of etiology is designated as the primary cause of admission and governs the classification of the patient. Patients who are admitted to medical treatment facilities for battle wounds or battle injuries but who also require treatment for disease or nonbattle injury are, nevertheless, classified as battle casualties.

b. Disease. All patient other than battle injury and wound and nonbattle injury cases are classified as disease cases. Patients readmitted for the result of an "old" traumatism are considered as disease cases. An old traumatism is defined as a case readmitted for a condition that is a result of a previously recorded traumatism (battle or nonbattle) incurred in the military service. Patients suffering from reactions to medication (other than acute poisoning) and patients admitted for the sequelae of an injury incurred prior to entering the military service are classified as disease cases. Food poisoning cases or food infection cases, except when due to food containing nonbacterial poisons, are classified as disease cases. A battle casualty patient who is dropped from medical reports as a disposition to AWOL is, if readmitted, classified as a disease patient.

c. Nonbattle Injury. All traumatisms are classified as nonbattle injury except "old" traumatisms (as defined in *b* above) or battle injuries and wounds (*d* below). The term "traumatism" refers

to a condition of ill health caused by an external agent and includes conditions resulting from acute poisonings (even though taken internally) and from exposure to heat, cold, or light. Food poisonings or food infections due to food containing nonbacterial poisons are classified as nonbattle injury. Injuries due to the elements (frostbite, trench foot, immersion foot, etc.) are considered to the nonbattle injuries, even when incurred in combat areas.

d. Battle Casualty. For purposes of medical statistical reporting, a battle casualty patient (or battle injury and wound patient) is any patient admitted to a medical treatment facility for treatment of injuries and/or wounds either directly due to enemy action or sustained while engaged in combat and related thereto. A patient admitted as a battle casualty is reported as such so long as hospitalization is continuous and uninterrupted. Except for disposition by transfer to another medical treatment facility, disposal of a battle casualty patient from a medical treatment facility terminates his battle casualty status for medical reporting purposes. Patients suffering from mental disorders developed under battle conditions are classified as disease patients, not as casualties. Killed in action cases are reported separately from wounded or injured in action cases.

Section II. ADMISSIONS FROM DISEASE AND NONBATTLE INJURY

109. Average Peacetime Experience

The average daily admission rate to hospital and quarters for disease and nonbattle injury combined for United States Army troops serving in the continental United States during time of peace is approximately 1.2 per 1,000. This rate is influenced by many factors, the more important of which are discussed in succeeding paragraphs. Tables XIV and XV show separately the annual disease admission rate and the annual nonbattle injury admission rate to hospital and quarters by month and geographic area for the period July 1946 through June 1950, a four-year period, which may perhaps be taken as typical of "peacetime" experience. It should be noted that rates during these years were markedly below those of earlier peacetime years. While much of the decline results from improvements in the medical field, the rates need to be used with appropriate caution. The data are arithmetic averages of the annual admission rates for each month of the year, for the total Army, continental United States, total overseas, and individual major oversea commands. Daily admis-

sion rates may be computed from each of the annual rates by dividing by 365. Tables XVI and XVII present the corresponding annual admission rates to hospital only. For purposes of comparison of "peacetime" experience with "wartime" experience, tables XVIII through XXII present corresponding data (where available) for World War II and the Korean War.

Table XIV. Average Annual Disease Admission Rates, Hospital and Quarters, U. S. Army [1] July 1946—June 1950, by Month and by Area

Rates expressed as admissions per 1,000 strength per year

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Army [2]	538	583	535	449	416	398	468	478	450	446	424	421
United States	429	509	472	372	339	315	359	361	346	352	327	317
Overseas [2]	689	679	622	558	524	513	612	635	597	586	570	572
Alaska	358	553	522	454	419	362	332	307	344	328	323	372
Caribbean	458	404	406	410	435	427	471	538	548	538	488	424
Europe [3]	770	752	669	602	574	581	716	754	710	698	676	656
Far East [4]	720	710	656	579	540	517	570	598	560	539	506	522
North America	350	400	408	360	365	349	372	430	365	344	318	327
Pacific [5]	368	380	333	324	302	364	405	423	360	389	422	427
Other areas [6]	617	560	544	546	468	458	760	739	751	773	702	725

[1] Includes U. S. Army Air Forces and U. S. Air Force through June 1949.

[2] Includes Mediterranean through December 1947; not shown separately.

[3] Includes Austria and Trieste for the complete period (July 1946–June 1950) although Trieste became separate command in January 1948 and Austria became separate command in July 1949.

[4] Included as Southwest Pacific area with Pacific theaters prior to January 1947.

[5] Includes Pacific Ocean area and Southwest Pacific area through December 1946.

[6] Includes China-Burma-India through January 1949, Canada, Turkey, Saudi Arabia, Iceland, Greenland, Newfoundland, and military mission to Korea.

Table XV. Average Annual Nonbattle Injury Admission Rates, Hospital and Quarters, U. S. Army [1] July 1946—June 1950, by Month and by Area

Rates expressed as admissions per 1,000 strength per year

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Army [2]	53	54	54	56	61	58	56	56	58	56	54	53
United States	44	45	45	48	55	51	46	46	47	48	45	43
Overseas [2]	65	66	66	67	70	69	71	71	72	70	70	69
Alaska	103	142	103	94	82	96	91	83	93	81	89	113
Caribbean	68	73	89	68	58	61	68	72	72	72	73	64
Europe [3]	74	74	72	77	83	82	84	90	95	84	80	76
Far East [4]	56	54	56	60	64	59	61	57	55	59	54	55
North America	79	80	68	62	53	71	87	80	62	51	79	83
Pacific [5]	52	64	68	62	61	74	69	72	59	62	68	69
Other areas [6]	66	48	34	19	50	58	85	53	51	97	95	62

[1] Includes U. S. Army Air Forces and U. S. Air Force through June 1949.

[2] Includes Mediterranean through December 1947; not shown separately.

[3] Includes Austria and Trieste for the complete period (July 1946–June 1950) although Trieste became separate command in January 1948 and Austria became separate command in July 1949.

[4] Included as Southwest Pacific area with Pacific theaters prior to January 1947.

[5] Includes Pacific Ocean area and Southwest Pacific area through December 1946.

[6] Includes China-Burma-India through January 1949, Canada, Turkey, Saudi Arabia, Iceland, Greenland, Newfoundland, and military mission to Korea,

See Ch # 3

Table XVI. Average Annual Disease Admission Rates, Hospital Only, U. S. Army July 1946—June 1950, by Month and by Area

Rates expressed as admissions per 1,000 strength per year

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Army [2]	350	387	351	305	281	270	316	319	300	298	284	274
United States	332	399	358	292	265	247	286	287	270	275	255	240
Overseas [2]	380	371	341	322	304	302	355	362	342	333	329	323
Alaska	198	258	238	247	232	206	206	182	195	194	189	196
Caribbean	304	264	262	281	281	282	331	354	334	340	288	267
Europe [3]	436	436	386	359	335	344	386	397	393	390	386	368
Far East [4]	378	361	340	318	304	295	345	347	313	292	282	283
North America	301	350	334	320	316	292	335	386	315	306	276	295
Pacific [5]	229	252	229	232	226	267	268	294	255	272	284	266
Other areas [6]	396	396	330	302	308	278	408	472	392	478	406	459

[1] Includes U. S. Army Air Forces and U. S. Air Force through June 1949.

[2] Includes Mediterranean through December 1947; not shown separately.

[3] Includes Austria and Trieste for the complete period (July 1946–June 1950) although Trieste became separate command in January 1948 and Austria became separate command in July 1949.

[4] Included as Southwest Pacific area with Pacific theaters prior to January 1947.

[5] Includes Pacific Ocean area and Southwest Pacific area through December 1946.

[6] Includes China-Burma-India through January 1949, Canada, Turkey, Saudi Arabia, Iceland, Greenland, Newfoundland, and military mission to Korea.

Table XVII. Average Annual Nonbattle Injury Admission Rates, Hospital Only, U. S. Army [1] July 1946—June 1950, by Month and by Area

Rates expressed as admissions per 1,000 strength per year

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Army [2]	40	40	40	41	46	44	43	42	46	45	43	41
United States	36	36	36	38	43	42	37	37	40	40	37	35
Overseas [2]	46	45	46	46	48	48	51	50	54	54	52	50
Alaska	44	54	44	38	41	38	42	51	41	36	43	58
Caribbean	47	41	56	44	36	40	42	45	40	47	46	42
Europe [3]	54	55	53	56	58	58	62	64	72	64	60	57
Far East [4]	42	39	38	40	44	42	44	41	42	47	42	41
North America	77	79	68	59	49	67	81	76	58	42	73	65
Pacific [5]	31	41	47	43	45	58	49	44	40	56	55	50
Other areas [6]	42	40	22	7	20	24	38	23	31	67	54	54

[1] Includes U. S. Army Air Forces and U. S. Air Force through June 1949.

[2] Includes Mediterranean through December 1947; not shown separately.

[3] Includes Austria and Trieste for the complete period (July 1946–June 1950) although Trieste became separate command in January 1948 and Austria became separate command in July 1949.

[4] Included as Southwest Pacific area with Pacific theaters prior to January 1947.

[5] Includes Pacific Ocean area and Southwest Pacific area through December 1946.

[6] Includes China-Burma-India through January 1949, Canada, Turkey, Saudi Arabia, Iceland, Greenland, Newfoundland, and military mission to Korea.

Table XVIII. Average Annual Disease Admission Rates, Hospital and Quarters, U. S. Army [1] World War II, 1942–1945, by Month and by Area

Rates expressed as admissions per 1,000 strength per year

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Army	784	774	750	673	627	610	595	600	578	576	610	719
United States	782	776	749	653	594	556	530	543	538	530	558	700
Overseas	728	704	702	707	687	724	698	699	652	661	695	721
Africa-Middle East	871	769	765	815	984	744	1,229	1,142	1,140	931	845	781
Alaska	614	596	605	615	653	546	493	450	444	436	467	486
Burma-China-India	848	744	755	811	1,048	1,138	1,360	1,104	1,045	866	766	769
Caribbean	642	643	641	650	655	684	674	668	603	607	606	594
European	891	884	735	607	557	497	477	462	468	571	793	800
Mediterranean	828	740	702	689	669	841	880	940	861	752	768	861
North America	582	546	514	528	556	543	461	446	445	432	441	529
Pacific [2]	676	728	759	828	795	823	765	761	708	676	648	689

[1] Includes U. S. Army Air Forces.

[2] Southwest Pacific area and Pacific Ocean area combined.

Table XIX. Average Annual Nonbattle Injury Admission Rates, Hospital and Quarters, U. S. Army [1] World War II, 1942–1945, by Month and by Area

Rates expressed as admissions per 1,000 strength per year

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Army	96	91	89	88	92	92	93	89	82	80	78	76
United States	75	75	72	69	74	78	78	76	70	66	62	55
Overseas	129	118	117	120	121	114	117	112	107	106	104	108
Africa-Middle East	116	96	107	106	107	101	136	119	110	104	93	103
Alaska	155	148	146	138	130	137	126	128	132	124	127	134
Burma-China-India	110	98	95	100	80	100	98	98	74	67	78	85
Caribbean	107	96	89	96	86	85	82	82	75	78	74	74
European	137	128	102	94	92	89	100	88	84	90	90	96
Mediterranean	159	131	121	126	130	124	130	122	110	92	99	107
North America	138	129	109	104	109	114	119	108	102	103	100	102
Pacific [2]	107	110	122	126	130	125	119	124	124	120	114	112

[1] Includes U. S. Army Air Forces.

[2] Southwest Pacific area and Pacific Ocean area combined.

Table XX. Average Annual Disease Admission Rates, Hospital and Quarters, U. S. Army, Korean War, July 1950—June 1953, by Month and by Area

Rates expressed as admissions per 1,000 strength per year

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Army	618	606	548	477	441	422	393	439	433	416	415	440
United States	560	600	535	445	389	354	317	333	331	341	340	379
Overseas	704	614	575	527	521	518	504	577	563	517	520	525
Alaska	622	434	371	347	333	287	307	300	288	374	331	308
Caribbean	454	491	467	590	618	523	462	430	402	415	391	398
Europe	699	531	506	462	416	427	463	459	463	479	470	478
Austria	648	425	409	377	281	316	391	375	401	418	425	360
Trieste	827	850	713	427	375	365	374	427	353	445	471	420
Pacific	334	398	417	555	477	333	294	243	239	311	251	277
Far East [1]	778	714	659	600	608	617	584	745	698	593	600	615
Korea	832	751	671	591	616	628	626	946	808	605	625	630
Other areas [2]	277	340	335	280	268	302	231	221	274	237	253	269

[1] Includes Korea.

[2] Includes Canada, Turkey, Iran, Saudi Arabia, French Morocco, Iceland, Greenland, and Newfoundland.

Table XXI. Average Annual Nonbattle Injury Admission Rates, Hospital and Quarters, U. S. Army Korean War, July 1950—June 1953, by Month and by Area

Rates expressed as admissions per 1,000 strength per year

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Army	71	70	60	57	65	63	66	73	71	66	65	69
United States	45	46	44	46	50	52	54	59	52	53	50	44
Overseas	114	110	87	76	87	79	83	91	95	83	87	110
Alaska	134	99	94	79	92	90	103	93	84	83	92	104
Caribbean	77	72	79	67	69	68	57	64	60	65	71	70
Europe	71	78	68	65	69	75	88	82	81	80	73	71
Austria	129	82	57	59	66	54	85	70	69	74	86	67
Trieste	83	77	57	80	63	74	68	69	65	71	79	52
Pacific	33	39	42	44	67	59	57	37	39	33	37	29
Far East [1]	143	137	104	92	104	91	89	110	118	95	104	142
Korea	187	177	127	107	127	107	119	160	156	115	126	183
Other areas [2]	14	11	15	9	11	16	27	31	12	10	11	19

[1] Includes Korea.

[2] Includes Canada, Turkey, Iran, Saudi Arabia, French Morocco, Iceland, Greenland, and Newfoundland.

Table XXII. Average Annual Nonbattle [1] Admission Rates, Hospital Only, U. S. Army, Korean War, July 1950—June 1953, by Month and by Area

Rates expressed as admissions per 1,000 strength per year

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Army	379	389	350	310	283	263	271	290	278	276	271	285
United States	416	432	397	344	304	281	271	280	275	284	278	285
Overseas	373	339	297	268	263	243	275	302	283	268	268	302
Alaska	330	275	234	224	214	197	213	220	203	258	234	237
Caribbean	226	262	222	260	258	231	253	249	223	239	205	198
Europe	376	319	292	271	253	251	291	278	280	303	298	288
Austria	699	467	427	391	311	320	406	389	424	428	458	379
Trieste	570	545	421	332	305	293	295	331	293	358	394	272
Pacific	252	325	349	499	469	328	315	235	259	313	248	268
Far East [2]	382	355	307	270	269	260	287	357	311	263	266	328
Korea	411	395	327	273	274	248	309	459	341	264	261	347
Other areas [3]	76	157	88	101	100	14	37	33	57	63	52	56

[1] Disease and nonbattle injury combined.
[2] Includes Korea.
[3] Includes Canada and Iran.

110. Seasonal Variation

The incidence of sickness varies with the season. Seasons, in turn, vary with the climate. The seasonal variation for troops in the United States is shown in table XXIII, which sets forth the experience from July 1946 through June 1950 and which is based on the data presented in tables XIV and XV.

111. Effect of Climate

a. Climate is so closely associated with other environmental factors, such as density of population, sanitation, etc., that it is difficult to evaluate the effect of climate alone. It is estimated, however, that under favorable conditions the sickness in temperate climates should be approximately that expected in the United States. Statistical data showing the effect of climate are available in the form of rates for the various geographical areas of the world, chiefly major oversea commands. These data are presented in tables XIV through XVII.

b. For planning purposes, the effect of climate (that is, geographical area) can be taken into consideration using the following approximate daily hospital admission rates for nonbattle causes (diseases and nonbattle injuries) :

Major Oversea Command	*Daily rate per 1,000*
Alaska	0.9
Austria	0.8
Caribbean	1.0
Europe	1.0
Far East	1.2
Pacific	0.9
Trieste	1.1

Table XXIII. Average Daily Nonbattle Admission Rates to Hospital and Quarters, U. S. Army Troops in United States July 1946—June 1950.

Month	Daily rate per 1,000	Percent of average daily rate for year
January	1.30	112
February	1.52	131
March	1.42	122
April	1.15	99
May	1.08	93
June	1.00	86
July	1.11	96
August	1.12	97
September	1.08	93
October	1.10	95
November	1.02	88
December	0.99	85
Average for year	1.16	100

These rates are estimated rates based on Army experience over the two fiscal years from July 1950 through June 1952. It should be borne in mind that these rates reflect an experience unlike that of World War II. During World War II, United States Army troops were engaged in combat in several major oversea areas. In the experience on which the above rates have been based, all areas were free from the effect of combat with the exception of the Far East. Because of such limitations, care should be exercised in the use and interpretation of these data. In case of worldwide combat, the nonbattle daily hospital admission rates shown above should be expected to be increased considerably.

112. Effect of Race

Hospital and quarters admission rates for sickness and nonbattle injuries in Negroid enlisted troops is approximately 20 percent higher than among Caucasion enlisted troops. The effect of race is even more apparent when considering certain specific diseases.

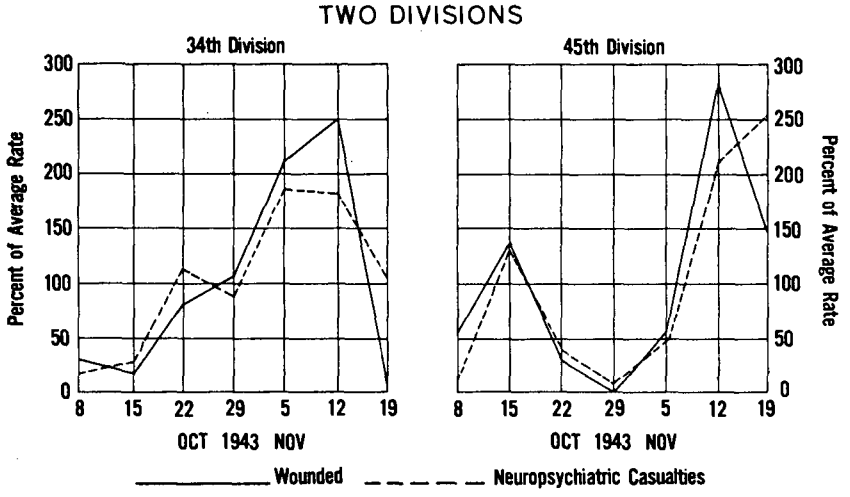
113. Effect of Seasoning of Troops

All other factors being equal, the admission rate for disease is usually higher among recruits than among seasoned troops. Replacement training stations have higher disease admission rates than other stations in the United States. The difference in rates is particularly noticeable with respect to the various respiratory diseases, for which the rate at replacement training stations is sometimes twice the rate at other stations.

114. Effect of Type of Action

Disease and nonbattle injury rates in the theater of operations are significantly influenced by the type of action in which the troops are engaged. No statistics are presently available concerning the variation in these rates due to special types of operations such as mountain, jungle, desert, arctic, airborne, and amphibious. Data have been compiled, however, from selected experiences of United States Army divisions and regiments in the Korean War. These selected experiences (retrograde, defense, general offensive, limited offensive, and pursuit) show a wide variation in disease and nonbattle injury. For divisions the total nonbattle daily admission rate per 1,000 ranges from 2.53 in pursuit to 6.06 in defense (table XXIV). In comparing these rates with those shown in table XLIII for battle casualties in the small operations, it can be readily seen that nonbattle casualty rates tend to increase with increased battle casualty rates. Al-

though environmental circumstances and the previous experience of troops alter the relationship in many ways, a high correlation has been shown between wounding, for example, and psychiatric breakdown in combat troops. Figure 5 shows plotted data of two divisions in World War II, which are considered typical. Obviously types of action which produced higher than average battle casualties could be expected to produce higher than average disease rates, especially neuropsychiatric.



(From Gilbert W. BEE Beebe, and Michael E. Debakey, BATTLE CASUALTIES 1952. Courtesy Charles C. Thomas, Publisher, Springfield, Illinois)

Figure 5. Relation between rates for neuropsychiatric and wounded admissions.

Table XXIV. Nonbattle Experience, by Selected Types of Action, U. S. Army Divisions and Regiments, Korea *

Rates expressed as cases per 1,000 average strength per day

Based on experience as indicated	Type of action	Disease (Incl NP)	NP [7]	Nonbattle injury	Total [1], nonbattle losses
Two divisions [2] 22 July–4 Aug, 1950, and Three divisions [3] 25 Nov–1 Dec, 1950	Retrograde				
	Division	2.33	0.10	0.96	3.29
	Regiment	2.41	----------	1.08	3.49
Three divisions [4] 2–15 Sep, 1950	Defense				
	Division	5.08	1.42	0.98	6.06
	Regiment	5.26	----------	1.10	6.36
Three divisions [4] 16–22 Sep, 1950	General Offensive				
	Division	4.12	1.02	0.91	5.03
	Regiment	4.30	----------	1.01	5.31
Four divisions [5] 27 Jan–16 Feb, 1951	Limited Offensive				
	Division	2.70	0.18	1.03	3.73
	Regiment	2.82	----------	1.15	3.97
Four divisions [6] 23 Sep–13 Oct, 1950	Pursuit				
	Division	2.02	0.08	0.51	2.53
	Regiment	2.09	----------	0.57	2.66

* For the purpose of these estimates rates for battalions may be assumed to be identical with those listed for regiments.

[1] Total nonbattle losses include disease (including neuropsychiatric) and nonbattle injury. The rates for *divisions* were computed from the actual number of admissions and strengths reported by the divisions on their weekly summary reports (DD Form-442, Morbidity Report, and DD Form 443, Beds and Patients Report). For *regiments*, data are not available for these same periods; thus the rates for regiments have been estimated. These estimates were prepared by relating an appropriate factor to the actual computed rate for the entire division. The factors were based on the relative proportion of total division admissions and strengths that may be attributed to the regiments. The exact proportion was determined by examining certain reports for which experience was available for both regiments and divisions. In the above computations of rates for regiments, the following factors were used: disease, 1.04; and nonbattle injury, 1.12.

[2] 1st Cavalary Division and 25th Infantry Division.

[3] 1st Cavalry Division and 24th and 25th Infantry Divisions.

[4] 1st Cavalry Division and 2d and 25th Infantry Divisions.

[5] 1st Cavalry Division and 3d, 24th, and 25th Infantry Divisions.

[6] 1st Cavalry Division and 2d, 24th, and 25th Infantry Divisions.

[7] NP rates for regiments are not computed separately but are included in the disease column. To obtain a spread for branch of service, it is suggested that the rate computed for the division be used increased by 20% for the infantry and armor and decreased by 20% for all supporting troops.

115. Range of Variation From Average Experience

a. In the foregoing paragraphs are discussed certain factors that influence the admission rate for disease and nonbattle injury, such as the location of the command in relation to climate, the season of the year, and local sanitary conditions, the constitution of the command in regard to race, and the type of action the troops are engaged in. The variation from average experience that may result from combinations of these and other factors may be considerable. Table XXV shows a frequency distribution of the combined disease and nonbattle injury admission rate to hospital and quarters at 69 of the larger Army stations in the United States in calendar year 1953. It can be seen that there is wide variation from station to station; most stations show an admission rate near the overall average rate of 397 for all stations in the United States, but some show very low rates and a very few show extremely high rates.

b. The range of variation from the average experience is also evident from examination of the disease and nonbattle injury admission rates to hospital and quarters in each Army area in the United States in calendar year 1953. These rates, expressed as admissions per 1,000 average strength per year, are shown in table XXVI.

Table XXV. Frequency Distribution of Disease and Nonbattle Injury Admission Rates to Hospital and Quarters at 69 Selected Army Stations in United States, 1953

Rate [1]	Frequency
0–99	0
100–199	6
200–299	14
300–399	18
400–499	16
500–599	9
600–699	3
700–799	2
800–899	0
900–999	1
Total	69

[1] Expressed as the number of admissions per 1,000 average strength per year.

Note. The average rate for all stations in the United States in 1953 was 397 admissions per 1,000 strength per year.

Table XXVI. Disease and Nonbattle Admission Rates by Army Area in United States During 1953

Army area	Rate	Percent of total United States rate
First Army Area	325	82
Second Army Area	362	91
Military District of Washington	388	98
Third Army Area	359	90
Fourth Army Area	441	111
Fifth Army Area	467	118
Sixth Army Area	438	110
Total United States	397	100

Section III. BATTLE CASUALTIES (NON-NUCLEAR)

116. Introduction

Data in this section are principally of World War II and the Korean War. Weapons and methods of warfare have changed in the past from war to war. These changes have always been reflected in changes in the battle casualties. It is possible that experience factors of World War II and the Korean War may be changed considerably in future wars, particularly in view of the possibility of chemical, biological, and nuclear warfare.

117. Battle Casualty Statistics

a. Definitions. In 1953, the Department of Defense officially established common definitions for use by all services as the basis for the collection and dissemination of battle casualty statistics. A battle casualty is any person lost to his organization because he is killed, wounded, missing, captured, or interned, provided such loss is incurred in action. *In action* characterizes the casualty status as having been the direct result of hostile action, or sustained in combat and related thereto, or sustained while going to or returning from a combat mission, provided that the occurrence was directly related to hostile action. Injuries due to the elements or self-inflicted wounds are not considered to have been sustained in action, however, and are, therefore, not reported as battle casualties. Battle casualties include the following:

(1) *Wounded in action (WIA).* This term is used to describe all battle casualties who have incurred a traumatism or injury due to external agent or cause, with the single exception of the killed in action. Thus, broadly used, the term encompasses all kinds of wounds and other injuries

incurred in action, whether there is a piercing of the body, as in a penetrating or perforating wound, or not, as in a contused wound; all fractures; all burns; all blast concussions; all effects of gases and like chemical warfare agents; and the effects of exposure to radioactive substances. Those battle casualties who require admission to a hospital or corresponding field activity or who die of their wounds after reaching *any* medical treatment facility are reported to The Adjustant General of the Army as wounded in action. Subsequent reporting to The Adjutant General of the Army *as died of wounds* may be required. It should be noted that the *wounded in action* category includes the *died of wounds received in action,* but excludes the *killed in action.* Individual medical records and morbidity reports received by The Surgeon General include, in addition to these wounded in action, all other individuals wounded or injured in action and treated by medical treatment facilities without requiring admission to a hospital. This includes persons admitted and then returned to duty at installations forward of the hospitals as well as persons treated on an outpatient status only. These categories are separately identified in the medical reports.

(2) *Died of wounds received in action (DOW).* This term is used to describe all battle casualties who die of wounds or other injuries received in action, after having reached any medical treatment facility. These cases are differentiated from battle casualties who are found dead or who die before reaching a medical treatment facility (the *killed in action* group). It should be noted that the criterion is: *reaching a medical treatment facility while still alive.* All cases counted as *died of wounds received in action* are also always counted as *wounded in action.*

(3) *Killed in action (KIA).* This term is used to describe battle casualties who are killed outright or who die of wounds or other injuries before reaching *any* medical treatment facility. This provides an objective basis for distinction between these cases and the *died of wounds received in action* cases, since it is often impracticable to determine whether deaths in combat were or were not instantaneous. *Killed in action* cases are never included in the *wounded in action* category or in the *died of wounds* category.

(4) *Missing in action (MIA).* This term is used to describe all battle casualties whose whereabouts or actual fate

cannot be determined and who are not known to be in an unauthorized absence status (desertion or absence without leave). Missing in action casualties are not usually included in medical statistical records or reports received by The Surgeon General, but are reportable to The Adjutant General.

(5) *Captured.* This term is used to describe all battle casualties definitely known to have been taken into custody by a hostile force as a result of and for reasons arising out of any armed conflict in which armed forces of the United States are engaged. Captured casualties are not usually included in medical statistical records or reports received by The Surgeon General but are reportable to The Adjutant General.

(6) *Interned.* This term is used to describe all battle casualties known to have been taken into custody by a nonbelligerent foreign power as the result of and for reasons arising out of any armed conflict in which armed forces of the United States are engaged. Interned casualties are not usually included in medical statistical records or reports received by The Surgeon General, but are reportable to The Adjutant General.

b. Regulations. Regulations pertaining to the casualty report to The Surgeon General and The Adjutant General are the following:

AR 40–400, Individual Medical Records.
AR 40–417, Morbidity Reports, Tables, Charts.
AR 40–418, Beds and Patients Report.
AR 40–419, Outpatient Report.
AR 40–423, Recording of Anatomical Locations.
AR 40–424, Preparation and Maintenance of Clinical Records.
AR 600–65, Casualties.
AR 600–66, Reports of Casualties Originating in Combat Areas.

118. Battle Casualties and Deaths in Principal Wars

a. Table XXVII and XXVIII present United States Army statistics on the killed in action, wounded in action, and deaths in the principal wars of the United States. Nonbattle deaths are shown in table XXVII for the sake of completeness and comparison with battle deaths. World War II was the first war in which battle deaths exceeded disease deaths.

b. Based for the most part on the data in tables XXVII and XXVIII, various rates, ratios, and percentages have been computed

and are presented in tables XXIX and XXX. Table XXIX shows various types of casualty rates (wounded in action rate, killed in action rate, death rate, etc.) for the principal wars. These rates are expressed as cases per 1,000 average strength per year. Table XXX presents several of the frequently used percentages and ratios, such as the probability of death when hit by the enemy, the case fatality rate for the wounded, and the *killed in action/wounded in action* ratio.

119. Distribution of Casualties by Branch of Service

Table XXXI shows the distribution of casualties (KIA, WIA, and DOW only) by branch of service among United States Army personnel (excluding Air Corps) for World War II and among United States Army personnel in the Korean War, respectively. Since the Air Corps is no longer a branch of the Army, Air Corps branch personnel and flight officers have been excluded from the World War II distribution in order to present data more comparable with that of Korea. As was to be expected, the Infantry suffered the greatest number of casualties among the KIA and WIA in both wars; the Artillery ranked second. During World War II the Corps of Engineers ranked third for both KIA and WIA, whereas in the Korean War the Engineers dropped to fourth place among the KIA and fifth among the WIA. The Army Medical Service, which ranked fifth in KIA and fourth in WIA in World War II, sustained the third highest number of KIA and WIA casualties in the Korean War. This casualty distribution is related to the policy of moving medical treatment facilities, including surgery, as far forward as possible, with more Army Medical Service personnel exposed to the risks of combat. This same policy, however, is one of the factors responsible for the remarkable reduction of the case fatality rate for wounded to 2.6 percent (based on AGO data) in the Korean War. Other factors were the extensive use of the helicopter for evacuating the wounded, the proximity of the mobile army surgical hospitals to the frontlines, the use of large quantities of resuscitative fluids, and the estensive use of antibiotics.

Table XXVII. Deaths in Principal Wars, U. S. Army

War	Total deaths	Deaths among battle casualties				Other deaths [1]		
		Total	Killed in action	Died of wounds	Other	Total	Died of disease	Nonbattle injury and other deaths [2]
War of the Revolution [3]	----------	4,044 [4]	----------	----------	----------	----------	----------	----------
War of 1812 [3]	----------	1,950	----------	----------	----------	----------	----------	----------
Mexican War [3]	13,271	1,721	1,192	529	----------	11,550	11,155	395
Civil War (North)	359,528	138,154	67,226 [5]	43,012 [6]	27,916 [7]	221,374	199,720	21,654 [8]
Spanish-American War	2,430 [9]	369 [10]	266	103	----------	2,061	1,939	122
World War I (Including Air Service)	106,378	50,510 [11]	37,568 [12]	12,942 [12]	----------	55,868 [13]	51,447	4,421
World War II (Including Army Air Forces)	312,293	234,874 [14]	192,798 [15]	26,762 [16]	15,314 [17]	77,419 [18]	15,779	61,640
Korean War	36,488	27,704	19,585 [19]	2,034 [20]	6,085 [21]	8,784 [22]	2,101	6,683

... Not available.

[1] The magnitude of the disease, nonbattle injury, and other nonbattle deaths is directly related to the time period selected to represent a particular war. Any date selected is necessarily arbitrary due to the variance of time between the date actual hostilities cease and the date a formal treaty of peace is negotiated or a proclamation is issued declaring the end of hostilities. The time periods used here in which the nonbattle deaths occured are as follows:

Mexican War: 25 April 1846—5 July 1848
Civil War (North): 15 April 1861—1 August 1865
(Includes nonbattle deaths among the relatively small number of Volunteers remaining in Federal service subsequent to 1 August 1865. Although the great proportion of the Volunteer Army was disbanded in 1865, the last regiment was not disbanded until 20 December 1867.)
Spanish-American War: 1 May 1898—31 August 1898
World War I: 1 April 1917—31 December 1918
World War II: 7 December 1941—31 December 1945
Korean War: 1 July 1950—31 July 1953

Table XXVII. Deaths In Principal Wars, U. S. Army—Continued

[2] Includes accidents (aircraft and other), homicide, suicide, drowned, and other deaths for which the causes were not stated.

[3] Data are based on incomplete records and are therefore understated.

[4] The total number was undoubtedly greater, perhaps even several times as great. Dr. James Thatcher, a surgeon of the Continental Army, estimated the total battle and non-battle deaths in the war as 70,000, of which the great majority were undoubtedly due to disease.

[5] Includes 104 killed after capture and 64 executed by the enemy.

[6] Includes 2,072 died of wounds while captured.

[7] Includes 24,866 died of disease, 353 died of nonbattle injury, and 2,697 died of other causes not stated while in Confederate prisons. Since the records of deaths in Confederate prisons are incomplete, it is believed the actual number of such deaths were much larger.

[8] Includes 9,424 deaths for which the causes were not stated. It is possible that a proportion of these 9,424 deaths could be due to disease or battle causes.

[9] The epidemic of typhoid fever and other enteric diseases usually associated with this period is not fully reflected in these figures, which extend only slightly beyond the cessation of active hostilities on 13 August 1898. There were an additional 2,856 deaths due to disease, largely attributable to this epidemic, during the period 1 September 1898 through 31 December 1898.

[10] Excludes 6 killed in action and 4 died of wounds subsequent to 31 August 1898 and prior to the start of the Philippine Insurrection on 4 February 1899.

[11] Includes gas casualties. Also includes 27 killed in action and 8 died of wounds in northern Russia and Siberia.

[12] The Surgeon General's data show 36,694 killed in action and 13,691 died of wounds.

[13] The Adjutant General's data show 69,446 deaths due to nonbattle causes from 6 April 1917 to 2 July 1921, the date on which the war with Germany and Austria-Hungary was officially terminated by a joint resolution of the Congress. The difference arises solely from the different time periods. (See footnote[1])

[14] Includes 5 killed in action, 1 died of wounds received, and 1 declared dead from missing in action, of which the initial casualty status occurred subsequent to 31 December 1945 and prior to 31 December 1946.

[15] Includes 3,102 killed outright by air bombardment or while trying to escape while in a captured status.

[16] Includes 453 died of wounds while captured.

[17] Includes 6,058 declared dead and 9,256 died of other causes nonbattle while captured or missing in action. Of the 9,256, it is estimated that 8,989 died of disease and 267 died of nonbattle injury.

[18] Estimate based on The Adjutant General's figure of 83,400 for the period 7 December 1941 through 31 December 1946.

[19] Includes 251 killed after capture.

[20] Includes 104 died of wounds while captured.

[21] Includes 3,791 declared dead and 2,294 died of other causes nonbattle while captured or missing in action. Of the 2,294 it is estimated that 2,218 died of disease and 76 died of nonbattle injury.

[22] Based on individual medical records. The Adjutant General's data show 8,697 other deaths of which 1,728 were due to disease and 6,969 resulted from nonbattle injury.

Table XXVIII. Wounded in Action in Principal Wars, U. S. Army

War	Number wounded in action (incl DOW)
War of the Revolution [1]	6,004 [2]
War of 1812 [1]	4,000 [2]
Mexican War [1]	4,102
Civil War (North)	323,052 [3]
Spanish-American War	1,697
World War I [4]	224,089 [5]
World War II [6]	592,623 [7]
Korean War	79,630 [8]

[1] Based on incomplete records.
[2] Excludes the died of wounds.
[3] Includes 2,072 died of wounds while captured.
[4] Including Air Service.
[5] Includes 70,552 gas casualties, 1,221 of which later died. The Adjutant General's data show 206,605 wounded or injured in action (including gas casualties).
[6] Including Army Air Force.
[7] Includes 453 died of wounds while captured.
[8] Includes 104 died of wounds while captured.

Note. The figure for Civil War (North) was derived by the addition of OTSG wounded (Medical and Surgical History of The War of the Rebellion, Part First, Vol. II) to AGO died of wounds, and the World War I figure is based entirely on OTSG data.

Table XXIX. Wounded and Death Rates in Principal Wars, U. S. Army

Rates expressed as cases per 1,000 average strength per year

War	Total wounded in action (includes DOW)	Killed in action	Died of wounds	Total deaths among battle casualties [1]	Died of disease	Died of nonbattle injury
Mexican War	37.51	10.90	4.84	15.74	102.01	3.61
Civil War (North)	100.24	20.86	13.35	42.87	61.97	6.72 [2]
Spanish-American War	22.38	3.51	1.36	4.87	25.57	1.61
World War I [3]						
Including gas	71.75	11.75	4.38	16.13	16.47	1.42
Excluding gas	49.16	11.68 [4]	3.99	15.67	16.47	1.42
World War II [5]	23.08	7.51	1.04	9.15	0.61	2.40
Korean War	18.25	4.49	0.47	6.35	0.48	1.53

[1] For the Civil War, World War II, and the Korean War, includes other deaths among battle casualties (declared dead, nonbattle deaths while captured or interned, or while missing in action, etc.) in addition to the killed in action and died of wounds.

[2] Includes deaths for which the causes were not stated.

[3] Including Air Service. All rates for World War I are based on OTSG data. Battle casualty rates based on AGO data (which include gas casualties), differ slightly. For example, the rate for total deaths among battle casualties based on AGO data is 16.17 per 1,000.

[4] OTSG KIA figure (36,694) was reduced by 200, the number of KIA estimated to have died of the effects of gas by Col. H. L. Gilchrist, MC, page 8, Army Medical Bulletin No. 16, 1925.

[5] Including Army Air Forces.

Table XXX. Selected Ratios, Principal Wars, U. S. Army

War	KIA as percent of total hit [1]	KIA + DOW as percent of total hit [1]	DOW as percent of WIA [2]	KIA + DOW to nonbattle deaths	KIA to WIA [3]
War of the Revolution	(*)	(*)	27.00 [4]	(*)	(*)
War of 1812	(*)	(*)	18.00 [4]	(*)	(*)
Mexican War	22.52	32.51	12.90	1:6.71	1:3.44
Civil War (North)	17.23	28.25	13.31	1:2.01	1:4.81
Spanish-American War	13.55	18.80	6.07	1:5.59	1:6.38
World War I [5]					
Including gas	14.07	19.32	6.11	1:1.11	1:6.11
Excluding gas	19.20 [6]	25.77	8.12	1:1.14	1:4.21
World War II [7]	24.55	27.95	4.52	1:0.35	1:3.07
Korean War	19.74	21.79	2.55 [8]	1:0.41	1:4.07

* Not available.

[1] Total Hit: KIA + WIA. WIA includes DOW.

[2] WIA includes DOW. This percentage is usually referred to as the case fatality rate for wounded.

[3] WIA includes DOW.

[4] Estimated.

[5] Including Air Service. All ratios for World War I are based on OTSG data. Ratios based on AGO data (which include gas casualties) differ slightly. For example, the case fatality rate based on AGO data is 6.26 percent.

[6] OTSG KIA figure (36,694) was reduced by 200, the number of KIA estimated to have died of the effects of gas by Col. H. L. Gilchrist, MC, page 3, Army Medical Bulletin No. 16, 1925.

[7] Including Army Air Forces.

[8] Based on AGO data, OTSG data give a case fatality rate of 2.52 percent.

Table XXXI. Percentage Distributions of Battle Casualties By Branch of Service, U. S. Army[1], World War II and Korea

Branch of service	Killed in action		Wounded or injured in action [2]		Died of wounds or injuries	
	World War II	Korea	World War II	Korea	World War II	Korea
Armored [3]	1.0	2.0	0.9	2.8	0.7	4.0
Cavalry	2.7	---	2.7	---	3.6	---
Artillery	5.9	5.7	6.2	5.8	8.3	8.0
Infantry	81.2	85.6	82.1	84.9	77.4	79.6
Corps of Engineers	4.0	2.5	3.5	2.2	4.5	2.9
Army Medical Service	2.5	3.0	2.8	3.0	2.9	3.5
Other branches of service [1]	2.7	1.2	1.8	1.3	2.6	2.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

— Not applicable.

[1] Excludes Air Corps personnel and flight officers in World War II and U. S. Air Force personnel in the Korean War.

[2] Includes DOW.

[3] During World War II, Armored pertained only to enlisted personnel, since officers serving with Armored Units were carried under their basic branch, i.e., Cavalry, Infantry, etc. In Korea, the designation pertains to both officer and enlisted personnel.

See ch #3

120. Ratio of Wounded in Action to Killed in Action

In the Korean War the United States Army experienced a ratio of wounded in action to killed in action of 4.07 to 1. By comparison, the corresponding ratio for World War II was 3.07 to 1, including personnel of the Army Air Forces, then a part of the Army. The World War II ratio becomes 3.96 to 1 when Air Corps branch personnel are excluded, a ratio which is more nearly comparable to the one for the Korean War. That the ratio of wounded in action to killed in action is not invariable is readily apparent when they are considered by rank, by month and year, by campaign, and by branch of service. In general the ratio for officers is less than the ratio for enlisted personnel. For the Korean War these two ratios were 3.41 to 1, and 4.11 to 1, respectively. The variations in the ratio among points of time correspond to the variations by campaign, in that the ratio varies inversely with the severity of combat, being generally lower in severe engagements and generally higher in light engagements. During World War II, the ratio (excluding Army Air Corps personnel) varied from a low of 1.24 to 1 for 1942 (the lowest monthly ratio being 0.24 to 1) to 4.41 for 1945 with a high individual monthly ratio of 5.07 to 1. For the individual years, 1942–1945, the ratios were: 1.24, 3.28, 3.89, and 4.41. By individual campaign, the ratio (excluding Air Force units) varied from 0.56 to 1 for the first Philippine Islands Campaign (1942) and 0.68 to 1 in the Aleutians (1942–1943) to a high of 7.38 to 1 in the Bismark Archipelago Campaign (1944). Similar data for the Korean War show that the ratio of wounded in action to killed in action varied from 3.26 to 1 for 1950 (with a low individual monthly ratio of 1.44 to 1) to 4.73 to 1 for 1953. The highest individual monthly ratio of 6.58 to 1 occurred in 1952 in this series. For the individual years 1950–1953, the ratios were 3.26, 4.52, 4.85, and 4.73, respectively. By branch of service, the ratio varied during World War II from 0.41 for Air Corps personnel to 8.33 for Adjutant General personnel. The various combat arms, with the exception of Armored personnel, show similar ratios for both World War II and the Korean War. During World War II, the ratios were: Field Artillery 4.23; Infantry 4.01; and Armored 3.54. For the Korean War, corresponding ratios were 4.22, 4.08, and 5.83, respectively. The ratio for Armored in World War II pertains only to enlisted personnel since officers serving with Armored units were carried under their basic branch (i.e., Cavalry, Infantry, etc.), whereas in the Korean series the designation pertains to both officer and enlisted personnel. The ratios for the Army Medical Service were 4.33 and 4.09 for World War II and the Korean War, respectively.

As a rule of thumb, for average combat operations the ratio of wounded in action to killed in action can be taken as 4 to 1. This indicates that approximately 20 percent (or one out of five) of those hit by missiles (or otherwise receiving enemy-inflicted battle wounds or injuries) are either killed immediately or are so severely wounded that they die before reaching a medical treatment facility.

121. Casualties by Causative Agent

a. Tables XXXII and XXXIII present the percentage distribution of casualties (killed in action, wounded in action, and died of wounds) by causative agent for World War II and the Korean War. Explosive projectiles and small arms accounted for the majority of the casualties for whom the causative agent was known. The causative agent was unknown, however, for a very large fraction of the killed in action cases: 52 percent in World War II and 57 percent in the Korean War. These unknown percentages varied from year to year, depending partially upon the type of combat involved. For this reason, data pertaining to killed in action by causative agent should always be used with caution. In World War I, gas was an important factor in producing casualties. Gas caused 31 percent of the wounded in action among the American Expeditionary Forces in Europe. If gas is used in future wars by the enemy, the proportion of casualties due to gas will in all probability bear little relationship to the proportion experienced in World War I.

b. The table pertaining to the wounded in action excludes the carded-for-record-only cases, that is, those individuals who receive only minor battle wounds or battle injuries and, after receiving medical care, are returned to duty the same day they are wounded or injured.

Table XXXII. Percentage Distribution of the Killed in Action and Died of Wounds by Causative Agent, U. S. Army World War II and Korea

Causative agent	Killed in action		Died of wounds	
	World War II	Korea	World War II	Korea
Small arms	15.2	14.2	31.4	33.9
Explosive projectiles	23.7	21.4	57.1	48.3
Bombs (aerial)	0.7	0.0	2.1	0.1
Land mines	1.1	1.8	4.3	5.1
Other causative agents	6.9	5.5	5.1	12.6
Unknown	52.4	57.1	(1)	(1)
Total	100.0	100.0	100.0	100.0

1 Distributed proportionately among the known causative agents. The causative agent was unknown for 6.1% of the died of wounds in World War II and for 13.8% of the died of wounds in the Korean War.

Table XXXIII. Percentage Distribution of the Wounded or Injured in Action by Causative Agent, U. S. Army, World War II and Korea

Causative agent	World War II	Korea
Small arms	19.5	27.2
Explosive projectiles	58.7	50.5
Bombs	1.8	0.1
Land mines	3.3	3.6
Other causative agents	16.7	18.6
Unknown	(1)	(1)
Total	100.0	100.0

[1] Distributed proportionately among the known causative agents. The causative agent was unkown for 8.3 percent of the wounded in World War II and for 1.3 percent of the wounded in the Korean War.

122. Casualties by Anatomical Location

a. Distribution of casualties by anatomical location is given in tables XXXIV and XXXV for the killed in action, wounded in action, and died of wounds in World War II and the Korean War. Although the data have been tabulated in greater detail than is shown in these tables, the groupings give sufficient information for practical use.

b. The same comment concerning the carded-for-record-only cases given in paragraph 121*b* is applicable here.

c. The data do not represent a distribution of the anatomical locations of each of the wounds that may have been incurred by a battle casualty. Although many individuals received wounds in more than one anatomical location, the data presented in these tables consider only the location of the major wound.

123. Distribution of Casualties Within Units

Casualties are rarely distributed equally throughout a unit larger than a company. Normally, some fraction of a unit is in reserve, and the tasks of other fractions actively engaged are not ordinarily equally productive of casualties. This unequal distribution within units must constantly be recognized in estimating probable casualties.

Table XXXIV. Percentage Distributions of the Killed in Action and Died of Wounds by Anatomical Location, U. S. Army, World War II and Korea

Anatomical location	Killed in action		Died of wounds	
	World War II	Korea	World War II	Korea
Head, face or neck	20	22	25	32
Thorax	9	10	19	18
Abdomen	7	7	34	32
Upper extremities	1	1	4	3
Lower extremities	3	4	16	13
General	5	2	2	2
Unknown	55	54	(1)	(1)
Total	100	100	100	100

1 Distributed proportionately among the known locations. The anatomical location was unknown for 2.3 percent of the died of wounds in World War II and for 10.8 percent of the died of wounds in the Korean War.

Table XXXV. Percentage Distributions of the Wounded or Injured in Action by Anatomical Location, U. S. Army World War II and Korea

Anatomical location	Percentage distributions	
	World War II	Korea
Head, face, or neck	15	19
Thorax	10	8
Abdomen	6	8
Upper extremities	28	29
Lower extremities	41	36
Unknown	(1)	(1)
Total	100	100

1 Distributed proportionately among the known locations. The anatomical location was unknown for 6.4 percent of the wounded in World War II and for 0.5 percent of the wounded in the Korean War.

124. Influence of Type of Action

*a. In World War II.**

(1) *General.* The type of action has a very definite relationship to the incidence of battle casualties. About 27 percent of the total wounded or injured in action among United States Army ground troops in World War II had

* Material in this paragraph and in tables XXXVI through XLII are from Gilbert W. Beebe, Carroll I. Leith, Jr., and Frank A. Reister, Influence of Type of Ground Operation on Wounded in Action, U. S. Divisions in World War II, Military Medicine, 121:361–370, December, 1957. Courtesy of Military Medicine.

been classified according to six types of ground operations with higher than average casualty rates. Statistics were compiled from after-action reports, historical reports of tactical units, campaign summaries, various staff journals, and operational reports. The types of ground operations as listed in table XXXVI reflect United States divisional experience of World War II, both in Europe and in the Pacific. Although there remains a great deal of variation behind each rate, it is believed that the medical planner will find use for this partial set of models in instances where casualty rates are expected to be high. It must be remembered that very different rates are being averaged in the table and that planning will be improved to the extent that one can find a model in past operations rather than rely on an average figure. It is evident that many factors must be considered in addition to the average rates shown in the table. Table XXXVI provides a summary of the average wounded rates for each of the types of combat chosen for study. No attempt was made to go beyond the United States experience in World War II. The average rates shown in tables XXXVI through XLII are *weighted* means which were obtained by weighting each individual rate by the proportion of all man days which it represents.

(2) *Beachhead operations.* In the beachhead operations airborne attacks were excluded; but the airborne infantry were included in combined air and overwater assault such as led to the establishment of the Normandy beachhead. River crossings, except where rivers were part of natural features of a beachhead, were also excluded. Beachead operations in this table include combined naval and ground operations directed against a hostile shore with the intent to secure a forward position capable of reinforcement and forward displacement. Wounded among Air Corps and Naval personnel are, however, excluded. Moreover, as there were no repulsed or abandoned beachheads among the United States ground actions in World War II, all the eight beachhead operations analyzed to secure these data were successful beachhead operations: Tarawa, Saipan, Iwo Jima, Normandy, Salerno, Leyte, Okinawa, and Anzio. In these eight beachhead operations 24 divisions participated for one or more days. The distribution of wounded in action rates (per 1,000 average division strength per day over

the entire period of participation) varies from 1.47 to 32.25 with an arithmetic mean of 11.1. This average rate was exceeded by not more than 2 percent of the wounded in action rates for all division weeks in combat in the European Theater of Operations. Since the average beachhead operation lasted 6.2 days, the rates are roughly comparable with those for division weeks (table XXXVII).

(3) *Offensive breakthrough operations.* Characteristic of these operations is the fact that an enemy barrier, not necessarily fortified, resists pressure and denies advance until a final successful effort at penetration at one or more points is made. Included in this category are successful operations only: Cisterna, St. Lo, and Po Valley. Excluded are flanking movements and rapid penetrations of lightly-held territory and the subsequent exploitation of the breakthrough. The examples chosen represent 16 division periods averaging 4.1 days in length. The average casualty rate per 1,000 divisional strength per day is 7.1—a lower rate than that for beachhead operations (table XXXVIII).

(4) *Reduction of ports and towns.* Operations in this category are characterized primarily by encirclement and sustained assault on ports and towns heavily fortified and defended: Cherbourg, St. Malo, Brest, Aachen, Metz, Nuremburg, Cassino, Lanuvio, and Manila. The unweighted mean is 5.7; the weighted mean is 5.9 (table XXXIX).

(5) *Assaults on fortified lines.* Representatives of this class are the Gustav Line and the Gothic Line, in Italy; Hurtgen Forest and the Siegfried Line, in Germany; the Yamashita Line, on Luzon; and the Machinato Line and the Shuri Line, on Okinawa. Attacks on single strong points such as Aachen and Cassino were omitted from the operations of this class and placed in those classified in (4) above. There were 47 division-periods averaging 13.6 days in length. The unweighted mean is 5.9 (table XL).

(6) *River crossings.* The major river crossings against enemy opposition were those at Volturno (three crossings) and Rapido, in Italy; and the Moselle, the Roer, and the Rhine, in France and Germany. The weighted and unweighted mean rates are 5.0 (table XLI).

(7) *Defensive operations against strong enemy counter-*

See Ch #3

attack. Five operations were chosen for this category; Mortain, Ardennes, Anzio, Okinawa, and Bougainville, These operations had the lowest rate of any of the types studied. The weighted mean (3.7) and the unweighted mean (4.6) differ by more than those of any other types of operation, but both are below parallel rates for the other types of operations (table XLII).

b. For the Korean War. Statistics have been compiled showing regiment and division casualty rates by type of casualty, for selected types of action in the Korean War: retrograde, defense, general offensive, limited offensive, and pursuit. Refer to table XLIII. These rates are based on the experiences of from two to four divisions and are computed both for division and regiment (battalion). Division rates of total battle casualties vary from 1.29 in pursuit operations to 9.18 in general offensive; regiment (battalion) rates of total battle casualties range from 2.14 in pursuit operations to 15.21 in general offensive. Battle injury and wound loss rates and killed in action loss rates ran highest in general offensive operations. Missing in action or captured loss rates were highest in retrograde operations.

c. Comparison of Loss Rates Due to Selected Types of Action in World War II and in Korea. Although classification of types of operations chosen for study in these two wars is not parallel and no meaningful comparison can be made, interesting differences exist between the averages for these two experiences. For World War II the average division wounded in action rate for the selected operations is 5.19 and ranges from 3.73 to 11.04. For the selected operations of the Korean War the average division wounded in action rate is 2.87 and ranges from 0.99 to 7.03. However, when operations of pursuit (which produce rates far below the average for these operations) are excluded, the average division wounded rate for the selected operations of the Korean War is 3.71 and ranges from 1.86 to 7.03.

Table XXXVI. Wounded in Action for Selected Types of Ground Operations, U. S. Army and Marine Corps Divisions, World War II

Type of operation	Number of operations	Number of divisions	Wounded	
			Number	Rate [1]
Beachhead operations	8	24	26,570	11.04
Offensive breakthrough operations	3	16	7,420	7.14
Reduction of ports and towns	9	23	25,139	5.88
Assault on fortified lines	7	47	46,910	5.10
River crossings	7	43	18,339	5.02
Defensive (enemy counterattack)	8	63	45,049	3.73
Total	42	216	169,427	5.19

[1] Wounded in action per 1,000 men per day.

Table XXXVII. Wounded in Action During Beachhead Operations, U. S. Army and Marine Corps Divisions, World War II

Operation	Calendar period [1]	Number of divisions	Division days	Mean division strength	Wounded	
					Number	Rate [2]
Tarawa	20–23 Nov 1943	1	4	17,000	2,193	32.25
Saipan	15–19 Jun 1944	3	13	16,366	4,957	23.30
Iwo Jima	19–27 Feb 1945	3	25	16,360	6,323	15.46
Normandy	6–13 Jun 1944	6	42	15,217	8,677	13.58
Salerno	9–14 Sep 1943	2	11	15,818	905	5.20
Leyte	20–30 Oct 1944	4	34	17,964	2,502	4.10
Okinawa	1–4 Apr 1945	4	16	14,791	860	3.63
Anzio	22–24 Jan 1944	1	3	18,530	153	2.75
Total		24	148	16,256	26,570	11.04

[1] Inclusive dates within which one or more divisions in the sample contributed combat days to the indicated operation.
[2] Wounded in action per 1,000 men per day.

Table XXXVIII. Wounded in Action During Offensive Breakthrough Operations, U. S. Army Divisions, World War II

Operation	Calendar period [1]	Number of divisions	Division days	Mean division strength	Wounded	
					Number	Rate [2]
Cisterna	23–25 May 1944	4	12	18,091	2,063	9.50
St. Lo	25–28 Jul 1944	6	21	16,687	2,590	7.39
Po Valley	14–20 Apr 1945	6	33	14,313	2,767	5.86
Total		16	66	15,755	7,420	7.14

[1] Inclusive dates within which one or more divisions in the sample contributed combat days to the indicated operation.
[2] Wounded in action per 1,000 men per day .

Table XXXIX. Wounded in Action During Reduction of Ports and Towns, U. S. Army Divisions, World War II

Operation	Calendar period [1]	Number of divisions	Division days	Mean division strength	Wounded	
					Number	Rate [2]
St Malo	5–17 Aug 1944	1	13	14,384	1,828	9.78
Lanuvio	26 May–3 Jun 1944	1	9	16,661	1,381	9.21
Cherbourg	19–27 Jun 1944	3	27	15,134	3,294	8.06
Brest	25 Aug–20 Sep 1944	3	81	15,319	6,941	5.59
Metz	8–22 Nov 1944	4	44	15,162	3,590	5.38
Cassino	1–14 Feb 1944	2	19	15,285	1,525	5.25
Aachen	7–21 Oct 1944	3	32	16,999	2,749	5.05
Manila	3–25 Feb 1945	3	56	11,018	3,028	4.91
Nuremburg	16–20 Apr 1945	3	12	14,458	803	4.63
Total		23	293	14,602	25,139	5.88

[1] Inclusive dates within which one or more divisions in the sample contributed combat days to the indicated operation.
[2] Wounded in action per 1,000 men per day.

Table XL. Wounded in Action During Assaults on Fortified Lines, U. S. Army and Marine Corps Divisions, World War II

Operation	Calendar period [1]	Number of divisions	Division days	Mean division strength	Wounded	
					Number	Rate [2]
Machinato Line	19–24 Apr 1945	3	18	10,794	2,762	14.22
Gustav Line	11–15 May 1944	2	10	18,012	1,984	11.01
Shuri Line	11–24 May 1945	5	59	13,159	7,466	9.62
Hurtgen Forest	13 Sep–7 Dec 1944	3	99	15,607	11,662	7.55
Gothic Line	13–22 Sep 1944	4	40	14,896	2,813	4.72
Yamashita Line	21–28 Feb 1945	2	16	11,398	706	3.87
Siegfried Line	12 Sep 1944–24 Mar 1945	28	399	14,334	19,517	3.41
Total		47	641	14,342	46,910	5.10

[1] Inclusive dates within which one or more divisions in the sample contributed combat days to the indicated operation.
[2] Wounded in action per 1,000 men per day.

Table XLI. Wounded in Action During River Crossing Operations, U. S. Army Divisions, World War II

Operations	Calendar period [1]	Number of divisions	Division days	Mean division strength	Wounded	
					Number	Rate [2]
Rapido	20–31 Jan 1944	2	11	15,743	1,240	7.16
Volturno						
1st crossing	13–14 Oct 1943	2	4	16,679	441	6.61
2d crossing	18–20 Oct 1943	1	3	17,166	47	0.91
3d crossing	3–4 Nov 1943	2	4	17,362	301	4.33
Roer	23–28 Feb 1945	12	59	16,446	5,540	5.71
Rhine	7–31 Mar 1945	17	92	15,214	7,185	5.13
Moselle	5–18 Sep 1944	7	63	14,679	3,585	3.88
Total		43	236	15,490	18,339	5.02

[1] Inclusive dates within which one or more divisions in the sample contributed combat days to the indicated operation.
[2] Wounded in action per 1,000 men per day.

Table XLII. Wounded in Action During Defensive (Enemy Counterattack) Operations, U. S. Army and Marine Corps Divisions, World War II

Operations	Calendar period [1]	Number of divisions	Division days	Mean division strength	Wounded	
					Number	Rate [2]
Okinawa	4–5 May 1945	2	4	11,537	692	15.00
Mortain	7–12 Aug 1944	6	29	15,539	3,033	6.73
Anzio						
1st attack	3–12 Feb 1944	2	20	18,327	580	1.58
2d attack	16–18 Feb 1944	2	6	19,640	545	4.62
3d attack	20 Feb–4 Mar 1944	2	28	19,340	1,468	2.71
Bougainville	8–24 Mar 1944	2	33	13,030	1,627	3.78
Ardennes						
1st phase	16 Dec 1944–2 Jan 1945	27	334	13,971	17,240	3.69
2d phase	3–27 Jan 1945	20	372	14,654	19,864	3.64
Total		63	826	14,613	45,049	3.73

[1] Inclusive dates within which one or more divisions in the sample contributed combat days to the indicated operation.
[2] Wounded in action per 1,000 men per day.

*Table XLIII. Battle Experience, by Selected Types of Action, U. S. Army Divisions and Regiments, Korea**

Rates expressed as cases per 1000 average strength per day.

Based on experience as indicated	Type of action	Battle [1] injury and wounded	Killed in action	Missing in action [2] or captured or interned	Total battle casualties
Two Divisions[3] 22 Jul–4 Aug, 1950, and Three Divisions[4] 25 Nov–1 Dec, 1950	*Retrograde*				
	Division	3.53	1.28	2.06	6.87
	Regiment	5.84	2.11	3.41	11.36
Three Divisions[5] 2–15 Sep, 1950	*Defense*				
	Division	6.19	1.64	0.26	8.09
	Regiment	10.25	2.72	0.42	13.39
Three Divisions[5] 16–22 Sep, 1950	*General Offensive*				
	Division	7.03	1.86	0.29	9.18
	Regiment	11.64	3.09	0.48	15.21
Four Divisions[6] 27 Jan–16 Feb, 1951	*Limited Offensive*				
	Division	1.86	0.56	0.49	2.91
	Regiment	3.09	0.96	0.81	4.86
Four Divisions[7] 23 Sep–13 Oct, 1950	*Pursuit*				
	Division	0.99	0.26	0.04	1.29
	Regiment	1.64	0.43	0.07	2.14

* For the purpose of these estimates rates for battalions may be assumed to be identical with those listed for regiments.

(For footnotes see next page.)

[1] The rates for the *divisions* shown in Table XLIII were computed from the actual number of admissions and strengths reported by the divisions on their weekly summary reports (DD Form 442, Morbidity Report, and DD Form 448, Beds and Patients Report). For *regiments* data are not available for these same periods; thus the rates for regiments have been estimated. These estimates were prepared by relating an appropriate factor to the actual computed rate for the entire division. The factors were based on the relative proportion of the total division admissions and strengths that may be attributed to the regiments. The exact proportion was determined by certain reports for which experience was available for both regiments and divisions. In the above computations of rates for regiments, the factor of 1.66 was used for battle injury or wound.

[2] The rates for the killed in action (KIA) and the missing in action (MIA) have been estimated. These estimates were derived by applying an appropriate factor to the computed battle injury or wound rates for the different types of action. The factors reflect the ratio of the killed in action to the battle injuries or wounds and the ratio of the missing in action or captured to the battle injuries or wounds, respectively, during the months of the selected operations. In the computation of the rates for KIA and MIA for divisions and regiments, the following ratios were used: *retrograde,* 0.8621 for KIA (0.8621 KIA to 1 battle injury or wound) and 0.5842 for MIA (0.5842 MIA to 1 battle injury or wound); *defense and general offensive,* 0.2651 for KIA and 0.0412 for MIA; limited offensive, 0.8093 for KIA and 0.2622 for MIA; *pursuit,* 0.2631 for KIA and 0.0406 for MIA.

[3] 1st Cavalry Division and 25th Infantry Division.

[4] 1st Cavalry Division and 24th and 25th Infantry Divisions.

[5] 1st Cavalry Division and 2d and 25th Infantry Divisions.

[6] 1st Cavalry Division and 8d, 24th, and 25th Infantry Divisions.

[7] 1st Cavalry Division, and 2d, 24th, and 25th Infantry Divisions.

125. Casualties and Nonbattle Admissions in a Division

a. Tables XLIV through XLVII present data on the daily rates per 1,000 for wounded in action and disease and nonbattle injury admissions for United States Army divisions in World War II and the Korean War, and percentage distributions for divisions by the various types of casualties.

b. It will be noted that approximately 17 to 18 percent of all casualties were KIA, 72 to 74 percent were WIA, 6 to 7 percent were captured or interned, and 2 to 4 percent were MIA. There was remarkably little difference in the distribution of these casualties between World War II and the Korean War, and also little variation from infantry division to armored division to airborne division.

c. When using tables XLIV and XLV pertaining to daily rates for divisions, it should be borne in mind that these rates are averages over a *long period of time*, including time not in combat. Therefore, these rates should not be used in making short term estimates of casualties, particularly during periods of heavy fighting.

Table XLIV. Average Battle Casualty and Nonbattle Admission Experience of U. S. Army Divisions in Europe, World War II

Rates expressed as admissions per 1,000 average strength per day

Type of division	All causes	Wounded or injured in action	Disease	Nonbattle injury
All divisions	4.43	2.03	1.84	0.56
Infantry	4.72	2.18	1.93	0.61
Armored	3.56	1.58	1.58	0.40
Airborne	3.97	1.83	1.67	0.47

Table XLV. Average Battle Casualty and Nonbattle Admission Experience of U. S. Army Divisions During the Korean War

Rates expressed as admissions per 1,000 average strength per day

Division	All causes	Wounded or injured in action	Disease	Nonbattle injury
All divisions	2.47	0.61	1.47	0.39
1st Cav Div	3.85	1.39	1.97	0.49
2d Inf Div	2.38	0.73	1.18	0.47
3d Inf Div	2.40	0.45	1.63	0.32
7th Inf Div	2.39	0.59	1.38	0.42
24th Inf Div	3.35	0.89	1.97	0.49
25th Inf Div	2.55	0.57	1.58	0.40
40th Inf Div	1.78	0.17	1.33	0.28
45th Inf Div	1.49	0.31	0.92	0.26

Table XLVI. Distribution of Battle Casualties by Type of Casualty, U. S. Army Divisions, World War II

Type of casualty	Percent of total casualties		
	Infantry divisions	Armored divisions	Airborne divisions
Killed in action	17.76	17.41	18.39
Wounded or injured in action	72.58	73.73	71.72
Captured or interned	7.38	7.32	7.28
Missing in action	2.28	1.54	2.61
Total	100.00	100.00	100.00

Table XLVII. Distribution of Battle Casualties by Type of Casualty, U. S. Army Divisions, Korean War

Type of casualty	Percent of total
Killed in action	17.58
Wounded or injured in action	72.11
Captured or interned	6.18
Missing in action	4.13
Total	100.00

126. Casualties in an Army Corps

As units increase in size, a greater proportion of their personnel are less exposed to the risk of battle wounding. While a corps may be engaged in active fighting, one or more of its divisions may not be in contact with the enemy. Elements of corps troops serving in rear areas suffer relatively few casualties. While the strength of nondivisional corps troops may approximate the strength of a division, they consist of artillery, engineers, signal troops, and other service troops; the casualty rates for all of these are low compared with those of the infantry. All these factors operate to reduce the casualty rates of a corps as a whole far below those of its infantry (or other) divisions actively engaged with the enemy. As a rough approximation, it may be stated that the wounded in action rate for a corps as a whole is about 25 percent less than the wounded in action rate for its component divisions.

127. Casualties in an Army

The factors discussed in paragraph 126 (large units in reserve and a considerable strength of troops in rear areas) operate with even greater effect in the field army. Consequently, army casualty rates are even lower than those of a corps. Thus, it has been esti-

mated very roughly that the wounded in action rate for an army is about 20 percent lower than the wounded in action rate for a corps, and about 40 percent lower than that for a division. Table XLVIII presents weekly rates for World War II armies for wounded in action and nonbattle admissions.

Table XLVIII. Average Battle Casualty and Nonbattle Admission Experience of U. S. Field Armies During World War II

Rates expressed as admissions per 1,000 average strength per week

Area and Army	All causes	Wounded or injured in action	Disease	Nonbattle injury
European				
First	25.7	12.0	10.3	3.4
Third	21.8	9.1	10.0	2.7
Seventh[1]	25.5	7.8	14.0	3.7
Ninth	13.8	4.2	7.5	2.1
Mediterranean				
Seventh (Sicily)	47.4	16.3[2]	28.4	2.7[2]
Fifth	24.9	5.5	16.7	2.7
Pacific				
Sixth (Leyte)	32.0	7.0	22.1	2.9
Sixth (Luzon)	35.9	7.2	26.3	2.4
Tenth	35.8	20.8	7.7	7.3

[1] Including period when army was assigned to Mediterranean Theater.
[2] Estimated. Reported rate of 19.0 included both wounded in action and nonbattle injury.

128. Casualties in a Theater of Operations

The factors discussed in paragraphs 126 and 127 also operate to reduce the casualty rates for a theater of operations as a whole below the rates for field armies. The amount of such reduction is obviously dependent upon the relative proportion of service troops in the communications zone in relation to the troops in the combat zone. Based on data for ground troops in the European Theater of Operations in World War II, it has been estimated that the wounded in action rate for the theater as a whole is about 70 percent below that for field armies.

129. Estimation of Probable Casualty Rates

a. General. The foregoing paragraphs clearly indicate that the estimation of probable casualty rates in advance is not a simple matter that can be reduced to a general formula. While casualty expectancy tables have been prepared and are useful, it must be understood that such tables bear the same type of relationship to

actual experience as map problems do to actual combat. These tables are among the many arbitrary assumptions (based in general, it is true, upon experience) that are necessary to create the artificial situation wherein a battlefield is brought into a classroom; thus, they serve to demonstrate the method that needs to be employed in action operations in order to make plans and estimates, and they provide experience guides for those tasks. The experience factors must, however, always be used with awareness of their limitations and of the fact that no absolute reliance on them as necessary values can be expected.

b. Method. The first step in estimating probable casualty rates is the selection of a point of departure. This is preferably what might be termed an *average casualty day* for the unit concerned. To this average casualty day must be applied the quantitative combined effect of all factors in each situation that may be expected to influence the casualty rate. The more important of these factors are—

(1) *Enemy capabilities.* These include all the means and characteristics of the enemy that can be translated into casualties, such as his numerical or relative strength, the strength of his position (both natural strength and improvement by organization of the ground), his weapons, his airpower, his attitude, and his morale and general combat efficiency.

(2) *Terrain.* Terrain is not to be confused with position. Open terrain, affording little cover or protection, may favor one side, depending upon the situation.

(3) *Own scheme of maneuver.* This is a most important factor. Attack is usually more costly than defense. Losses in defense are tempered by the type of defense, the degree of organization of the ground, and relative combat strength, including the element of fire power. Frontal attacks are, in general, more productive of casualties in the attacking force than are envelopments. Daylight retrograde movements are extremely costly; and when the retrograde movement becomes disorderly, losses may be staggering.

(4) *Relative fire power.* A preponderance of friendly fire power, especially in heavy weapons and air strength, will greately decrease the capability of the enemy to inflict casualties, by smothering his weapons. Conversely, relative weakness in heavy fire power will operate to increase casualty rates.

(5) *Movement under hostile fire.* All other factors being equal, troops moving under hostile fire suffer more heavily than those remaining in position.

c. Sickness and Nonbattle Injuries in Combat. In preparing estimates of patients to be evacuated, it must be remembered that disease declares no armistice during combat and that soldiers do not become unusually careful to avoid ordinary injuries at such times. On the contrary, the admission rate during combat for nonbattle causes (diseases and nonbattle injury) may even rise above the average for the following reasons:

(1) Necessity for haste causes a disregard of ordinary precautions in the handling of materiel.

(2) Fatigue not only causes actual disability, but produces a state of mind that tends to exaggerate minor ailments and injuries, if not to foster frank malingering. While careful sorting should prevent the evacuation of any great proportion of such cases, the operation of sorting alone places an additional burden on medical units.

d. Proportion of Troops Actively Engaged. The proportion of a command actively engaged in combat determines, to a considerable degree, the casualty rate of unit as a whole; and this proportion varies within wide limits in units of different sizes and operations of different types. While the retention of a reserve is habitual in all units, local reserves of smaller units are ordinarily located so near the frontline that their exposure to risk is at least comparable with that of other elements of the unit. On the other hand, general reserves are ordinarily located well to the rear and outside the zone of greatest casualty incidence. Furthermore, reserves are committed to action by smaller units at more frequent intervals than by larger units. Whereas during active fighting it might be unusual for a battle group reserve to remain inactive for an entire day, in the same battle the reserve of a corps or army might not be committed for several days. All this points to the dangers in generalizations in the estimation of casualties. Each situation must be studied and an estimate made for each major fraction of the command rather than one estimate for the command as a whole, or the result will be no more than a poor guess. This is to say that the army surgeon should not base his estimate of probable casualties and nonbattle losses upon army experience, but upon the experience of the corps or, better yet, of divisions as influenced by the situation confronting them at the time. For this reason data in this manual and in FM 101–10 should be used with extreme caution for planning purposes.

Section IV. BATTLE CASUALTIES (NUCLEAR)

130. General

This section will guide the medical staff officer in estimating casualties in a nuclear war until experience factors have been accumulated for that type warfare. The estimations as described in this section are in addition to those resulting from conventional warfare.

131. Characteristics of Nuclear Warfare Casualties

a. Peak Loads. Detonation of a single nuclear weapon over a concentration of people produces a large number of casualties simultaneously in one spot, causing peak loads of patients in nearby facilities. This problem can become even more acute if there are multiple detonations. The medical planner is faced with the dilemma of planning for these peak loads but at the same time of dispersing medical facilities so that damage to them from a single weapon will be minimized.

b. Types of Casualties. Battle casualties in a nuclear war may be divided into several categories of wounded according to the effects produced on them by the causative agents: blast, thermal, ionizing radiation, or a combination of these traumatic effects. Moreover, the effects may be further subdivided into direct and indirect. For example, there might be an insignificant number of injuries from direct blast effects, but a much larger number from indirect effects. Thermal injuries can be profile type flash burns or incendiary burns from flammable materials. The time factor is significant also. While the time of onset of injuries of blast and thermal origin will be short and almost immediate, the time of onset for clinical manifestation of prompt radiation injuries varies in almost direct proportion to the amount of ionizing radiation received by the individual. An individual who receives a mid-lethal dose of radiation (450–500 RAD) may have no symptoms for from one to four hours, for example; but he may then experience nausea and vomiting. This symptom usually clears up within a few hours, and there usually follows a period of time ranging up to five days before the patient is brought to the hospital with other and more disabling clinical symptoms. From the time of his admission to his final disposition there may be a period of several days to several weeks during which hospital care is required. All these phenomena affect medical planning.

132. Experience Data

a. Developmental Studies. There have been many developmental studies for estimating casualties resulting from nuclear weapons,

but these studies have been directed primarily toward metropolitan areas, and for the most part from a single weapon.

b. Data from Past Wars. Data are available on the numbers and types of casualties produced from nuclear weapon detonations over Hiroshima and Nagasaki and from large non-nuclear attacks on cities in many areas of Europe as well as in Japan. These data all indicate that large numbers of the casualties resulted from the indirect effects of weapons of all types. These indirect effects included falling debris, secondary fires, suffocation, and other major casualty-producing effects.

c. New Element Specific to Nuclear Warfare. The only new casualty producing agent specific to nuclear weapons is nuclear radiation. Thus, the problem of casualty estimation on a battlefield becomes a study of specific weapons effect because in this situation (1) the secondary missile concentration per unit area is much less than in an urban area, (2) secondary fires (except in forests) are at a minimum, and (3) protection from all trauma-producing events (including ionizing radiation) are from whatever is available (foxholes, tanks, gun emplacements).

133. References

a. Classified. The estimates of probable casualties and damage are reported in many books and Department of the Army pamphlets, some classified and some unclassified. Classified reports considered the most reliable and usable are:

(1) TM 23–200 (Confidential), *The Capabilities of Atomic Weapons (U).*

(2) FM 101–10, Part III (S) Staff Officers Field Manual: Organizational, Technical and Logistical Data. Part III, Classified Data (U)

(3) FM–31 (S) Staff Officers Field Manual: Nuclear. Weapons Employment (U)

b. Unclassified. Unclassified, but most usable and rather reliable are:

(1) DA Pam 39–3, *The Effects of Nuclear Weapons.*

(2) DA Pam 39–1, *Atomic Weapons Employment,* May, 1959.

c. Evaluation. The classified studies are more reliable because actual field tests are used; in the unclassified studies, only general results or average data are used. Both classified and unclassified results are really only estimates, however, as nuclear weapons have never been used on a battlefield. For planning purposes the studies can be considered more or less reliable, their reliability varying with the effect being reported. In general, the physical data are good, but the biological data extrapolated to humans are

less reliable. The data will increase in reliability only after experience tables have been developed from actual wartime use of nuclear weapons. Because of the similarity in the format of both the classified and the unclassified manuals, consideration is given in this section to DA Pamphlet 39–1, *Atomic Weapons Employment.*

134. Basic Information Needed for Making an Estimate

Part of the information necessary prior to making casualty estimations includes knowledge about the detonation: the yield, ground zero, and height of burst of the weapon; and the deployment of troops (i.e., whether they are in attack and are relatively unshielded, or in well-fortified positions where most of the troops will be protected). In planning for an attack, if a study is made of the impact on friendly troops in the event the enemy should use nuclear weapons, part of the necessary information for the study would be obtained from various members of the staff. For example, G1 would have information on troop strengths; G2 would furnish information on enemy capabilities, including probable yield of enemy weapons to be expected, rate, and means of delivery; G3 would provide information relative to friendly troops, such as location and disposition; G4 would have information available on the dispersion and security of logistical installations. Radiological Center (RADC) would furnish information on fallout prediction from friendly and enemy delivered nuclear weapons. The Fire Support Coordination Center (FSCC) would have detailed target analysis information. The RADC and FSCC are in the vicinity of Division Headquarters and higher organizations. The RADC is under general staff supervision of G2 and special staff supervision of the Chemical Officer. Its primary function is predicting fallout contours and maintaining up-to-date radiological situation maps. Thus, much of the information necessary for medical planning for action to take following a nuclear attack or for the estimation of the numbers of possible casualties, should an attack be made on friendly troops, is available; but much coordination with different staff members is necessary to make reasonable estimations of the situation.

135. Procedure for Predicting Casualties When Nuclear Weapons Are Used Against the Enemy

a. Primary Considerations. Tactical employment of nuclear weapons against an enemy in nuclear warfare is considered part of the tactical plans; the actual use, however, would depend upon the development of an adequate target. These nuclear weapons

are planned to accomplish such tasks as softening a fortified position, opening a gap in the enemy line, or striking a terrific blow upon the enemy with a minimum of risk to friendly troops. It must be assumed that the enemy will have the same capability and will be in possession of the same information about troop safety as the friendly forces. Weapon utilization is the responsibility of the commander, who must give guidance to his staff as to his requirements for their aid in the accomplishment of his mission. His guidance must take into consideration many factors such as high assurance of no fallout, troop safety, and the contingent requirements of no obstacles in the zone of the planned attack, etc. The success or failure of his mission may well depend upon the ability to kill or injure the enemy without unnecessary risk to his own troops, and not necessarily in the destruction of equipment. For this reason, casualty estimates should be realistic without either an overestimation or an underestimation of weapons effects on personnel. The same considerations will hold for any particular yield of weapon at any particular height of burst.

b. Use of DA Pam 39–1. Utilization of the information available in DA Pamphlet 39–1 depends upon understanding the method of presentation of the material. The characteristics of weapons and weapon delivery systems, as well as the physical damage caused by an assumed family of weapons of various yields, are presented in this manual both in tabular form and in specially constructed nomographs and nomograms. The probable errors of delivery by the various delivery systems and the possible effects on the desired damage results are also presented in tabular form. Two methods are given for estimating the probable casualties produced by various orientation of the detonation (surface bursts or high or low air bursts) : the graphic template method and the numerical method. Troop safety criteria are specifically given in tables and nomograms for various degrees of protection, warned and protected, warned and exposed, and unwarned and exposed. In each category are given the distances which constitute the emergency, moderate, and negligible risks for friendly troops when employing various yield weapons and heights of burst.

136. Procedure for Predicting Casualties When Nuclear Weapons Are Used by the Enemy Against Friendly Forces

a. Primary Considerations. It is impossible to know precisely the number of casualties to expect from any particular detonation, or to predict the number with a high degree of accuracy. With study of the information available, even though it is not highly reliable, indications can be given of what to expect by way of

casualties, and the surgeon will have time to do some planning prior to the arrival of patients.

b. An Assumed Situation to Illustrate Method of Predicting Casualties.

(1) *General assumptions.* To illustrate the principles involved in the preceding statement, it is assumed that a division has been attacking along a broad front and was halted during a short period. The period was sufficiently long to permit digging of foxholes, but insufficient to allow for extensive fortifications. The attack is to be resumed at 0500 hours. If the enemy were to hit the friendly forces with a nuclear attack 30 minutes prior to the jumpoff, how many casualties could be expected among the friendly forces? By using data and assumptions furnished by other members of the staff (par. 134) and by making computations in accordance with DA Pam 39–1, the surgeon can estimate casualties as described in the paragraphs below. In the event such an estimation had not been previously made, and the enemy did hit the friendly forces at 0430 hours, when darkness would add to the general confusion and make visual examination of the destruction almost impossible, the surgeon could follow this same procedure, but restrict his calculations to the weapons actually employed. (References to tables and pages in the paragraphs which follow are to DA Pam 39–1.)

(2) *Specific assumptions.*

Problem: Compute the total number of casualties resulting from enemy use of (a) a 20 KT weapon and (b) multiple attack with lower yield weapons (Co B, 1 KT, Co C, 1 KT, Co E, 5 KT).

Prior to making any calculations, certain specific assumptions must be made. Assumptions are as realistic as possible, and it is only after the event that the assumptions can be checked for an actual sequence of events. It is assumed (for this calculation) that—

(*a*) Each rifle company has strength of 200 men.

(*b*) Enemy troops are protected (dug in) and warned.

(*c*) Delivery system is long range cannon for 5 KT and 20 KT and medium range cannon for 1 KT weapons (DA Pam 39–1, p. 175, fig. 10.1).

(*d*) Personnel are homogeneously distributed within the target areas.

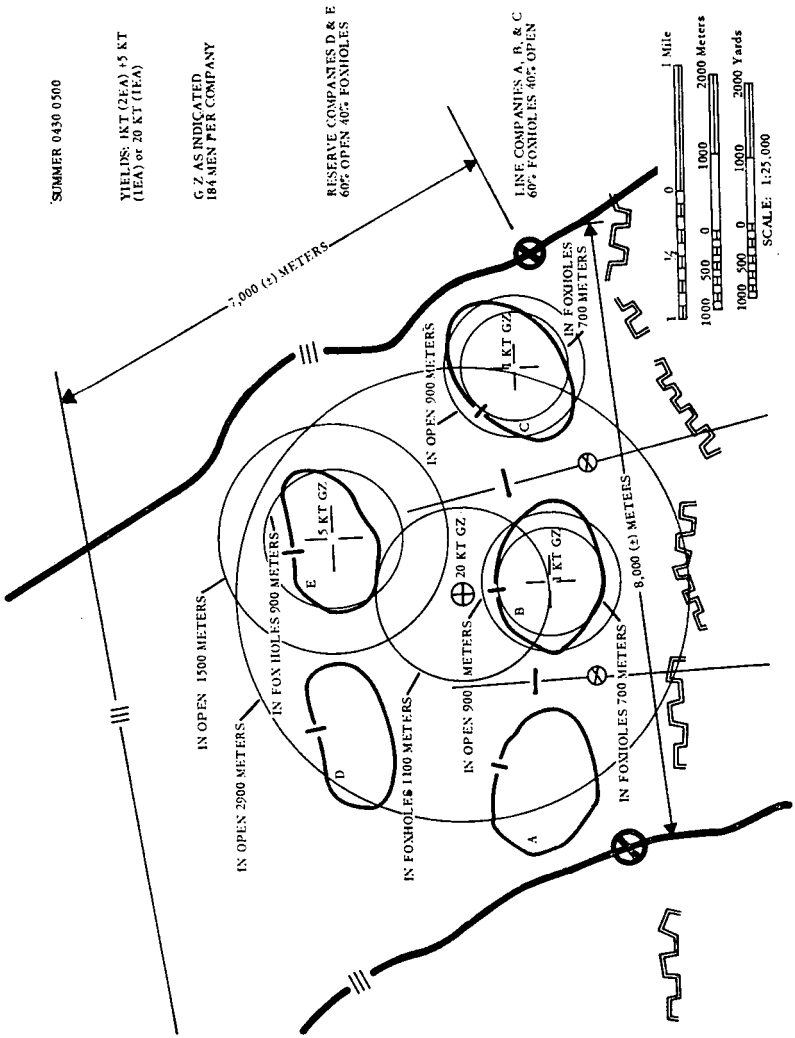


Figure 6. Nuclear attack on the five rifle companies of a battle group.

(*e*) Adequate delivery means (weapon reaches target) with zero delivery error from friendly point of view, and a 300 meter buffer distance (3CEP) from the enemy point of view.

(*f*) Enemy employs all weapons as low air bursts (DA Pam 39–1, pp. 176, 177, fig. 10.2).

(*g*) Companies on line (Cos. A, B, and C) have 40 percent of the troops in the open and 60 percent in foxholes.

(*h*) Companies in reserve (Cos. D and E) have 60 percent of the troops in the open and 40 percent in foxholes.

(*i*) Ground zero for 20 KT weapon is as indicated in figure 6.

(*j*) Ground zero for 1 KT weapon (1 each on Co. B and Co. C) is at the geometrical center of the target area. Ground zero for the 5 KT weapon is at the geometrical center of the target area enclosing Co. E.

(*k*) The enemy accepted a moderate degree of risk.

(3) *Calculations.*

(*a*) Calculation for one 20 KT weapon, situation on Companies A, B, C, D, and E.

The vulnerability radii for own dispositions, in meters, for low airbursts, 20 KT weapon (as given in DA Pam 39–1, p. 183, fig. 10.8), are as follows:

In the open—2900
In foxholes—1100

These figures are used as a basis for the following calculations:

1. Co. A.

	(184 men 40% in open	*60% in foxholes)*
74 men in open	70% of area affected	52 casualties
110 men in foxholes	0% of area affected	0 casualties
		52 Total

2. Co. B.

	(184 men 40% in open	*60% in foxholes)*
74 men in open	100% of area affected	74 casualties
110 men in foxholes	40% of area affected	44 casualties
		118 Total

3. Co. C.

	(184 men 40% in open	*60% in foxholes)*
74 men in open	40% of area affected	30 casualties
110 men in foxholes	0% of area affected	0 casualties
		30 Total

4. Co. D.

	(184 men 60% in open	*40% in foxholes)*
110 men in open	90% of area affected	99 casualties
74 men in foxholes	0% of area affected	0 casualties
		99 Total

5. Co. E.

	(184 men 60% in open	*40% in foxholes)*
110 men in open	100% of area affected	110 casualties
74 men in foxholes	0% of area affected	0 casualties
		110 Total

6. Recap:

Co. A. 52 casualties
Co. B. 118 casualties
Co. C. 30 casualties
Co. D. 99 casualties
Co. E. 110 casualties
409 Total or 44% of men in battle group area are affected by 20 KT detonation.

(*b*) Calculations for multiple attack with 1 KT on Co. B and on Co. C and a 5 KT attack on Co. E.

The vulnerability radii for own dispositions, in meters, for low airbursts, 1 KT and 5KT weapons (as given in DA Pam 39–1, p. 183, fig. 10.8), are as follows:

	1 KT	*5 KT*
In the open	900	1500
In foxholes	700	900

These figures are used as a basis for the following calculations: (Area affected represents men in area as being affected.)

1. Co. B.

	(184 men 40% in open	*60% in foxholes)*
74 men in open	90% of area affected	67 casualties
110 men in foxholes	75% of area affected	83 casualties
		150 Total

2. Co. C.

	(184 men 40% in open	*60% in foxholes)*
74 men in open	90% of area affected	67 casualties
110 men in foxholes	75% of area affected	83 casualties
		150 Total

3. Co. E.

	(184 men 60% in open	*40% in foxholes)*
110 men in open	100% of area affected	110 casualties
74 men in foxholes	90% of area affected	67 casualties
		177 Total

4. Recap:

Co. B. 150 casualties
Co. C. 150 casualties
Co. E. 177 casualties
477 Total or 52% of men in area are affected by the multiple burst.

(*c*) Enemy troop safety considerations. In deciding upon the use or nonuse of nuclear weapons, the enemy had to consider troop safety. The closest point to the 20

KT ground zero was approximately 2800 meters. The safety radii (this does not include a buffer distance) for troops warned and protected from a low airburst (DA Pam 39–1, p. 181, fig. 10.6) are as follows:

Negligible risk_____2000 meters
Moderate risk_____1600 meters
Emergency risk_____1300 meters

An inspection of the casualty radii indicates no danger to the enemy user of the 20 KT weapon (DA Pam 39–1, pp. 176, 177, fig. 10.2). Delivery error would have to be assumed by the enemy planners. The radius of safety plus the buffer distance equal the degree of safety assurance (DA Pam 39–1, p. 182, fig. 10.7).

c. Projection of the Assumed Situation to a Field Army. These assumptions appear to be realistic, and the calculations are valid for the assumptions. If it is assumed that a battle group consists of approximately 1,000 men and that the troop density is somewhat increased with about the same disposition, then it appears reasonable to assume that 50 percent of the battle group would be casualties. Nothing is indicated in DA Pam 39–1 relative to the number dead and the number injured. On the basis of the experience of the Japanese in Hiroshima and Nagasaki, about 50 percent of the casualties would be killed. Thus, in round numbers there would be approximately 500 casualties per battle group, of whom approximately 250 would be in need of medical attention. It is unreasonable to state categorically that there will be a certain number of casualties per theater, because nothing is known of the troop disposition, the number of weapons used, their yields, and many other things necessary for estimation. However, if it is assumed that there were three field armies per theater, and that five 20 KT weapons were used every day with at least 250 casualties per 20 KT weapon in need of medical attention, there would be at least 37,500 casualties per month per theater, or 12,500 per field army. If this number is added to the expected number of nonnuclear casualties as determined by methods described in section III, the numbers of expected casualties are far greater than have ever been considered in previous wars; nevertheless, such numbers must be considered in nuclear warfare.

137. Problems of Operating in a Radioactive Area

a. General. It has been previously stated in this section (par. 134), that the mission of predicting radioactive fallout rests with RADC, which also has the mission of maintaining the current radiological situation. The latter mission is an after-the-fact activity, based on the information relayed to RADC by monitors

within the area of radioactive contamination. The problem of predicting radioactive fallout is not fully solved at present, and to take drastic action based on some of the nebulous information presently available might invite disaster or uncalled-for delays in accomplishment of the mission. The procedure for predicting radioactive fallout is adequately discussed in DA Pam 39–1, section VI, paragraphs 3.25 through 3.33.

b. Hazards From Radioactive Fallout. The hazards from radioactive fallout include both beta particles and gamma rays. The beta particles travel through air only short distances (i.e., about 6 feet), or they may be stopped by an individual's clothing. If a fallout particle lands on the skin and is allowed to remain for a considerable length of time, a beta burn may result. The primary hazard of radiation from fallout is from the gamma rays. Since most of the gamma rays with the energy of radiation in fallout come from a distance of not more than 180 feet, protection cannot be an area protection, but must be more specific. As a matter of fact, it can be shown that about 50 percent of the radiation on a flat plane surface comes from a distance of 25 to 30 feet, and 75 percent of the total from not more than 60 feet. Thus, if a field hospital in tents is to be protected, individual tents will have to be shielded. Some shielding can be obtained by digging in to a depth of about four feet, or by putting up a wall of sand bags about four feet high around each tent or small area. A removable cover for the top will materially aid in rapidly removing the contamination from the top of the tent.

c. Decontamination of an Area. Decontamination of an area following its contamination may be accomplished by any method of removing fine dirt. This includes sweeping, vacuuming, hosing, or mopping with soap and water. Decontamination of personnel includes washing, removal of clothing, brushing, and other means of mechanically removing dirt.

d. Decontamination of Patients. Decontamination of patients may be accomplished in much the same manner, but the saving of life is much more important than the removal of the last traces of contamination prior to treatment. As a matter of fact, the amount of radioactive contamination that is probably on one individual is not sufficient to be a real hazard. The hazard comes in having collected into one confined area many patients, each with small amounts of contamination, and possibly in scattering radioactivity in an area occupied by other individuals. The problem of monitoring large numbers of patients prior to admission to a hospital can be significant. One procedure suggested is to monitor the casualties prior to their removal from the aid station. If a

number of casualties are removed from the same general area and, upon monitoring, representative individuals are found to be contaminated, time and effort can be saved by removing the outer clothing from all who were in the same general vicinity. If time permits (this depends upon the severity of the injuries), the contaminated patients upon arrival at a treatment facility can be placed in a special receiving ward, which is somewhat removed from the usual admitting room (app. VIII). Following decontamination, patients can then be added to the usual flow of patients, without regard to former radiation in kind (contamination) or amounts. An irradiated patient is nonhazardous to handle; however, the contaminated patient must be decontaminated to insure that he is nonhazardous.

e. Decontamination of Food and Water.

(1) Much has been said and written about the use of food and water which have been contaminated. Ground water is protected even from high levels of radiation on the surface above because radioactivity does not move appreciably into the ground from the top soil. Surface water (for example, lakes, rivers, and reservoirs) can become contaminated; since the fallout is particulate matter, however, the particles tend to settle out. After the settling and filtration procedures generally carried out in purification of surface water supplies are used, the water will probably contain only a very low percentage of the radioactivity which originally fell out. The best guide to the amount of radioactivity safe for consumption is from the National Committee for Radiation Protection: 0.09 microcuries mixed fission products per cubic centimeter (ml) for an emergency 10-day consumption, or 0.03 microcuries for a 30-day consumption. The accurate determination of the radiation level in water can be made only by adequate equipment at a laboratory established for this purpose. Field survey beta-type meters give indications of contamination, but they are much too insensitive for more than an indication. The same general statements apply to food; it can be considered that food in containers is safe for consumption. Decontamination of containers is accomplished by dusting, by washing, or by the simple procedure of turning the container over and opening the unexposed side. If food or water is contaminated by early fallout, the radioactive decay will frequently be sufficient to bring the radiation down to the accepted level.

(2) The real crux of whether or not water or food is used depends somewhat upon necessity. This is particularly true of water; if water rations are short, the levels of contamination may have to be exceeded for short periods of time. This does not mean that a person receiving more fission products than the amount recommended is subject to immediate injury, but it does mean that other supplies of food and/or water which are not contaminated should be found and used. Food and water which have been irradiated without contamination are safe to eat or drink. If a weapon is detonated high in the air over a water supply, the water is more than likely safe, although a low air burst may give significant amounts of induced radiation in the water. This radiation is dissolved, and probably cannot be filtered out; however, there should not be significant quantities for longer than two days. This situation will be unusual, and the history of the detonation will answer any of the questions.

f. Necessity for Prior Planning. Radioactive fallout is a new military problem, and plans must be made to vitiate the effects of the radiation as much as possible. Knowledge of the occurrence of fallout, the effects of radiation on personnel, and the ways of preventing wide spread hazard to personnel is necessary so that lives can be saved. Fallout in the event of surface burst nuclear weapons cannot be prevented; but if care is taken in planning, there will be a minimum of interruption of activities of the medical service. Undue fear of radioactive fallout can be just as detrimental to the military effort as lack of planning for protection of personnel. There are problems, but careful investigation of ways of protection from radiation and utilization of available information about the possible hazards to personnel will save needless time and effort which might otherwise be exerted in activities totally ineffectual in helping to solve the problems.

CHAPTER 8
EVACUATION AND HOSPITALIZATION

Section I. INTRODUCTION

138. General

One of the chief functions of the medical service in the theater of operations is to prevent the adverse effect produced on combat efficiency by unevacuated patients. Accomplishment of this function involves the careful evaluation (sorting) of the wounded in relation to the capabilities of the medical echelon involved, and the treatment of such wounded on their evacuation to the rear. The general plan of evacuation and hospitalization within the theater of operations is prepared by the theater surgeon in accordance with the policies prescribed by the theater commander. Execution of the plan, under the supervision of the theater headquarters, is decentralized to the major commands. The fixed hospitalization requirements of a theater of operations are computed in terms of the total number of beds in those hospitals capable of performing all types of treatment. The total authorization to meet these requirements is described as the "fixed bed allotment" of the theater of operations. In general, the fixed bed requirements of a theater of operations are satisfied by assignment to the theater army logistical command of appropriate numbers of general hospitals and station hospitals. Field hospitals assigned to the theater army logistical command, which have been designated by the theater army logistical command commander to perform station hospital type medical service, are considered as part of the hospitalization system which satisfies the fixed bed requirements.

139. Policies

a. Evacuation Policy. Before plans can be made to provide hospitalization and evacuation for any theater, there are certain problems which must be resolved by command decision. One decision is the evacuation policy. The evacuation policy is established by the Secretary of Defense with the advice of the Joint Chiefs of Staff, and upon the recommendation of the theater commander. It determines which patients will be evacuated to the continental United States by designating a maximum number of days for the

allowable period of hospitalization within the theater. The time set may vary from 30 to 120 days in increments of 30 days. The decision is made as early as possible. The policy does not imply that a patient is held at each level of medical treatment for the limit of the time set, but that his total fixed hospitalization time in the theater does not exceed the number of days specified. In conformity with the theater evacuation policy, subordinate commanders establish evacuation policies, subject to approval of the theater commander, indicating the maximum period that patients may be held in their particular installations or areas. For example, a shorter evacuation policy may be established for station hospitals than for the theater as a whole. This would mean that all patients admitted to station hospitals, whose recovery is likely to require more than the number of days of the shorter policy would be evacuated to general hospitals. This would in no way affect the total fixed bed requirements of the theater, provided proper adjustment is made in the distribution of total theater fixed beds between station and general hospitals on the basis of their different evacuation policies. In subordinate commands, particularly those of the combat zone, the policy may be very fluid, varying from hour to hour and day to day in the forward elements of the division in accordance with manpower policies, admission rates, and available beds. The evacuation policy established in the combat zone, for example, must not be such that it will hamper the ability of medical facilities to move forward. Frontline medical units must be as mobile as the combat units they support. No medical unit can maintain mobility unless the units behind it provide prompt and continuous evacuation of its patients. After treatment, patients cannot be held in stations if mobility is to be retained. Consideration must also be given to the need for keeping at a minimum the number of patients in forward areas in order to reduce vulnerability of enemy attacks at all times. More rigid evacuation policies, allowing treatment for longer periods, are normal in higher commands and in the communications zone. The evacuaction policy in an overseas command is the minimum consistent with military economy. It is based on the following conditioning factors: (1) distance of the command from the continental United States; (2) availability and type of inter- and intra-theater evacuation means; (3) character of the operations; (4) numbers and types of patients anticipated; (5) continental United States replacement capabilities; and (6) availability of medical treatment facilities in the oversea commands. Every commander wishes to retain in the theater as many seasoned personnel as he can. Such practice not only maintains a high experi-

ence level among his forces, but also lessens the load on the replacement system and on the evacuation system. These advantages, however, can be achieved only at the expense of greatly expanding the medical service in the theater. This expansion requires allotment to the medical service of a much larger share of the transportation space and the troop strength, at a time when both transportation and personnel are critical. A shorter evacuation policy has the major advantages of requiring fewer medical facilities and fewer medical personnel in the theater. Its major disadvantages are a great increase in personnel in replacement channels, increased loss to the theater of many trained personnel, and increased transportation requirements. In general, for a longer evacuation policy the reverse is true.

b. Chain of Responsibility. The evacuation and hospitalization system is based on the principle that it is the responsibility of the supporting units to relieve forward units of their patients in accordance with the established evacuation policy. The principle extends from the responsibility of the zone of interior to evacuate and hospitalize all long-term patients from a theater of operations to the responsibility of the medical platoon to evacuate patients from the battle group companies. Patients begin to accumulate as soon as troops come under fire. Care and prompt evacuation are as important then as at any time in the operations. Medical units must be disposed in a manner which will facilitate their entry into action to give their support to any combat action. Evacuation and hospitalization facilities are provided at each level according to the expected needs for medical service and the number of patients expected to be received from supported units. Medical installations are established only as required to meet existing needs or the contingencies of the immediate future; medical units not required for this purpose are held in reserve.

c. Control of Transportation. Decision concerning evacuation control is another command problem. The amount of transportation available to the medical service and the degree of control which it is able to exercise over the transportation affect all medical planning. Surface evacuation from the combat zone to the communications zone is the responsibility of the commander, theater army logistical command; air evacuation, except within the combat zone, is the responsibility of the theater air force commander (FM 100–10). Although maximum use is normally made of aircraft for evacuation, this means of transportation is affected and interrupted by weather, enemy action, or reallocation. Consequently, ground means must always be available and planned for. (Refer to paragraph 141 for details concerning control of evacua-

tion by the Medical Regulating Section.) Moreover, because of the nuclear threat, alternate channels of evacuation should be planned, into which the evacuation flow could be diverted should the principal one be made ineffective. Evacuation and hospitalization are continuing activities that cannot be suspended while adjustments are being made.

d. Patients. Policy in regard to patients is that no patient must be permitted to go farther to the rear than his physical condition requires or the military situation demands. Every case evacuated without sufficient reason imposes an unnecessary burden on three agencies: the man's organization, which must go shorthanded until he is returned or replaced; the replacement system, which must procure, equip, train, and transport a man to take his place; and the medical service, which must provide an additional berth in ambulances and trains, an additional bed in a hospital, and additional trained medical personnel to care for him. Patients with minor wounds and minor illnesses are returned to duty as soon as possible from as far forward as possible in the evacuation system. Movement of patients within a field army is held to a minimum by their classification into the following categories: (1) patients who can be promptly returned to duty with their units from the point of initial treatment; (2) patients whose condition indicates their period of treatment will be completed within the period of time established as the field army evacuation policy (these remain in the hospitalization elements of the field army); and (3) patients whose condition indicates a requirement for an extended period of hospitalization (these are evacuated to the communications zone for treatment and further classification). This process is called sorting and is defined as the professional evaluation of a patient in light of his condition, the capability of the agency concerned, the tactical situation, and the available means of transportation. It is subject to constant modification based on a continuous comparison of the condition of the individual against the entire group. Sorting considers the need for rapid return to duty, priority for treatment, and priority of evacuation.

e. Effect of Chemical, Biological, or Radiological Warfare. The possible use of chemical, biological, or radiological warfare has a direct bearing on all of these policies because of the required dispersion of units, the rapidity of their movement, the long lines of communications, maximum decentralization, and the types and rate of admission of patients.

f. Effect of Nuclear Warfare. Employment of mass-destruction weapons on friendly troops will bring greatly increased numbers of patients, in a single area, in a very brief period of time. These

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increased numbers as such as not of as great significance as the *rate* at which they are produced. The rate affects medical capabilities for immediate treatment, generates peak requirements for evacuation, and places an increased need on hospitals for expansion. The "fixed bed allotment" may need to be increased. Because of the type of wounds, the effects from ionizing radiation, and the large number of burns, the problem of long term care will increase and the evacuation policy may be affected. Moreover, nuclear missiles and high performance aircraft will probably inflict many more casualties and much more destruction of medical facilities in the communications zone than have been experienced in the past. The medical service in the communications zone may need to be expanded to include a field type system patterned after that of the combat zone. It is evident that experience factors regarding hospitalization and evacuation policies would need modification to fit the new situation.

140. Evacuation Flow

a. Medical evacuation is the process of removing patients from the battlefield and subsequently moving them from the combat area to hospitals for treatment or to other installations for disposition. The evacuation flow is from the forward to the rear areas, with impetus of support from successively higher levels of medical service. The division level picks up patients from the station(s) of the unit level; the corps/army level evacuates patients from the division level; planes and trains transporting patients from evacuation hospitals and/or holding facilities of the corps/army level belong to the communications zone level. Hospital ships and planes evacuating communications zone patients to the zone of interior belong to the zone of interior level of medical service. The division relieves subordinate units of their patients; the field army evacuation units relieve the division of its patients and remove them to field army hospitalization facilities. Forward surgical facilities which reinforce the division clearing stations are provided by the field army as supplementary medical support. They receive the nontransportable patients directly from unit level facilities or from the clearing station or stations and prepare them for further evacuation. These combat zone hospitalization facilities are moved forward where they are easily accessible to the division clearing stations. It is evident that evacuation and hospitalization are very closely related. A good evacuation system permits the maximum utilization of ideally located hospital sites; conversely, a properly developed hospitalization system takes advantage of the evacuation means to be employed with correspondingly reduced requirements for connecting evacuation means.

b. In order to meet varying conditions imposed by climate, terrain, and the tactical situation, the evacuation of casualties is not characterized by an inflexible system. Generally the evacuation flow begins at unit level from the moment patients receive aid from the company aid man and walk back or are carried to a company collecting point or aid post. These patients follow the primary line of evacuation to a point as far rearward as is consistent with their injuries and the tactical situation. From the company collecting point or aid post patients are taken (usually by wheeled ambulance) to the battle group aid station, the first medical treatment station in the evacuation system. Transportables usually proceed through the primary evacuation route (i.e., via wheeled ambulances to the division clearing station and later to an evacuation hospital of the field army). Nontransportable patients and those who must have immediate surgery are moved preferably via Army aircraft, to a mobile army surgical hospital located in the division zone, or they may be moved direct to an evacuation hospital. From the mobile army surgical hospital they may later be sent (preferably via air) to an evacuation hospital in the field army area, where they will rejoin the primary flow of evacuation. Patients who are awaiting evacuation from an evacuation hospital may be sent to a medical holding facility and then to a numbered general hospital in the communications zone, or they may be sent directly to the general hospital. If further evacuation becomes necessary, they may be sent to a medical holding facility where they await transportation to the zone of interior. Patients evacuated to the zone of interior are sent to named Army hospitals; post, camp, or station hospitals; or (if they are separated from service) to veterans' hospitals. It must be remembered that at any point in the evacuation system, a patient will be returned to duty if it is possible.

141. Medical Regulating

a. Close coordination must be maintained between the surgeon of the theater army logistical command, and the surgeons of the base and advance logistical commands, and the field army surgeon in order to accomplish timely and adequate evacuation of patients. This coordination is effected through the establishment of a medical regulating section as a subdivision of the surgeon's office in each of these commands. The medical regulator of the theater army logistical command ascertains from the medical regulator of each of the other commands mentioned above the number and location of patients awaiting evacuation. From the medical regulators of the advance and base logistical commands, he also ascer-

tains the number and location of available beds for patients. Availability of this information enables the theater army logistical command medical regulator to allocate bed credits for the movement of patients from the field army, and for the rearward movement of those patients awaiting evacuation from the advance logistical command. It enables him also to schedule the evacuation of patients to the zone of interior. Based upon the patient evacuation requirements of all these commands, arrangements can then be made by the medical regulator, theater army logistical command, through the theater agency having movement control of the type of transportation desired to accomplish the evacuation of patients. He then notifies the medical regulators of the subordinate and supported commands of the pertinent information regarding the movement which concerns them (figs. 7 and 8). For further details and possible deviation, refer to FM 8–10.

b. The availability of sufficient transportation (ship, plane, helicopter, train, or motor vehicle) determines the degree to which evacuation can be accomplished. Evacuation from the combat zone is modified significantly by the type of transportation used. The theater Air Force surgeon provides guidance as to the types of patients to be evacuated by air. The field army surgeon and the surgeons of the advance and base logistical commands are responsible for selection of cases to be evacuated by way of air from medical installations under their control. The medical regulator must have this information in order to coordinate surface and air

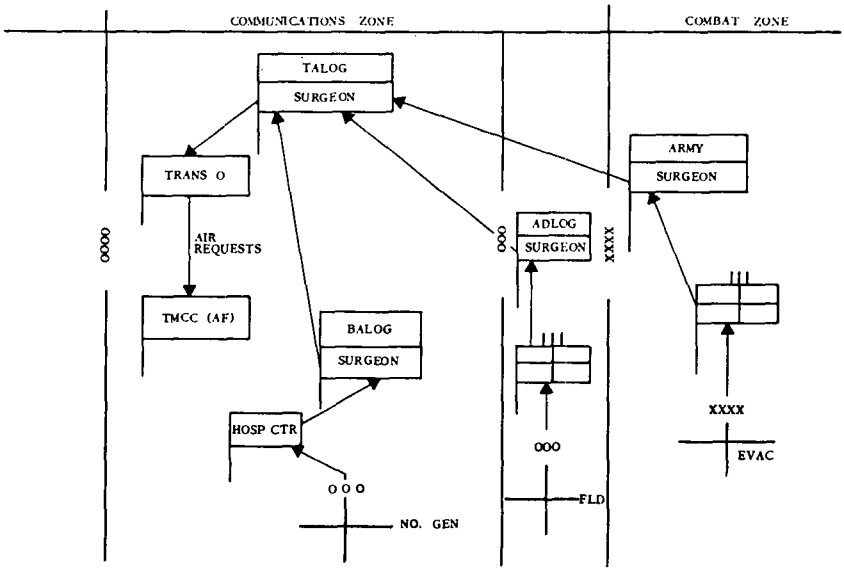

Figure 7. Intra-theater evacuation requests.

evacuation. Patients to be evacuated from an oversea command by air transportation are transferred to an air force aeromedical evacuation facility at an aerial port. Here the responsibility of the theater army logistical command surgeon ends. His responsibility terminates also for patients who are received on board a ship for transportation to the zone of interior. Military Air Transport Service (MATS) provides aircraft and medical attendants for the air transportation of patients from the oversea command to the zone of interior. Military Sea Transportation Service (MSTS) provides water transportation for surface evacuation of patients from the oversea area to the zone of interior.

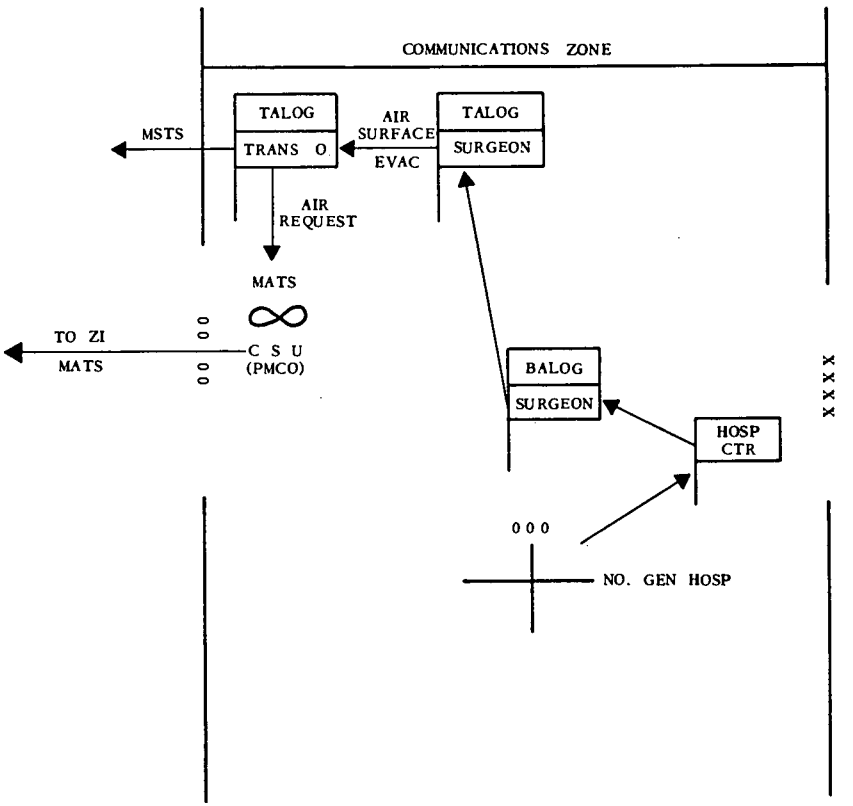

Figure 8. Inter-theater evacuation requests.

Section II. REQUIREMENTS

142. General

Adequate means must be made available for the accomplishment of the medical mission. These means include hospital beds (both fixed and nonfixed), patient holding facilities, transportation,

medical supply, and communications. The number of hospital beds required is a function of—

a. The expected daily number of admissions to hospital for disease and nonbattle injury, which, in turn, is a function of the strength and the admission rate.

b. The expected daily number of admissions to hospital for battle injury and wound, which, in turn, is a function of the strength and the admission rate.

c. The expected total durations of treatment for each of the two classes of admissions noted in *a* and *b* above.

d. The evacuation policy, as relevant to the computation.

e. Appropriate dispersion allowance.

143. Explanation of Factors Used in Computing Fixed Bed Requirements

a. Basis of Fixed Bed Allotment. The total authorization to meet the hospital requirements of a theater of operations is expressed as the fixed bed allotment. In general, the fixed bed requirements of a theater of operations are satisfied by assignment of appropriate numbers of general hospitals and station hospitals to the communications zone. Medical units of the combat zone and convalescent centers of the communications zone are not included in the computation. Field hospitals are included only when they are employed as fixed hospitals in the communications zone. While the estimate of the number of beds required in any specific situation must be based on all the considerations listed in paragraph 142, the medical planner does not normally work with them all as separate factors. He makes use of tables of experience factors which automatically take account of the effects of the expected duration of treatment and of evacution policy. Thus the basic data which he requires are—(1) the time period covered (the period of estimate, usually in 30-day intervals); (2) the troop strength (population covered); (3) the daily admission rate (rate of generation of patients); (4) the experience factors for accumulation of patients dependent upon evacuation policy (rate of patient-load growth); and (5) the dispersion factor (patient-bed conversion factor). Each of these factors will be discussed separately in the paragraphs which follow. Nuclear warfare will affect hospital bed planning by increasing requirements. As no experience data for this type of warfare are available, it will be necessary for the surgeon to rely on careful estimates based on the most detailed knowledge of the projected operation.

b. Time Period Covered. The time period in a particular estimate is that period from the beginning of operations to a maximum number of days of operations which are included in the estimate (*f* below). Experience factors for patient-load growth are always related to *periods of estimate* which are included in the overall time period covered. These periods of estimate are usually stated in 30-day intervals. Accumulation factors (*f*(1) below) are always directly related to that period of estimate which is equal to the maximum number of days in the time period covered. For example, an accumulation factor at the 90-day interval is used for a 90-day period of estimate. Accumulation-decumulation factors of both types (*f*(2) and (3) below) are related to each separate 30-day interval included in the overall period of estimate, depending upon the maximum number of days a particular month of admission contributes to the overall time period covered. For example, four separate 30-day intervals are included in a 120-day period of estimate. Accumulation-decumulation factors at the 120-day interval represent decumulation from the first month's accumulation of patients, while those factors at the 90, 60, and 30-day intervals represent respective decumulation through this time period covered for the second through the fourth month's accumulation of patients. Where 30-day stability does not exist, remaining factors (*f*(4) below) are related to each separate daily interval included in the overall estimate, depending upon the maximum number of days a particular day of admission contributes to the overall time period covered. This is similar to the use of the accumulation-decumulation factors except that the process involves 120 separate intervals within a 120-day period of estimate.

c. Troop Strength. As hospital admission rates vary according to type of troops, their location in the theater, the type of engagement, the enemy capabilities, etc., it is advisable when computing the strength factor to divide the troops to be supported into various groups having approximately the same casualty rate. The patients are then computed separately for each group on the basis of its numerical strength. The average, or mean, strength for any group during any given period can be obtained by dividing the sum of the strength of each day in the period by the number of days in the period. The strength supported figures in hospital planning vary, not only in the numerical sense, but in the relative vulnerability of various elements of that strength to wounding. A theater admission rate based on wounds, derived from World War II, is based on relative invulnerability of the communications

zone component. Even if the combat zone rate remains the same, but casualties are increased in the communications zone, the *theater* rate will increase.

d. The Daily Admission Rate. For planning hospital requirements, the daily admission rate is expressed as the number of admissions per 1000 average strength per day. In using experience factors to compute this rate, it is necessary to consider the theater from the standpoint of combat, size and organization of forces, weapons employment, etc. The data presented in chapter 7, therefore, should be used only as rough guides toward selecting an assumed daily admission rate applicable to the particular problem at hand. Because of the great effectiveness of nuclear weapons, large numbers of patients will be produced rapidly. These will create peak loads which will decrease to normal or below normal between nuclear strikes. The wide fluctuation produced by these circumstances will obviously make reliance upon any long term average admission rate quite hazardous. Flexibility in computing fixed beds required under such conditions is provided for in "remaining factors" (*f*(4) below).

e. Duration of Treatment.

(1) *General.* The average duration of treatment in any particular echelon of medical service depends upon the echelon, the type of case, and the evacuation policy (par. 139*a*). Forward of general hospitals, the type of medical treatment facility determines, in general, the duration of treatment, although the severity of the case, particularly as it affects the transportability of the patient, also exerts an influence in individual cases.

(2) *Case fatality and disability separation rates.* The proportion of cases that die in a medical treatment facility and their average longevity after admission, and the proportion of cases that are separated from the Army for physical disability and their average hospital stay after admission, influence the average duration of treatment of all cases. These factors should be considered in planning. For example, during World War II 4.5 percent of battle casualty admissions to medical treatment facilities died of wounds and an estimated 18 percent were separated for physical disability, whereas in the Korean War (based on OTSG data) only 2.5 percent of all battle casualty admissions died of wounds and 9.1 percent were

separated for physical disability. Thus in World War II approximately 77 percent of the battle casualty admissions were returned to duty, compared with approximately 89 percent in the Korean War.

(3) *Disease and nonbattle injury.* During World War II, for cases treated in both hospital and quarters, the average duration of treatment of cases of disease and nonbattle injury was 20 days for the United States Army worldwide. In the Korean War, the average duration of all nonbattle hospital and quarters cases was 19 days.

(4) *Battle injury and wound.* The average duration in hospital and quarters of battle casualty admissions was 121 days in World War II.

f. Experience Factors for Accumulation of Patients Dependent Upon the Evacuation Policy. For determining theater fixed bed requirements a 30-day evacuation policy is normally used during the earliest month or months of an operation; thereafter, the evacuation policy is generally increased so that a large number of trained men, who otherwise would be lost to the theater, may be retained (par. 139*a*). During certain periods of mass casualty phenomena as in a nuclear strike when wounded become so numerous, almost instantaneously, that availability of beds for both battle and nonbattle casualties is seriously affected, the evacuation policy may be reduced for a long enough period to make room for the increased influx of patients. Redetermination of theater fixed bed requirements is not required under these conditions; fixed bed requirements in the continental United States would need redetermination, however, to accommodate the increased number of patients evacuated from the theater (par. 149*c*). The evacuation policy, by setting a maximum for the number of days a patient may be retained in theater hospitals, exercises a limiting effect on the growth of the patient load in the theater. While the evacuation policy alone does not enter directly as a computational factor in the estimation of fixed bed requirements, it does determine which table and which type of experience factor are appropriate to use. The rate of patient-load growth is represented by the various experience factors relating to rates of accumulation and decumulation of hospital patients under specified evacuation policies. (Decumulation is the reverse of the process of accumulation; that is, it is the reduction of a total by successive decrements.) These experience factors are identified (1) through (4) below—

(1) *Accumulation factors.* These factors indicate the number of patients who will have accumulated at specified periods of time beginning of operations based upon a constant admission of one patient per day and a constant fixed evacuation policy. These factors are used *when the evacuation policy, the daily admission rate, and the troop strength remain constant during the entire period covered.* Separate sets of factors are provided for the different evacuation policies and for separate theater and CONUS accumulation of patients as affected by the evacuation policies. It is probable, in the face of the great fluctuation of admission rate in nuclear warfare, that the theater evacuation policy would deviate from time to time, which would have the effect of making requirements based on a fixed policy somewhat unreliable.

(2) *Accumulation-decumulation factors, first type (AD–I).* These indicate the number of patients from the accumulation of patients for the prior 30-days (day X) who still require hospitalization at x + 30-days, x + 60-days, x + 90-days, etc. These factors are used only *when the evacuation policy remains constant, but the troop strength or daily admission rate, or both, vary* for one or more of the 30-day intervals of the time period covered.

(3) *Accumulation-decumulation factors, second type (AD–II).* These factors indicate the number of patients (from the accumulation of patients for the prior 30-days) who still require hospitalization as in (2) above except that the effect of specified increases in evacuation policy on the retention of patients is reflected in the factors. They are used only *when the evacuation policy varies* during one or more of the 30-day intervals in the time period covered. *AD–II factors are used regardless of whether or not there is a variation in the troop strength and/or admission rate.*

(4) *Remaining factors.* These factors show for the number of patients admitted on any one day the proportion who will still remain on each day thereafter. This is the raw material on which tables of accumulation factors and accumulation-decumulation factors are based. Remaining factors are used *when one or more of the elements—evacuation policy, daily admission rates, or troop strength*

—*vary from day to day within the time period covered* or when it is not feasible to asume a 30-day stability in these elements. This process is a much lengthier one since computations by single days of operation are necessary.

g. Tables of Experience Factors. For all of the experience factors relating to patient-load growth, a distinction is made between those applicable to battle (battle injury and wound patients) and nonbattle (disease and nonbattle injury patients). Four separate types of factors for each of the two major categories of patients are provided in tables XLIX through LIII. The type factor selected will be determined by the criteria presented in *f* above.

See ch # 3

Table XLIX. Disease and Nonbattle Injury

Accumulation Factors[1] and Accumulation-Decumulation Factors (AD–I)[2]

Periods of estimate in intervals of 30 days

1	1	2	3	4	5	6	7	8	9	10
	Periods of estimate	Theater factors								Periods of estimate
		Evacuation policies								
		120 day		90 day		60 day		30 day		
		ACC	AD-I[3]	ACC	AD-I[3]	ACC	AD-I[3]	ACC	AD-I[3]	
2	30	13.43	13.43	13.34	13.34	13.11	13.11	11.40	11.40	30
3	60	16.46	3.03	15.95	2.61	14.67	1.56	11.40	0	60
4	90	17.67	1.21	16.51	0.56	14.67	0	11.40	0	90
5	120	17.94	0.27	16.51	0	14.67	0	11.40	0	120
6	150 & over	17.94	0	16.51	0	14.67	0	11.40	0	150 & over
		CONUS FACTORS								
7	30	0.13	0.13	0.22	0.22	0.45	0.45	2.16	2.16	30
8	60	0.76	0.63	1.27	1.05	2.55	2.10	5.82	3.66	60
9	90	1.80	1.04	2.96	1.69	4.80	2.25	8.07	2.25	90
10	120	3.06	1.26	4.49	1.53	6.33	1.53	9.60	1.53	120
11	150	4.05	0.99	5.48	0.99	7.32	0.99	10.59	0.99	150
12	180	4.67	0.62	6.10	0.62	7.94	0.62	11.21	0.62	180
13	210	5.05	0.38	6.48	0.38	8.32	0.38	11.59	0.38	210
14	240	5.29	0.24	6.72	0.24	8.56	0.24	11.83	0.24	240

15	270	5.44	0.15	6.87	0.15	8.71	0.15	11.98	0.15	270
16	300	5.54	0.10	6.97	0.10	8.81	0.10	12.08	0.10	300
17	330	5.60	0.06	7.03	0.06	8.87	0.06	12.14	0.06	330
18	360	5.64	0.04	7.07	0.04	8.91	0.04	12.18	0.04	360
19	390	5.67	0.03	7.10	0.03	8.94	0.03	12.21	0.03	390
20	420	5.70	0.03	7.13	0.03	8.97	0.03	12.24	0.03	420
21	450	5.71	0.01	7.14	0.01	8.98	0.01	12.25	0.01	450
22	480	5.72	0.01	7.15	0.01	8.99	0.01	12.26	0.01	480
23	510	5.73	0.01	7.16	0.01	9.00	0.01	12.27	0.01	510
24	540 & over	5.73	0.00	7.16	0.00	9.00	0.00	12.27	0.00	540 & over

[1] Based on constant admission of one per day.

[2] Based on admission of one per day for 30 days only, and decumulation thereafter.

[3] Beginning with the 150-day interval AD-I factors and AD-II factors are identical since increases in length of evacuation policy are given to 120 days only.

Table L. Disease and Nonbattle Injury

Accumulation-Decumulation Factors (AD-II)[1] For Increased Evacuation Policies

Periods of estimate in intervals of 30 days [2]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Theater factors

Various increases in evacuation policy[3]

11. Periods of estimate	30 to 60 day AD-II	30 to 60 to 90 day AD-II	30 to 60 to 90 to 120 day AD-II	30 to 60 to 120 day AD-II	30 to 90 day AD-II	30 to 90 to 120 day AD-II	30 to 120 day AD-II	60 to 90 day AD-II	60 to 60 to 120 day AD-II	60 to 90 day AD-II	60 to 90 to 120 day AD-II	60 to 120 day AD-II	90 to 90 to 120 day AD-II	90 to 90 to 120 day AD-II	90 to 120 day AD-II	Periods of estimate
2	11.40	11.40	11.40	11.40	11.40	11.40	11.40	13.11	13.11	13.11	13.11	13.11	13.34	13.34	13.34	30
3	1.42	1.42	1.42	1.42	2.05	2.05	2.30	1.56	1.56	2.40	2.40	2.74	2.61	2.61	2.96	60
4	0	0.47	0.47	0.59	0.52	0.72	0.94	0.50	0.67	0.55	0.63	1.14	0.84	0.56	1.14	90
5	0	0	0.24	0.25	0	0.26	0.27	0	0.27	0	0.28	0.28	0.28	0.26	0.29	120
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Conus factors Various increases in evacuation policy[3]															
7 Periods of estimate	30 to 60 day AD-II	30 to 60 to 90 day AD-II	30 to 60 to 90 to 120 day AD-II	30 to 60 to 120 day AD-II	30 to 90 day AD-II	30 to 90 to 120 day AD-II	30 to 120 day AD-II	60 to 60 to 90 day AD-II	60 to 60 to 120 day AD-II	60 to 90 day AD-II	60 to 90 to 120 day AD-II	60 to 120 day AD-II	90 to 90 to 120 day AD-II	90 to 90 to 90 to 120 day AD-II	90 to 120 day AD-II	Periods of estimate
8 30	2.16	2.16	2.16	2.16	2.16	2.16	2.16	0.45	0.45	0.45	0.45	0.45	0.22	0.22	0.22	30
9 60	2.24	2.24	2.24	2.24	1.61	1.61	1.36	2.10	2.10	1.26	1.26	0.92	1.05	1.05	0.70	60
10 90	2.25	1.78	1.78	1.66	1.73	1.53	1.31	1.75	1.58	1.70	1.42	1.11	1.41	1.69	1.11	90
11 120	1.53	1.53	1.29	1.28	1.53	1.27	1.26	1.53	1.26	1.53	1.25	1.25	1.25	1.27	1.24	120
12 150	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	150

[1] Based on admission of one per day for 30 days only, and decumulation thereafter.

[2] Beginning with the 150-day interval AD-II factors and AD-I factors are identical since increases in length of evacuation policy are given to 120 days only.

[3] Increases in evacuation policy are shown for 30-day intervals from an original evacuation policy in effect during the 30 days of accumulation.

Search # 3

Table LI. Battle Casualty

Accumulation Factors[1] and Accumulation-Decumulation Factors (AD–I)[2]

Periods of estimate in intervals of 30 days

	1	2	3	4	5	6	7	8	9	10
		Theater factors								
		Evacuation policies								
1	Periods of estimate	120 day		90 day		60 day		30 day		Periods of estimate
		ACC	AD-I[3]	ACC	AD-I[3]	ACC	AD-I[3]	ACC	AD-I[3]	
2	30	22.96	22.96	22.39	22.39	21.04	21.04	16.44	16.44	30
3	60	33.38	10.42	31.00	8.61	25.57	4.53	16.44	0	60
4	90	37.36	3.98	32.87	1.87	25.57	0	16.44	0	90
5	120	38.27	0.91	32.87	0	25.57	0	16.44	0	120
6	150 & over	38.27	0	32.87	0	25.57	0	16.44	0	150 & over

		CONUS FACTORS								
7	30	1.55	1.55	2.12	2.12	3.47	3.47	8.07	8.07	30
8	60	6.88	5.33	9.26	7.14	14.69	11.22	23.82	15.75	60
9	90	13.43	6.55	17.92	8.66	25.22	10.53	34.35	10.53	90
10	120	20.35	6.92	25.75	7.83	33.05	7.83	42.18	7.83	120
11	150	26.59	6.24	31.99	6.24	39.29	6.24	48.42	6.24	150
12	180	31.66	5.07	37.06	5.07	44.36	5.07	53.49	5.07	180
13	210	35.86	4.20	41.26	4.20	48.56	4.20	57.69	4.20	210
14	240	39.40	3.54	44.80	3.54	52.10	3.54	61.23	3.54	240
15	270	42.37	2.97	47.77	2.97	55.07	2.97	64.20	2.97	270
16	300	44.89	2.52	50.29	2.52	57.59	2.52	66.72	2.52	300
17	330	47.02	2.13	52.42	2.13	59.72	2.13	68.85	2.13	330
18	360	48.79	1.77	54.19	1.77	61.49	1.77	70.62	1.77	360
19	390	50.26	1.47	55.66	1.47	62.96	1.47	72.09	1.47	390
20	420	51.46	1.20	56.86	1.20	64.16	1.20	73.29	1.20	420
21	450	52.39	0.93	57.79	0.93	65.09	0.93	74.22	0.93	450
22	480	53.14	0.75	58.54	0.75	65.84	0.75	74.97	0.75	480
23	510	53.71	0.57	59.11	0.57	66.41	0.57	75.54	0.57	510
24	540	54.16	0.45	59.56	0.45	66.86	0.45	75.99	0.45	540
25	570	54.52	0.36	59.92	0.36	67.22	0.36	76.35	0.36	570
26	600	54.79	0.27	60.19	0.27	67.49	0.27	76.62	0.27	600
27	630 & over	55.00	0.21	60.40	0.21	67.70	0.21	76.83	0.21	630 & over

[1] Based on constant admission of one per day.

[2] Based on admission of one per day for 30 days only, and decumulation thereafter.

[3] Beginning with the 150-day interval AD-I factors and AD-II factors are identical since increases in length of evacuation policy are given to 120 days only.

Table LII. Battle Casualty

Accumulation-Decumulation Factors (AD-II)[1] for Increased Evacuation Policies

Periods of estimate in intervals of 30 days[2]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
THEATER FACTORS Various increases in evacuation policy[3]																
1 Periods of estimate	30 to 60 day	30 to 60 to 90 day	30 to 60 to 90 to 120 day	30 to 60 to 120 day	30 to 90 day	30 to 90 to 120 day	30 to 120 day	60 to 60 to 90 day	60 to 60 to 120 day	60 to 90 day	60 to 90 to 120 day	60 to 120 day	90 to 90 to 120 day	90 to 90 to 90 to 120 day	90 to 120 day	Periods of estimate
	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	
2 30	16.44	16.44	16.44	16.44	16.44	16.44	16.44	21.04	21.04	21.04	21.04	21.04	22.39	22.39	22.39	30
3 60	4.29	4.29	4.29	4.29	6.75	6.75	7.78	4.53	4.53	7.41	7.41	8.65	8.61	8.61	9.88	60
4 90	0	1.74	1.74	1.95	1.82	2.15	3.10	1.77	2.02	1.87	2.27	3.41	2.29	1.87	3.46	90
5 120	0	0	0.89	0.91	0	0.91	0.93	0	0.90	0	0.92	0.93	0.92	0.90	0.93	120
6 150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
CONUS FACTORS Various increases in evacuation policy[3]																	
7	Periods of estimate	30 to 60 day	30 to 60 to 90 day	30 to 60 to 90 to 120 day	30 to 60 to 120 day	30 to 90 day	30 to 90 to 120 day	30 to 120 day	60 to 60 to 90 day	60 to 60 to 120 day	60 to 90 day	60 to 90 to 120 day	60 to 120 day	90 to 90 to 120 day	90 to 90 to 90 to 120 day	90 to 120 day	Periods of estimate
		AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	AD-II	
8	30	8.07	8.07	8.07	8.07	8.07	8.07	8.07	3.47	3.47	3.47	3.47	3.47	2.12	2.12	2.12	30
9	60	11.46	11.46	11.46	11.46	9.00	9.00	7.97	11.22	11.22	8.34	8.34	7.10	7.14	7.14	5.87	60
10	90	10.53	8.79	8.79	8.58	8.71	8.38	7.43	8.76	8.51	8.66	8.26	7.12	8.24	8.66	7.07	90
11	120	7.83	7.83	6.94	6.92	7.83	6.92	6.90	7.83	6.93	7.83	6.91	6.90	6.91	6.93	6.90	120
12	150	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	150

[1] Based on admission of one per day for 30 days only, and decumulation thereafter.

[2] Beginning with the 150-day interval AD-II factors and AD-I factors are identical since increases in length of evacuation policy are given to 120 days only.

[3] Increases in evacuation policy are shown for 30-day intervals from an original evacuation policy in effect during the 30 days of accumulation.

Table LIII. Patients Remaining in Hospital Anywhere, by Type of Patient

Remaining Factors for Patients Admitted to Hospital on Any One Day of Operations

Based on admission of one on a day of operations in theater.

1	2	3	4	5	6	7	8	9
Complete hospital days	Battle injury and wound	Disease and non-battle injury	Complete hospital days	Battle injury and wound	Disease and non-battle injury	Complete hospital days	Battle injury and wound	Disease and non-battle injury
1	1.000	1.000	31	0.650	0.167	65	0.393	0.086
2	0.984	0.974	32	0.640	0.163	70	0.370	0.079
3	0.972	0.926	33	0.631	0.158	75	0.350	0.076
4	0.958	0.865	34	0.620	0.155	80	0.331	0.070
5	0.942	0.797	35	0.611	0.150	85	0.315	0.065
6	0.927	0.730	36	0.602	0.147	90	0.298	0.062
7	0.911	0.669	37	0.592	0.144	95	0.284	0.057
8	0.897	0.610	38	0.583	0.140	100	0.272	0.054
9	0.883	0.557	39	0.575	0.136	105	0.260	0.051
10	0.870	0.513	40	0.566	0.131	110	0.250	0.049
11	0.860	0.481	41	0.557	0.129	115	0.241	0.046

12	0.850	0.445	42	0.549	0.127	120	0.232		0.043
13	0.840	0.425	43	0.540	0.125	130	0.216		0.036
14	0.828	0.399	44	0.532	0.122	140	0.200		0.031
15	0.817	0.375	45	0.524	0.120	150	0.187		0.026
16	0.806	0.351	46	0.516	0.116	160	0.174		0.025
17	0.795	0.332	47	0.508	0.115	170	0.163		0.021
18	0.784	0.316	48	0.500	0.113	180	0.154		0.016
19	0.772	0.302	49	0.492	0.109	210	0.128		0.010
20	0.761	0.285	50	0.485	0.107	240	0.109		0.006
21	0.750	0.271	51	0.477	0.106	270	0.092		0.004
22	0.740	0.258	52	0.470	0.105	300	0.078		0.003
23	0.730	0.246	53	0.464	0.103	330	0.065		0.002
24	0.720	0.235	54	0.457	0.101	360	0.054		0.001
25	0.708	0.224	55	0.450	0.100	390	0.044		0.001
26	0.700	0.213	56	0.444	0.098	420	0.036		0.001
27	0.690	0.205	57	0.438	0.096	450	0.028		0.000
28	0.680	0.196	58	0.432	0.095	480	0.022		0.000
29	0.670	0.189	59	0.425	0.094	510	0.017		0.000
30	0.660	0.173	60	0.420	0.091	540 & over	0.013		0.000

h. Dispersion Factor. At any given time a percentage of the number of theater fixed beds will not be immediately available to patients because of dispersion. It is never possible to use all the available beds in any fixed hospital because of the necessity to utilize different wards for different sexes, for contagious disease, and for cases requiring different types of treatment. Margins must be provided on each type of ward to allow for variation in the number of various classes of patients. For this reason, a hospital is considered operating at full capacity when it has reached 80 percent of its rated capacity. In addition to the dispersion within each specific hospital, certain other considerations enter into the overall bed picture for the theater. These are (1) beds packed for shipment (especially in mobile units); (2) small troop units operating some distance from the main body of troops and supported by complete hospital units; and (3) increased dispersion of all facilities and troops because of the threat of nuclear warfare. The proportion of empty beds due to such causes is known as the dispersion allowance. The dispersion allowance in both World War II and the Korean War was 20 percent but may have to be increased considerably for any future war. The greater the mobility of troops, the greater dispersion allowance is required. If the threat of missile-delivered nuclear weapons in rear areas is significant, hospitals will have to be small and well dispersed. Such a requirement will decrease the efficient use of beds and require a greater dispersion allowance. If resources permit certain hospitals to be kept in readiness to replace those which are destroyed by the enemy, the dispersion allowance will need to be increased even more. Table LIV provides factors which increase bed requirements by the desired percentage according to various dispersion allowances.

Table LIV. Dispersion Allowance Factors

Dispersion allowance	Dispersion factor
5%	1.05
10%	1.11
15%	1.18
20%	1.25
25%	1.33
30%	1.43
35%	1.54
40%	1.67
45%	1.82
50%	2.00

144. Method of Estimating Hospital Bed Requirements

In computing the bed requirements in any specific situation, the planner will first determine the expected daily number of admissions. This will be the product obtained by multiplying the expected daily admission rate per 1,000 strength by the average daily strength in thousands. He will then select the type of experience factor(s) applicable to the situation, and on the basis of the evacuation policy (or policies) to be in effect in relation to the time period covered, obtain the appropriate factor(s) from the respective tables of experience factors, and multiply the expected daily number of admissions by these factors. Since patients of the two general classes (disease and nonbattle injury combined, and battle injury and wound) are admitted to hospital at different rates and have different experience factors, he must make separate computations for each class. The products thus obtained give the bed requirements before allowance is made for dispersion. These products are then multiplied by the appropriate dispersion factor to arrive at the total bed requirements.

145. Fixed Hospital Bed Requirement Worksheet (DA Form 2364–R)

a. DA Form 2364–R, Fixed Hospital Bed Requirement worksheet, is shown in figure 9. This worksheet may be reproduced locally on 8 x 13 paper.

b. The worksheet is divided into nine columns and thirteen lines. Columns d, g, and i are each subdivided into three subcolumns for the convenience of determining estimates of requirements at the end of a specified number of days; however, all or only one may need to be used depending upon the problem: for example, the number of fixed beds that will be required at the end of 90 days of operations (use only one subcolumn of columns d, g and i); the number of fixed beds that will be required at the end of 90 days and at the end of 150 days (use two subcolumns of columns d, g, and i); or the number of fixed beds that will be required at the end of 60 days, 120 days, and 180 days of operations (use all three subcolumns of columns d, g, and i).

c. Separate worksheets normally will be required for determining the fixed bed requirements resulting from *Disease and Nonbattle Injury* and *Conventional Battle Injury and Wound* from the respective formula or formulas used. However, when the formula for Accumulation Factor is used alone, or when the problem covers only a few months of operations, regardless of formula used, both classes of patients may be entered together on a single worksheet. This is indicated in worksheets—Example 1 (fig. 10) and Example 8 (fig. 23) for Accumulation Factors. Although all other

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☐ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR

LINE	MONTH OF OPERATION 1/ (a)	EVACUATION POLICY (Days) (b)	INCREASES IN EVACUATION POLICY (c)	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE (d)	ADMISSION RATE (e)	TROOP STRENGTH (Thous) (f)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE (g)	DISPERSION FACTOR 2/ (h)	PATIENTS 3/ AFTER DAYS OF OPERATION (i)
				Days / Days / Days	x	x	Days / Days / Days	x	= Days / Days / Days
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11	TOTAL PATIENTS								
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)							X	X / X
13	TOTAL FIXED BEDS REQUIRED								

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 9. Worksheet for fixed hospital bed requirement (DA Form 2364-R).

examples in paragraphs 146 and 149 show separate worksheets for the two types of patients, it may be seen that the separate computations, by class of patients, could have been entered, one above the other, on a single worksheet in most instances.

146. Computation of Fixed Beds for a Theater of Operations

Given the items of basic data, the fixed hospital bed requirements for a specific situation at a given time can be computed according to one of four basic formulas. Each formula is given separately along with examples of the manner in which it is used:

a. Accumulation Factor Formula.

Daily adm rate X { Average strength (thousands) } X { Accumulation factor at time period covered in estimate } X { Dispersion factor }

Accumulation factors are always used when the admission rate, theater strength and evacuation policy are assumed to be constant from month to month. Example 1 (fig. 10): Theater "A" has a troop strength of 500,000. Expected daily admission rates per 1,000 are as follows: disease and nonbattle injuries, 1.7; conventional battle injuries and wounds, 0.6. Theater evacuation policy is to be 120 days and the dispersion allowance is 20 percent. How many fixed hospital beds will be required at the end of 90 days? In figure 10, the accumulation factors were obtained from tables XLIX and LI, respectively. In both tables the proper accumulation factor is shown on line 4 (90-day period of estimate), column 2 (120-day evacuation policy).

b. AD–I, Accumulation-Decumulation Factor Formula.

Mo of Opn *	*Intervals of Period of Est*
1	Time period covered
2	Next lower interval
3	Next lower interval
etc.	Etc. to lowest interval (30 days)

Daily adm rate for respective mo of opn X { Avg str (thous) for respective mo of opn } X { AD–I factor at respective 30-day interval applicable to mo of opn }

* Each month is computed separately, the products added, and the sum of the products is then multiplied by the dispersion factor.

AD–I factors are used when either the admission rate, the average strength, or both, vary from month to month while the evacuation policy remains *fixed.* Example 2 (figs. 11 and 12): Theater "B" has a troop strength of 200,000 to be increased 150,000 per month during the second and third months of operations. Expected daily admission rates per 1,000 are as follows: disease and non-

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☐ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR Accumulation

LINE	MONTH 1/ OF OPERATION (a)	EVACUATION POLICY (Days) (b)	INCREASES IN EVACUATION POLICY (c)	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE (d)			ADMISSION RATE (e)		TROOP STRENGTH (Thous) (f)		EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE (g)				DISPERSION FACTOR 2/ (h)		PATIENTS 3/ AFTER DAYS OF OPERATION D&NBI (i)	BIW (i)	
				Days	Days	Days		x		x	90 Days	Days	Days	x		=	90 Days	90 Days	Days
1		120	Disease and NBI				1.7		500		17.67						15,020		
2		120	Conventional BIW				0.6		500		37.36							11,208	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11	TOTAL PATIENTS																15,020	11,208	
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)																X 1.25	X 1.25	X
13	TOTAL FIXED BEDS REQUIRED																18,775	14,010	

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 10. Worksheet—example 1.

battle injuries 2.0 the first month, 1.9 the second month and 1.7 the third month; conventional battle injuries and wounds 1.0 the first month, 0.7 the second month and 0.6 the third month of operations. Theater evacuation policy is to be 120 days *at all times* and the dispersion allowance is 20 percent. How many fixed hospital beds will be required at the end of 90 days? In figures 11 and 12, the AD–I factors were obtained from tables XLIX and LI, respectively. In both tables the proper AD–I factor for each separate month of operation is shown on lines 4, 3, and 2, respectively (90, 60, and 30-day intervals of a 90-day period of estimate) column 3 (120-day evacuation policy). It should be noted that when the dispersion factor varies from month to month, the product of each month may be multiplied by the proper dispersion factor separately prior to summation.

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR AD-I

LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 90 Days / Days / Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 90 Days / Days / Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 90 Days / Days / Days i
1	1	120		90	2.0	200	1.21		484
2	2	120		60	1.9	350	3.03		2,015
3	3	120		30	1.7	500	13.43		11,416
4									
5									
6									
7									
8									
9									
10									
11	TOTAL PATIENTS								13,915
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)							X	1.25 X X
13	TOTAL FIXED BEDS REQUIRED								17,394

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 11. Worksheet—example 2 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR AD-I

LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 90 Days / Days / Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 90 Days / Days / Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 90 Days / Days / Days i
					x	x	x	x	=
1	1	120		90	1.0	200	3.98		796
2	2	120		60	0.7	350	10.42		2,553
3	3	120		30	0.6	500	22.96		6,888
4									
5									
6									
7									
8									
9									
10									
11	TOTAL PATIENTS								10,237
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)							X	1.25 X X
13	TOTAL FIXED BEDS REQUIRED								12,796

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 12. Worksheet—example 2 (Conventional battle injury and wound).

c. *AD–II, Accumulation-Decumulation Factor Formula.*

Mo of Opn *	*Evac Policy*	*Increases to Evac Policy*	*Intervals of Period of Est*					
1	Days	Mo to mo increases from the evac policy in effect during respective mo of opn to maximum increase or to increase in evac policy that may affect respective number of constant policies	Time period covered	Daily adm rate for respective mo of opn	X	Avg str (thous) for respective mo of opn	X	AD–II factor for stated increase in evac policy at respective 30-day intervals both applicable to mo of opn
2	Days		Next lower interval					
3	Days		Next lower interval					
etc.	Days		Etc. to lowest interval (30 days)					

* Each month is computed separately, the products added, and the sum of the products is then multiplied by the dispersion factor.

The evacuation policy may show an increase from one 30-day period to the next, or may not show an increase until after a number of consecutive 30-day periods during which the evacuation policy remains the same. In either case, increases in length of evacuation policy have no effect beyond the 120-day interval for each separate month of admission, since the longest evacuation policy considered is the 120-day policy. Similarly, increases in length of evacuation policy after *two or more* consecutive 30-day periods with the same evacuation policy, have no effect on prior admissions beyond the interval equal to the number of days of the constant policy. Obviously, only these prior months, under a constant evacuation policy, which have patients remaining in the theater when an increase in policy does occur, can be affected by any increase in length of policy. The number of prior months that can be affected varies directly with the length of the constant evacuation policy. For example, an increase in evacuation policy occurring after a 30-day policy in effect for two or more months has no effect beyond the month immediately preceding the month of increase, while an increase in evacuation policy after two or more months under a 60-day policy has no effect beyond the preceding two months; under a 90-day policy, no effect beyond the preceding three months; and so forth. In those instances when constant evacuation policies exceed these periods prior to an increase in policy, AD–I factors are used in conjunction with AD–II factors (*d* below). Examples of the two instances when AD–II factors are used alone, are as follows:

(1) When the evacuation policy increases from one 30-day period to the next, regardless of whether or not the admission rate and theater strength change from month to month. Example 3 (figs. 13 and 14): Theater "C" has a troop strength of 500,000. Expected daily admission rates per 1,000 are as follows: disease and nonbattle injuries, 1.7; conventional battle injuries and wounds, 0.6. Theater evacuation policy is to be 30-days the first month, 60-days the second month, 90-days the third month and 120-days the fourth month. Dispersion allowance is 20 percent. How many fixed beds will be required at the end of 90-days? In figures 13 and 14, AD–II factors were obtained from tables L and LII, respectively. In both tables the proper AD–II factor for each separate month of operation is shown as follows:

Mo of Opn	*Line No.*	*Column No.*
1	4 (90–day pd of est)	4 (30–60–90–120–day increase)
2	3 (60–day interval)	12 (60–90–120–day increase)
3	2 (30–day interval)	16 (90–120–day increase)

The respective month-to-month increase in length of evacuation policy from each separate month of operations to the maximum increase in length of evacuation policy determines the appropriate column of AD–II factors for the respective month of operations, while the respective 30-day interval of the period of estimate determines the particular AD–II factor within that column. It should be noted that the admission rate and theater strength could also have been changed from month to month without affecting the manner of computation using this formula. However, when the admission rate and theater strength remain constant from month to month it is not necessary to compute each month separately. Examples 3–5 (figs. 13–18) show "total" figures entered on line 11 for columns e, f, and g. The product obtained by multiplying these "total" figures is identical to the total on line 11 column i, obtained by addition of the patients from each separate month of operations.

(2) When an increase in evacuation policy follows a constant evacuation policy in effect *no longer* than the number of 30-day periods that are included in the constant policy, regardless of whether or not the admission rate and theater strength change from month to month. Example 4 (figs. 15 and 16): Theater "D" has a troop strength of 500,000. Expected daily admission rates per 1,000 are as follows: disease and nonbattle injuries, 1.7; conventional battle injuries and wounds, 0.6. Theater evacuation policy is to be 90-days for the first three months and 120-days the fourth month. Dispersion allowance is 20 percent. How many fixed beds will be required at the end of 120-days for patients admitted during the first three months of operation only? In figures 15 and 16, the AD–II factors were obtained from tables L and LII, respectively. In both tables the proper AD–II factor for each separate month of operations is shown as follows:

Mo of Opn	*Line No.*	*Column No.*
1	5 (120–day pd of est)	15 (90–90–90–120–day increase)
2	4 (90–day interval)	14 (90–90–120–day increase)
3	3 (60–day interval)	16 (90–120–day increase)

d. AD–I factors are used in the same computation along with AD–II factors when, prior to an increase in evacuation policy, the evacuation policy in force had remained the same for a number of consecutive 30-day periods exceeding the number of 30-day periods included in the constant evacuation policy. Example 5

FIXED HOSPITAL BED REQUIREMENT (FM 8-55) — CLASS OF PATIENT (Check one): [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound — TYPE OF EXPERIENCE FACTOR AD-II

LINE	MONTH OF OPERATION 1/	EVACUATION POLICY (Days)	INCREASES IN EVACUATION POLICY	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE			ADMISSION RATE	TROOP STRENGTH (Thous)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE			DISPERSION FACTOR 2/	PATIENTS 3/ AFTER DAYS OF OPERATION		
				90 Days	Days	Days			90 Days	Days	Days		90 Days	Days	Days
	s	b	c	d			e	f	g			h	i		
1	1	30	30-60-90-120	90			1.7	500	0.47				400		
2	2	60	60-90-120	60			1.7	500	2.40				2,040		
3	3	90	90-120	30			1.7	500	13.34				11,339		
4	4	120	-	0			-	-	-						
5															
6															
7															
8															
9															
10															
11	TOTAL PATIENTS						1.7	500	16.21				13,779		
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)												X 1.25	X	X
13	TOTAL FIXED BEDS REQUIRED												17,224		

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns									Use Lines			
	a	b	c	d	e	f	g	h 2/	i	11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 13. Worksheet—example 3 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR AD-II

LINE	MONTH OF OPERATION 1/ (a)	EVACUATION POLICY (Days) (b)	INCREASES IN EVACUATION POLICY (c)	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE (d) 90 Days / Days / Days	ADMISSION RATE (e)	TROOP STRENGTH (Thous) (f)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE (g) 90 Days / Days / Days	DISPERSION FACTOR 2/ (h)	PATIENTS 3/ AFTER DAYS OF OPERATION (i) 90 Days / Days / Days
1	1	30	30-60-90-120	90	0.6	500	1.74		522
2	2	60	60-90-120	60	0.6	500	7.41		2,223
3	3	90	90-120	30	0.6	500	22.39		6,717
4	4	120	-	0	-	-			
5									
6									
7									
8									
9									
10									
11	TOTAL PATIENTS				0.6	500	31.54		9,462
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)							X 1.25 X	X
13	TOTAL FIXED BEDS REQUIRED								11,828

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 14. Worksheet—example 3 (Conventional battle injury and wound).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR AD-II

LINE	MONTH OF OPERATION 1/ (a)	EVACUATION POLICY (Days) (b)	INCREASES IN EVACUATION POLICY (c)	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE (d)	ADMISSION RATE (e)	TROOP STRENGTH (Thous) (f)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE (g)	DISPERSION FACTOR 2/ (h)	PATIENTS 3/ AFTER DAYS OF OPERATION (i)
				120 Days / Days / Days	x	x	120 Days / Days / Days	x	= 120 Days / Days / Days
1	1	90	90-90-90-120	120	1.7	500	0.26		221
2	2	90	90-90-120	90	1.7	500	0.84		714
3	3	90	90-120	60	1.7	500	2.96		2,516
4	4	120	-	30	-	-	-		
5									
6									
7									
8									
9									
10									
11	TOTAL PATIENTS				1.7	500	4.06		3,451
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)							X	1.25 X X
13	TOTAL FIXED BEDS REQUIRED								4,314

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	Use Lines i	11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 15. Worksheet—example 4 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)				CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound											TYPE OF EXPERIENCE FACTOR AD-II		
LINE	MONTH 1/ OF OPERATION a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 120 Days d	Days d	Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 120 Days g	Days g	Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 120 Days i	Days i	Days i
1	1	90	90-90-90-120	120			0.6	500	0.90				270		
2	2	90	90-90-120	90			0.6	500	2.29				687		
3	3	90	90-120	60			0.6	500	9.88				2,964		
4	4	120	-	30			-	-	-						
5															
6															
7															
8															
9															
10															
11	TOTAL PATIENTS						0.6	500	13.07				3,921		
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)											X	1.25	X	X
13	TOTAL FIXED BEDS REQUIRED												4,901		

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 16. Worksheet—example 4 (Conventional battle injury and wound).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one): [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR: AD-I and AD-II

LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 90 Days / 150 Days / Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 90 Days / 150 Days / Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 90 Days / 150 Days / Days i
					x		x	x	=
1	1	30	30-60	90 / 150 /	1.7	500	0 / 0 /		0 / 0 /
2	2	60	*	60 / 120 /	1.7	500	1.56 / 0 /		1,326 / 0 /
3	3	60	60-60-120	30 / 90 /	1.7	500	13.11 / 0.67 /		11,144 / 570 /
4	4	60	60-120	0 / 60 /	1.7	500	XX / 2.74 /		0 / 2,329 /
5	5	120	*	0 / 30 /	1.7	500	XX / 13.43 /		0 / 11,415 /
6									
7									
8									
9			(*) Not affected by later increases in evacuation policy (use AD-I factors)						
10									
11	TOTAL PATIENTS				1.7	500	14.67 / 16.84		12,470 / 14,314
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)							X	1.25 / X 1.25 / X
13	TOTAL FIXED BEDS REQUIRED								15,588 / 17,893 /

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 17. Worksheet—example 5 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one): ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR: AD-I and AD-II

LINE	MONTH OF OPERATION 1/ (a)	EVACUATION POLICY (Days) (b)	INCREASES IN EVACUATION POLICY (c)	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE (d) 90 Days	150 Days	Days	ADMISSION RATE (e)	x	TROOP STRENGTH (Thous) (f)	x	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE (g) 90 Days	150 Days	Days	x	DISPERSION FACTOR 2/ (h)	=	PATIENTS 3/ AFTER DAYS OF OPERATION (i) 90 Days	150 Days	Days
1	1	30	30-60	90	150		0.6	x	500	x	0	0		x		=	0	0	
2	2	60	*	60	120		0.6	x	500	x	4.53	0		x		=	1,359	0	
3	3	60	60-60-120	30	90		0.6	x	500	x	21.04	2.02		x		=	6,312	606	
4	4	60	60-120	0	60		0.6	x	500	x	XX	8.65		x		=	0	2,595	
5	5	120	*	0	30		0.6	x	500	x	XX	22.96		x		=	0	6,888	
6																			
7																			
8																			
9			(*) Not affected by later increases in evacuation policy (use AD-I factors)																
10																			
11	TOTAL PATIENTS						0.6	x	500	x	25.57	33.63		x		=	7,671	10,089	
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)																1.25	1.25	
13	TOTAL FIXED BEDS REQUIRED																9,589	12,611	

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 18. Worksheet—example 5 (Conventional battle injury and wound).

(figs. 17 and 18) : Theater "E" has a troop strength of 500,000. Expected daily admission rates per 1,000 are as follows: disease and nonbattle injuries, 1.7; conventional battle injuries and wounds, 0.6. Theater evacuation policy is to be 30 days the first month; 60 days the next three months and 120 days the fifth month. Dispersion allowance is 20 percent. How many fixed beds will be required at the end of 90 days, and at the end of 150 days? In figures 17 and 18, AD–II factors were obtained from tables L and LII, respectively; lines 4 and 6, column 2 for the first month of operations; lines 2 and 4, column 10 for the third month; and line 3, column 13 for the fourth month. The second and fifth months of operations are not affected by later increases in length of evacuation policy, thereby requiring the use of AD–I factors for a 60 day policy at intervals of 60 and 120 days for the second month of operations, and for a 120 day policy at the 30 day interval for the fifth month of operations. These latter factors were obtained from tables XLIX and LI.

e. Accumulation factors may be used in the same computation along with *AD–II factors* when the admission rate, average strength, and evacuation policy are constant during part of the time under consideration. Example 6 (figs. 19 and 20) : Theater "F" has a troop strength of 100,000, to be increased by 200,000 each month during the second and third months of operations. The average strength is to be maintained at 500,000 per month thereafter. Expected daily admission rates per 1,000 are as follows: disease and nonbattle injury 1.9 the first month, 1.7 the second month, 1.5 the third month, and 1.3 per 1,000 per day thereafter. Conventional battle injuries and wounds 2.0 the first month, 1.7 the second month, 0.9 the third month, and 0.6 per 1,000 per day thereafter. The evacuation policies are to be 30 days the first month, 60 days the second month, 90 days the third month; and 120 days thereafter. Dispersion allowance is 20 percent at all times. How many fixed hospital beds will be required at the end of 60 days, 120 days, and 180 days of operations in the theater? In figures 19 and 20, for the first three months of operations the AD–II factor for increased evacuation policies is selected from the respective column denoted by the changes to the evacuation policy, and from the interval of days within that column as shown by the respective month of operations. Beginning with the fourth month of operations the evacuation policy, admission rate, and average strength are constant, thereby permitting the use of accumulation factors under a 120-day evacuation policy at intervals of 30 and 90 days, respectively, as shown by the respective intervals relating to the fourth month of operations.

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one): [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR: AD-II and Accum.

LINE	MONTH OF OPERATION 1/ (a)	EVACUATION POLICY (Days) (b)	INCREASES IN EVACUATION POLICY (c)	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE (d) 60 Days	120 Days	180 Days	ADMISSION RATE (e)	TROOP STRENGTH (Thous) (f)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE (g) 60 Days	120 Days	180 Days	DISPERSION FACTOR 2/ (h)	PATIENTS 3/ AFTER DAYS OF OPERATION (i) 60 Days	120 Days	180 Days
1	1	30	30-60-90-120	60	120	180	1.9	100	1.42	0.24	0		270	46	0
2	2	60	60-90-120	30	90	150	1.7	300	13.11	0.83	0		6,686	423	0
3	3	90	90-120	0	60	120	1.5	500	XX	2.96	0.29		0	2,220	218
4	4	120	-	0	30	90	1.3	500	XX	13.43	17.67		0	8,730	11,486
5	5	120	-	0	0	60	1.3	500	XX	XX	XX		0	0	XX
6	6	120	-	0	0	30	1.3	500	XX	XX	XX		0	0	XX
7															
8															
9															
10															
11	TOTAL PATIENTS												6,956	11,419	11,704
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)											X	1.25	1.25	1.25
13	TOTAL FIXED BEDS REQUIRED												8,695	14,274	14,630

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns: s	b	c	d	e	f	g	h 2/	i	Use Lines: 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 19. Worksheet—example 6 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR AD-II and Accum.

LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 60 Days d	120 Days d	180 Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 60 Days g	120 Days g	180 Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 60 Days i	120 Days i	180 Days i
1	1	30	30-60-90-120	60	120	180	2.0	100	4.29	0.89	0		858	178	0
2	2	60	60-90-120	30	90	150	1.7	300	21.04	2.27	0		10,730	1,158	0
3	3	90	90-120	0	60	120	0.9	500	XX	9.88	0.93		0	4,446	419
4	4	120	-	0	30	90	0.6	500	XX	22.96	37.36		0	6,888	11,208
5	5	120	-	0	0	60	0.6	500	XX	XX	XX		0	0	XX
6	6	120	-	0	0	30	0.6	500	XX	XX	XX		0	0	XX
7															
8															
9															
10															
11	TOTAL PATIENTS												11,588	12,670	11,627
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)											X	1.25	X 1.25	X 1.25
13	TOTAL FIXED BEDS REQUIRED												14,485	15,838	14,534

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 20. Worksheet—example 6 (Conventional battle injury and wound).

f. Remaining Factor Formula.

Day of Opn *	*Intervals of Period of est*						
1	Time period covered.	}	Adm rate for respective day of opn	X	{ Avg str (thous) for respective day of opn	X	{ Remaining factor at respective daily interval applicable to day of opn
2	Next lower daily interval						
3	Next lower daily interval						
4	Next lower daily interval						
5	Next lower daily interval						
etc.	Etc. to lowest interval (1 day)						

* Each day is computed separately, the products added, and the sum of the products is then multiplied by the dispersion factor. However, when the daily admission rate and average strength are constant, the respective remaining factors through a given time may be added. The sum obtained is then multiplied by the product of the daily admission rate times the average strength (in thousands). The product thus obtained is then multiplied by the dispersion factor.

(1) For evacuation policies shorter than 30 days, the number of days in the stated evacuation policy, *less one day*, is always the time period covered as shown in the above formula. For example, under a 10-day evacuation policy patients admitted on any one day of operations, and who are remaining after 10 complete hospital days, represent the number from any day's admissions who cannot be returned to duty status within the time allowed (10 days) and, therefore, are evacuated from the theater between 1 and 9 days after admission to hospital. Under a 10-day evacuation policy, the maximum accumulation of patients in theater hospitals can only be the sum of those patients who have lost from 1 to 9 complete hospital days at any period of operations. Patients from any one day's admissions who are remaining in *theater hospitals* at the beginning of the tenth hospital day are those who will be returning to duty in the theater on the tenth day. Example 7 (figs. 21 and 22): Theater "G" has a troop strength of 100,000. Expected daily admission rates per 1,000 are as follows: disease and nonbattle injury, 1.3; conventional battle casualties, 0.6. Theater evacuation policy is to be 10 days and dispersion allowance is 20 percent. What is the maximum number of fixed beds required in the theater? In figures 21 and 22, the computation has been carried out for each individual day in addition to the total, in order to illustrate the necessary steps required when the daily admission rates and troop strength vary from day to day. The computation required for this particular example, however, involves the use of the total line only, since the remaining factors through 9 days may be added directly from table LIII and the sum thus obtained is multiplied by the product of the constant daily admission rate times the constant average strength. This product, in turn, is then multiplied by the proper dispersion factor.

(2) For evacuation policies of 30 days or longer the number of days in the stated evacuation policy is always the time period as shown in the formula. Since the accumulation and accumulation-decumulation factors take into account the place of hospitalization (theater or CONUS) in addition to the hospital days in theater prior to evacuation, the accumulation of the remaining factors from day one through the number of days of the evacuation policy will always equal the sum of the theater and CONUS

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one): [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR Remaining

LINE	DAY OF OPERATION (a)	EVACUATION POLICY (Days) (b)	INCREASES IN EVACUATION POLICY (c)	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE (d)	ADMISSION RATE (e)	TROOP STRENGTH (Thous) (f)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE (g)	DISPERSION FACTOR 2/ (h)	PATIENTS 3/ AFTER DAYS OF OPERATION (i)
				9* Days / Days / Days			9 Days / Days / Days		9 Days / Days / Days
1	1	10		9 (*) Evacuation policy less one day.	1.3	100	0.557		72
2	2	10		8	1.3	100	0.610		79
3	3	10		7	1.3	100	0.669		87
4	4	10		6	1.3	100	0.730		95
5	5	10		5	1.3	100	0.797		104
6	6	10		4	1.3	100	0.865		112
7	7	10		3	1.3	100	0.926		120
8	8	10		2	1.3	100	0.974		127
9	9	10		1	1.3	100	1.000		130
10	10	10		0	1.3	100	-		0
11	TOTAL PATIENTS				1.3	100	7.128		926
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)							X 1.25 X X	
13	TOTAL FIXED BEDS REQUIRED								1,158

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 21. Worksheet—example 7 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)				CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound										TYPE OF EXPERIENCE FACTOR Remaining		
LINE	DAY 1/ MONTH OF OPERATION	EVACUATION POLICY (Days)	INCREASES IN EVACUATION POLICY	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE			ADMISSION RATE	TROOP STRENGTH (Thous)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE			DISPERSION FACTOR 2/	PATIENTS 3/ AFTER DAYS OF OPERATION		
				9* Days	Days	Days			9 Days	Days	Days		9 Days	Days	Days
	a	b	c	d			e	f	g			h	i		
1	1	10		9	(*) Evacuation		0.6	100	0.883				53		
2	2	10		8	policy less		0.6	100	0.897				54		
3	3	10		7	ons day.		0.6	100	0.911				55		
4	4	10		6			0.6	100	0.927				56		
5	5	10		5			0.6	100	0.942				57		
6	6	10		4			0.6	100	0.958				57		
7	7	10		3			0.6	100	0.972				58		
8	8	10		2			0.6	100	0.984				59		
9	9	10		1			0.6	100	1.000				60		
10	10	10		0			0.6	100	-				0		
11	TOTAL PATIENTS						0.6	100	8,474				509		
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)											X	1.25	X	X
13	TOTAL FIXED BEDS REQUIRED												636		

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns									Use Lines		
	a	b	c	d	e	f	g	h 2/	i	11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 22. Worksheet—example 7 (Conventional battle injury and wound).

accumulation factors at that point in time. The proportion who are theater patients is, therefore, readily available from the accumulation and accumulation-decumulation tables. The difference between these longer policies and the 10-day evacuation policy is that CONUS patients, which are represented by the remaining factor at 10 complete hospital days, are not included in the computation for the shorter policy. In order to include CONUS patients under the shorter evacuation policies, the remaining factors would then be accumulated through the number of days in the evacuation policy; in the example given here, the addition would be through 10 days.

147. Medical Planning Factors for Quick Estimates of Patient Dispositions in Theater of Operations Under Various Evacuation Policies

For purposes of preparing quick estimates of the disposition of patients in theaters of operation under the various evacuation policies, tables LV and LVI have been prepared. Estimates of the number of patients remaining in theater hospitals from any single month of admission, including succeeding 30-day intervals permitted by the respective evacuation policy, may readily be obtained. Similar distributions for the various types of disposition in a theater of operations enable the planner, at a glance, to estimate the proportion that can be expected to return to duty within the stated intervals of time, the proportion requiring evacuation, and the proportion expected to die in the theater. The distributions for evacuees provide information required for estimating patient evacuation planning requirements, including the scheduling of patients for evacuation from the theater.

Table LV. Percentage Distribution of Disease and Nonbattle Injury Admissions by Type of Disposition in Theater

Based on admission of one per day for 30 days

Disposition of current status	Percentage during or at end of interval					Final disposition in theater
	1-30 days * %	31-60 days %	61-90 days %	91-120 days %	121-150 days %	%
Evac Policy–120–day						
Evacuated	0.44	1.73	1.49	0.88	0.19	4.73
Returned to duty	54.66	32.89	4.58	2.23	0.72	95.08
Died	0.12	0.05	0.01	0.01	0	0.19
Remaining hosp.	44.78	10.11	4.03	0.91	0	
	100.00	44.78	10.11	4.03	0.91	100.00
Evac Policy–90–day						
Evacuated	0.74	2.83	2.26	0.60		6.43
Returned to duty	54.66	32.89	4.58	1.26		93.39
Died	0.12	0.05	0.01	0		0.18
Remaining hosp.	44.48	8.71	1.86	0		
	100.00	44.48	8.71	1.86		100.00
Evac Policy–60–day						
Evacuated	1.51	5.57	2.16			9.24
Returned to duty	54.66	32.89	3.04			90.59
Died	0.12	0.05	0			0.17
Remaining hosp.	43.71	5.20	0			
	100.00	43.71	5.20			100.00
Evac Policy–30–day						
Evacuated	7.22	10.08				17.30
Returned to duty	54.66	27.89				82.55
Died	0.12	0.03				0.15
Remaining hosp.	38.00	0				
	100.00	38.00				100.00

* Month of admission.

See ch # 3

Table LVI. Percentage Distribution of Battle Injury and Wound Admissions by Type of Disposition in Theater
Based on admission of one per day for 30 days

Disposition or current status	Percentage during or at end of interval					Final disposition in theater
	1-30 days * %	31-60 days %	61-90 days %	91-120 days %	121-150 days %	%
Evac Policy–120–day						
Evacuated	5.15	12.62	4.06	1.34	0.23	23.40
Returned to duty	16.74	28.83	17.34	8.85	2.79	74.55
Died	1.57	0.35	0.07	0.06	0	2.05
Remaining hosp.	76.54	34.74	13.27	3.02	0	
	100.00	76.54	34.74	13.27	3.02	100.00
Evac Policy–90–day						
Evacuated	7.07	16.74	5.07	0.98		29.86
Returned to duty	16.74	28.83	17.34	5.20		68.11
Died	1.57	0.35	0.07	0.04		2.03
Remaining hosp.	74.62	28.70	6.22	0		
	100.00	74.62	28.70	6.22		100.00
Evac Policy–60–day						
Evacuated	11.56	25.84	4.60			42.00
Returned to duty	16.74	28.83	10.48			56.05
Died	1.57	0.35	0.03			1.95
Remaining hosp.	70.13	15.11	0			
	100.00	70.13	15.11			100.00
Evac Policy–30–day						
Evacuated	26.90	39.10				66.00
Returned to duty	16.74	15.38				32.12
Died	1.57	0.31				1.88
Remaining hosp.	54.79	0				
	100.00	54.79				100.00

* Month of admission.

148. Effects of Evacuation Policies on Theater of Operations Army Strength

a. General. The effect that a particular evacuation policy has on theater of operations army strength may be measured by the percentage of theater army strength that can be expected to return to duty or die in the theater, or be evacuated from the theater, depending upon the length of the evacuation policy. The number of admissions in a particular time period, among which the various dispositions ultimately occur in the theater, is a function of the admission rate and the average strength. The evacuation policy, which limits patient-load growth in the theater, directly affects the proportions of the various types of disposition (tables LV and LVI). Obviously, the planner needs to relate the appropriate number of dispositions (obtained by taking a certain percentage of the total number of admissions from which they came) and the theater strength in order to obtain a measurement of the proportion of strength which is evacuated under a particular policy. It is possible, however, to simplify this computation to a single multiplication involving two elements; the daily hospital admission rate per 1,000 strength and a *disposition factor.* Theater strength, which ordinarily would be used along with the admission rate (in the numerator of this computation), is cancelled out by the same theater strength which would appear as the denominator to obtain percentages of theater strength.

b. Disposition Factors. These factors indicate the percentage of theater army strength affected by the various types of disposition based on a constant admission of one per day for 30 days and a constant evacuation policy. These factors are given in table LVII.

Table LVII. Theater Army Disposition Factors

Expressed as the percentages of theater army strength represented by the specified eventual dispositions in theater from admissions of one per day for 30 days

1	1	2	3	4	5	6	7	1
	Evacuation policy	Return to duty		Deaths		Evacuees		
		D&NBI	BI&W	D&NBI	BI&W	D&NBI	BI&W	
2	120 Day	2.852	2.236	0.006	0.062	0.142	0.702	2
3	90 Day	2.802	2.043	0.005	0.061	0.193	0.896	3
4	60 Day	2.718	1.681	0.005	0.059	0.277	1.260	4
5	30 Day	2.477	0.964	0.004	0.056	0.519	1.980	5
6								

c. Computations.

(1) Given the *theater* daily hospital admission rate per 1,000 strength, regardless of the size of theater strength, the planner can estimate the effects of various evacuation policies on theater strength. Example—What percentage of theater strength eventually will be lost per month's operation due to evacuation of patients in a theater with hospital admission rates of 1.7 for disease and nonbattle injury and 0.6 for conventional battle injury and wound, under the four evacuation policies of 30, 60, 90, and 120 days, respectively?

			Disp factors for evacuees for respective evac policy					Percentage of theater strength lost by evac under respective evac policy per months operations			
Type of patient	Hosp adm rate		30 days	60 days	90 days	120 days		30 days	60 days	90 days	120 days
D&NBI	1.7	x	.519	.277	.193	.142	=	0.88%	0.47%	0.33%	0.24%
BI&W	0.6	x	1.980	1.260	.896	.702	=	1.19%	0.76%	0.54%	0.42%
Total								2.07%	1.23%	0.87%	0.66%

(2) When the daily admission rate for battle injury and wound applies only to combat forces and is not a *theater* daily admission rate, the planner must adjust for the relative difference between combat and theater strength in order to obtain percentages of theater strength. For example, if the BI&W daily admission rate is 2.5 among a combat force of 50,000 in a theater of 200,000 strength and no BI&W admissions occur in the balance of the theater strength, the percentage of theater strength requiring evacuation as a result of battle injuries and wounds under a 120-day evacuation policy would be:

Adm rate		*Evac Disp factor 120-day policy*		*Ratio of combat to theater str.*		*Percent of theater str. evacuated*
2.5	x	.702	x	.25	=	0.44%

149. Computation of Fixed Beds for Zone of Interior

a. Requirements for Fixed Beds.

(1) Fixed beds are required in the zone of interior for those troops which do not depart for theaters of operations. When new recruits are being inducted in large numbers, morbidity tends to be rather high and beds equal in number to as much as 4 percent of the zone of interior strength may be necessary. After the period of training

is over, beds equal in number to about 3 percent of the zone of interior strength may be sufficient.

(2) It is also necessary to compute bed requirements for patients who are evacuated from theater of operations. These additional beds are estimated on the basis of the expected numbers of evacuees arriving in the United States and the average duration of stay of such patients in CONUS hospitals. The basic data and methods of computation for determining fixed bed requirements in CONUS for patients evacuated from oversea theaters, are similar to those used for theaters of operations, except that CONUS experience factors are used in the computations.

b. Computation of Fixed Beds for Patients Evacuated to Zone of Interior.

(1) *Accumulation factor formula.* Example 8 (fig. 23): Using the data given for the problem in paragraph 146*a*, the accumulation of theater of operations patients in zone of interior hospitals after 90, 150, and 360-days of operations in the theater (under a 120-day evacuation policy), may be determined as shown in example 8.

(2) *AD–I, accumulation-decumulation factor formula.* Example 9 (figs. 24 and 25): Using the data given for the problem in paragraph 146*b* the accumulation of theater of operations patients (from the three months of operations only) in zone of interior hospitals at 90, 150, and 360 days after the beginning of operations (under a 120 day evacuation policy), may be determined as shown in example 9. While this example and those following, show the accumulation of patients from three months of operations only, it may be seen that these problems can be extended to include additional months of operations. For example, the monthly extension of the longest period of estimate, as shown in example 9, (360 days) to its lowest interval (30 days) would cover 12 months of operations in the theater.

(3) *AD–II, accumulation-decumulation factor formula.* Using the data given in the problems in paragraphs 146*c*(1) and (2), the accumulation of theater of operations patients (from the three months of operations only) in zone of interior hospitals at 90, 150, and 360-days after the beginning of operations may be determined as shown in examples 10 and 11.

(*a*) Example 10 (figs. 26 and 27): Under an evacuation

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☐ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR Accumulation

LINE	MONTH 1/ OF OPERATION a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE Days / Days / Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 90 Days / 150 Days / 360 Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 90 Days / 150 Days / 360 Days i
					x	x	x	x	=
1		120	Disease and NBI		1.7	500	1.80 / 4.05 / 5.64		1,530 / 3,443 / 4,794
2		120	Conventional BIW		0.6	500	13.43 / 26.59 / 48.79		4,029 / 7,977 / 14,637
3									
4									
5									
6									
7									
8									
9									
10									
11	TOTAL PATIENTS								5,559 / 11,420 / 19,431
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)								X 1.25 / X 1.25 / X 1.25
13	TOTAL FIXED BEDS REQUIRED								6,949 / 14,275 / 24,289

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 23. Worksheet—example 8.

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)				CLASS OF PATIENT (Check one) ☒ Disease and Nonbattle Injury ☐ Conventional Battle Injury and Wound										TYPE OF EXPERIENCE FACTOR AD-I		
LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 90 Days d	150 Days d	360 Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 90 Days g	150 Days g	360 Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 90 Days i	150 Days i	360 Days i
1	1	120		90	150	360	2.0	200	1.04	0.99	0.04		416	396	16
2	2	120		60	120	330	1.9	350	0.63	1.26	0.06		419	838	40
3	3	120		30	90	300	1.7	500	0.13	1.04	0.10		111	884	85
4															
5															
6															
7															
8															
9															
10															
11	TOTAL PATIENTS												946	2,118	141
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)												X 1.25	X 1.25	X 1.25
13	TOTAL FIXED BEDS REQUIRED												1,183	2,648	176

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 24. Worksheet—example 9 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR AD-I

LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 90 Days d	150 Days d	360 Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 90 Days g	150 Days g	360 Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 90 Days i	150 Days i	360 Days i
1	1	120		90	150	360	1.0	200	6.55	6.24	1.77		1,310	1,248	354
2	2	120		60	120	330	0.7	350	5.33	6.92	2.13		1,306	1,695	522
3	3	120		30	90	300	0.6	500	1.55	6.55	2.52		465	1,965	756
4															
5															
6															
7															
8															
9															
10															
11	TOTAL PATIENTS												3,081	4,908	1,632
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)												X 1.25	X 1.25	X 1.25
13	TOTAL FIXED BEDS REQUIRED												3,851	6,135	2,040

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 25. Worksheet—example 9 (Conventional battle injury and wound).

policy changing from 30 to 60 to 90 to 120 days. In those instances where either the admission rate, average strength, or both, vary from month to month, each month of operations must be computed separately. However, as previously explained in paragraph 146*c* (1), the "total" figures shown on line 11 for columns *e*, *f*, and *g* may be used when the admission rate and average strength remain constant from month to month. This is indicated in Examples 10–12 (figs. 26–31).

(*b*) Example 11 (figs. 28 and 29): Under a 90-day evacuation policy in force for the first three months and changing to 120 days the fourth month of operation. Beginning with the 150-day interval AD–I factors are identical to AD–II factors regardless of length of evacuation policy or any change thereto. In example 11, the AD–II factors, for intervals of more than 150 days were obtained from column 3 of tables XLIX and LI, respectively, whereas those AD–II factors for intervals of 150 days or less were obtained from tables L and LII, respectively.

(4) *AD–I factors used along with AD–II factors.* Example 12 (figs. 30 and 31): Using the data given in the problem in paragraph 146*d*, the accumulation of theater of operations patients (from the five months of operations only) in zone of interior hospitals at 90, 150, and 360 days after the beginning of operations (under an evacuation policy each month of 30, 60, 60, 60, and 120 days, respectively) may be determined as shown in example 12.

(5) *Accumulation factors used along with AD–II factors.* Example 13 (figs. 32 and 33): Using the data given in the problem in paragraph 146*e*, the accumulation of theater of operations patients in zone of interior hospitals (under an evacuation policy changing from 30 to 60 to 90 to 120 days and remaining at 120 days thereafter), may be determined as shown in example 13.

(6) *Remaining factor formula.* Example 14 (fig 34): Using the data given in the problem in paragraph 146*f* (1), the accumulation of theater of operations patients in zone of interior hospitals after one month of operations in the theater (under a 10-day evacuation policy) may be determined as shown in example 14. The sum of the remaining factors from 10 through 30 complete hospital days inclusive, represent the number of patients re-

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one): [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR: AD-II

LINE	MONTH OF OPERATION 1/ (a)	EVACUATION POLICY (Days) (b)	INCREASES IN EVACUATION POLICY (c)	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE (d): 90 Days	150 Days	360 Days	ADMISSION RATE (e)	x	TROOP STRENGTH (Thous) (f)	x	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE (g): 90 Days	150 Days	360 Days	x	DISPERSION FACTOR 2/ (h)	=	PATIENTS 3/ AFTER DAYS OF OPERATION (i): 90 Days	150 Days	360 Days
1	1	30	30-60-90-120	90	150	360	1.7		500		1.78	0.99	0.04				1,513	842	34
2	2	60	60-90-120	60	120	330	1.7		500		1.26	1.25	0.06				1,071	1,062	51
3	3	90	90-120	30	90	300	1.7		500		0.22	1.11	0.10				187	944	85
4	4	120	-																
5																			
6																			
7																			
8																			
9																			
10																			
11	TOTAL PATIENTS						1.7		500		3.26	3.35	0.20				2,771	2,848	170
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)													X			1.25	1.25	1.25
13	TOTAL FIXED BEDS REQUIRED																3,464	3,560	213

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 26. Worksheet—example 10 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR AD-II

LINE	MONTH 1/ OF OPERATION	EVACUATION POLICY (Days)	INCREASES IN EVACUATION POLICY	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE			ADMISSION RATE	TROOP STRENGTH (Thous)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE			DISPERSION FACTOR 2/	PATIENTS 3/ AFTER DAYS OF OPERATION		
				90 Days	150 Days	360 Days			90 Days	150 Days	360 Days		90 Days	150 Days	360 Days
	a	b	c	d			e	f	g			h	i		
1	1	30	30-60-90-120	90	150	360	0.6	500	8.79	6.24	1.77		2,637	1,872	531
2	2	60	60-90-120	60	120	330	0.6	500	8.34	6.91	2.13		2,502	2,073	639
3	3	90	90-120	30	90	300	0.6	500	2.12	7.07	2.52		636	2,121	756
4	4	120													
5															
6															
7															
8															
9															
10															
11	TOTAL PATIENTS						0.6	500	19.25	20.22	6.42		5,775	6,066	1,926
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)												1.25	1.25	1.25
13	TOTAL FIXED BEDS REQUIRED												7,219	7,583	2,408

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns								Use Lines			
	a	b	c	d	e	f	g	h 2/	i	11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 27. Worksheet—example 10 (Conventional battle injury and wound).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR AD-II

LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 90 Days d	150 Days d	360 Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 90 Days g	150 Days g	360 Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 90 Days i	150 Days i	360 Days i
1	1	90	90-90-90-120	90	150	360	1.7	500	1.69	0.99	0.04		1,436	842	34
2	2	90	90-90-120	60	120	330	1.7	500	1.05	1.25	0.06		893	1,062	51
3	3	90	90-120	30	90	300	1.7	500	0.22	1.11	0.10		187	944	85
4	4	120	-												
5															
6															
7															
8															
9															
10															
11	TOTAL PATIENTS						1.7	500	2.96	3.35	0.20		2,516	2,848	170
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)											X	1.25	1.25	1.25
13	TOTAL FIXED BEDS REQUIRED												3,145	3,560	213

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 28. Worksheet—example 11 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)				CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound									TYPE OF EXPERIENCE FACTOR AD-II		
LINE	1/ MONTH OF OPERATION	EVACUATION POLICY (Days)	INCREASES IN EVACUATION POLICY	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE			ADMISSION RATE	TROOP STRENGTH (Thous)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE			DISPERSION FACTOR 2/	PATIENTS 3/ AFTER DAYS OF OPERATION		
				90 Days	150 Days	360 Days			90 Days	150 Days	360 Days		90 Days	150 Days	360 Days
	a	b	c	d			e	f	g			h	i		
1	1	90	90-90-90-120	90	150	360	0.6	500	8.66	6.24	1.77		2,598	1,872	531
2	2	90	90-90-120	60	120	330	0.6	500	7.14	6.91	2.13		2,142	2,073	639
3	3	90	90-120	30	90	300	0.6	500	2.12	7.07	2.52		636	2,121	756
4	4	120													
5															
6															
7															
8															
9															
10															
11	TOTAL PATIENTS						0.6	500	17.92	20.22	6.42		5,376	6,066	1,926
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)											X	1.25	X 1.25	X 1.25
13	TOTAL FIXED BEDS REQUIRED												6,720	7,583	2,408

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns									Use Lines		
	a	b	c	d	e	f	g	h 2/	i	11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 29. Worksheet—example 11 (Conventional battle injury and wound).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)				CLASS OF PATIENT (Check one) [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound										TYPE OF EXPERIENCE FACTOR AD-I and AD-II		
LINE	MONTH 1/ OF OPERATION	EVACUATION POLICY (Days)	INCREASES IN EVACUATION POLICY	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE			ADMISSION RATE	TROOP STRENGTH (Thous)	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE			DISPERSION FACTOR 2/	PATIENTS 3/ AFTER DAYS OF OPERATION		
				90 Days	150 Days	360 Days			90 Days	150 Days	360 Days		90 Days	150 Days	360 Days
	a	b	c	d			e	f	g			h	i		
1	1	30	30-60	90	150	360	1.7	500	2.25	0.99	0.04		1,912	842	34
2	2	60	*	60	120	330	1.7	500	2.10	1.53	0.06		1,785	1,300	51
3	3	60	60-60-120	30	90	300	1.7	500	0.45	1.58	0.10		383	1,343	85
4	4	60	60-120	0	60	270	1.7	500	XX	0.92	0.15		0	782	128
5	5	120	*	0	30	240	1.7	500	XX	0.13	0.24		0	111	204
6															
7															
8															
9			(*) Not affected by later increases in evacuation policy (use AD-I factors)												
10															
11	TOTAL PATIENTS						1.7	500	4.80	5.15	0.59		4,080	4,378	502
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)												X 1.25	X 1.25	X 1.25
13	TOTAL FIXED BEDS REQUIRED												5,100	5,473	628

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns									Use Lines		
	a	b	c	d	e	f	g	h 2/	i	11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 30. Worksheet—example 12 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR: AD-I and AD-II

LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 90 Days d	150 Days d	360 Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 90 Days g	150 Days g	360 Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 90 Days i	150 Days i	360 Days i
1	1	30	30-60	90	150	360	0.6	500	10.53	6.24	1.77		3,159	1,872	531
2	2	60	*	60	120	330	0.6	500	11.22	7.83	2.13		3,366	2,349	639
3	3	60	60-60-120	30	90	300	0.6	500	3.47	8.51	2.52		1,041	2,553	756
4	4	60	60-120	0	60	270	0.6	500	XX	7.10	2.97		0	2,130	891
5	5	120	*	0	30	240	0.6	500	XX	1.55	3.54		0	465	1,062
6															
7															
8															
9			(*) Not affected by later increases in evacuation policy (use AD-I factors)												
10															
11	TOTAL PATIENTS						0.6	500	25.22	31.23	12.93		7,566	9,369	3,879
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)												X 1.25	X 1.25	X 1.25
13	TOTAL FIXED BEDS REQUIRED												9,458	11,711	4,849

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	Use Lines i	11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 31. Worksheet—example 12 (Conventional battle injury and wound).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one): [X] Disease and Nonbattle Injury [ ] Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR: AD-II and Accum.

LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 60 Days d	120 Days d	180 Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 60 Days g	120 Days g	180 Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 60 Days i	120 Days i	180 Days i
							x	x	x			x	=		
1	1	30	30-60-90-120	60	120	180	1.9	100	2.24	1.29	0.62			426	245	118
2	2	60	60-90-120	30	90	150	1.7	300	0.45	1.42	0.99			230	724	505
3	3	90	90-120	0	60	120	1.5	500	XX	0.70	1.24			0	525	930
4	4	120	-	0	30	90	1.3	500	XX	0.13	1.80			0	85	1,170
5	5	120	-	0	0	60	1.3	500	XX	XX	XX			0	0	XX
6	6	120	-	0	0	30	1.3	500	XX	XX	XX			0	0	XX
7																
8																
9																
10																
11	TOTAL PATIENTS													656	1,579	2,723
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)												x	1.25	1.25	1.25
13	TOTAL FIXED BEDS REQUIRED													820	1,974	3,404

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 32. Worksheet—example 13 (Disease and nonbattle injury).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)				CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☒ Conventional Battle Injury and Wound										TYPE OF EXPERIENCE FACTOR AD-II and Accum.		
LINE	MONTH OF OPERATION 1/ a	EVACUATION POLICY (Days) b	INCREASES IN EVACUATION POLICY c	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE 60 Days d	120 Days d	180 Days d	ADMISSION RATE e	TROOP STRENGTH (Thous) f	EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE 60 Days g	120 Days g	180 Days g	DISPERSION FACTOR 2/ h	PATIENTS 3/ AFTER DAYS OF OPERATION 60 Days i	120 Days i	180 Days i
							x	x	x	x	x	x	=		
1	1	30	30-60-90-120	60	120	180	2.0	100	11.46	6.94	5.07		2,292	1,388	1,014
2	2	60	60-90-120	30	90	150	1.7	300	3.47	8.26	6.24		1,770	4,213	3,182
3	3	90	90-120	0	60	120	0.9	500	XX	5.87	6.90		0	2,642	3,105
4	4	120	-	0	30	90	0.6	500	XX	1.55	13.43		0	465	4,029
5	5	120	-	0	0	60	0.6	500	XX	XX	XX		0	0	XX
6	6	120	-	0	0	30	0.6	500	XX	XX	XX		0	0	XX
7															
8															
9															
10															
11	TOTAL PATIENTS												4,062	8,708	11,330
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)												x 1.25	x 1.25	x 1.25
13	TOTAL FIXED BEDS REQUIRED												5,078	10,885	14,163

POSTING INSTRUCTIONS TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 33. Worksheet—example 13 (Conventional battle injury and wound).

FIXED HOSPITAL BED REQUIREMENT (FM 8-55)

CLASS OF PATIENT (Check one) ☐ Disease and Nonbattle Injury ☐ Conventional Battle Injury and Wound

TYPE OF EXPERIENCE FACTOR Remaining

LINE	DAY 1/ MONTH OF OPERATION (a)	EVACUATION POLICY (Days) (b)	INCREASES IN EVACUATION POLICY (c)	INTERVALS OF RESPECTIVE PERIOD OF ESTIMATE (d)			ADMISSION RATE (e)		TROOP STRENGTH (Thous) (f)		EXPERIENCE FACTORS AT RESPECTIVE INTERVALS OF PERIOD OF ESTIMATE (g)				DISPERSION FACTOR 2/ (h)		PATIENTS 3/ AFTER DAYS OF OPERATION D&NBI (i)	PATIENTS 3/ AFTER DAYS OF OPERATION BIW (i)	
				Days	Days	Days		x		x	* Days	Days	Days			=	30 Days	30 Days	Days
1	30	10	Disease and NBI				1.3		100		6.434						836		
2	30	10	Conventional BIW				0.6		100		16.031							962	
3																			
4																			
5																			
6											(*) Sum of remaining factors								
7											10 through 30 days incl.								
8																			
9																			
10																			
11	TOTAL PATIENTS																836	962	
12	DISPERSION FACTOR (Use this line when the Dispersion Factor is constant throughout the period of operation; omit it when the Dispersion Factor varies from month to month, and use col h)															X	1.25	X 1.25	X
13	TOTAL FIXED BEDS REQUIRED																1,045	1,203	

POSTING INSTRUCTIONS

TO DETERMINE BY:	Use Columns a	b	c	d	e	f	g	h 2/	i	Use Lines 11	12	13
Accumulation Factor		X			X	X	X		X	X	X	X
AD-I Factor	X	X		X	X	X	X		X	X	X	X
AD-II Factor	X	X	X	X	X	X	X		X	X	X	X
AD-I and AD-II Factors	X	X	X	X	X	X	X		X	X	X	X
AD-II and Accumulation Factors	X	X	X	X	X	X	X		X	X	X	X
Remaining Factors	X	X		X	X	X	X		X	X	X	X

1/ Or Day of Operation

2/ Use this column when the Dispersion Factor varies from month to month; omit it when the Dispersion Factor is constant throughout the period of operation, and use line 12.

3/ When column h is used, the resulting numbers in column i represent "Beds after Days of Operation."

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Figure 34. Worksheet—example 14.

maining in hospital after 30 days of operations who have, at that time, lost anywhere from 10 to 30 days depending upon the day of admission. This is the short method for use when the admission rate and average strength are constant. The use of the long method for each day, as shown by the formula given in paragraph 146*f*, would obtain the same answer as in example 14. When using the long method for daily variance in admission rates and troop strength, it should be noted that the number of days of the evacuation policy is the starting point for CONUS patients, since the number of days in the evacuation policy *less one day* is the ending point for theater patients.

c. Computations for Adjusting the Number of Fixed Beds Required in the Zone of Interior when the Theater Evacuation Policy is Reduced.

(1) *When the theater evacuation policy is reduced* in order to make theater beds available for an influx of patients due to some critical situation, those patients who, in the opinion of responsible medical officers, cannot be returned to duty status within the *reduced allowed period of hospitalization in the theater*, must be evacuated to CONUS. The additional beds required in CONUS for such patients are based upon the daily admission rate and average strength in the theater and upon the difference between the maximum theater accumulation factors for the two separate evacuation policies. Example 15 (fig. 35): Theater "H" with an average strength of 500,000 and daily admission rates of 1.3 for disease and nonbattle injury and 0.6 for battle injury and wound is operating under a 120-day evacuation policy. A crisis develops in the theater which immediately requires a larger number of fixed hospital beds than are presently unoccupied in the theater. In order to make beds immediately available, the evacuation policy is reduced to 60 days requiring evacuation of all patients who cannot be returned to duty status within the reduced allowed period of hospitalization. Dispersion allowance is 20 percent. How many additional beds would be required in CONUS to handle these patients?

(2) The adjustment, as shown in example 15, provides additional beds in CONUS for only those patients who were admitted during prior months of operations, when the longer evacuation policy was in effect, and who require evacuation only because of the reduction in length of

Type of disability	Maximum Theater accumulation factors: 120 day evac policy		60 day evac policy	Difference		Adm rate		Avg str (thous)		Patients
Disease and nonbattle injury.	17.94	minus	14.67	= 3.27	x	1.3	x	500	=	2,126
Battle injury and wound.	38.27	minus	25.57	= 12.70	x	0.6	x	500	=	3,810
Total patients										5,936
Dispersion allowance 20%										x1.25
Total additional beds required										7,420

Figure 35. Example 15. Reduction in theater evacuation policy from 120 days to 60 days.

evacuation policy. When the reduced evacuation policy and the theater admission rate and average strength remain constant over a period of time, subsequent CONUS bed requirements are computed on the basis of the shorter evacuation policy using the respective CONUS accumulation factors for the shorter policy.

(3) When either the theater admission rate or average strength, or both, vary from month to month and the theater evacuation policy is reduced for one or more months, CONUS bed requirements, *beginning with the month of reduction in policy*, are computed on the basis of the shorter evacuation policy using AD–I factors for the shorter policy at the respective interval, depending upon the month of admission in relation to the month the decrease occurs. Decreases in evacuation policy have no effect beyond the 120-day interval for each separate month of admission, since the longest evacuation policy considered is the 120-day policy. However, since the month of decrease always represents the first 30-day period under the shorter evacuation policy, decreases have no effect on *prior months of admission* beyond one month *less* than the number of months equal to the length of the longer evacuation policy. For example, a decrease in length of evacuation policy from a 120-day policy would require the substitution of AD–I factors for the shorter policy at the 120-day interval of the *third* preceding month; at the 90 and 120-day intervals of the second preceding month; and at the 60, 90, and 120-day intervals of the *month immediately preceding the month of decrease in*

evacuation policy. Similarly, under a decrease in length of evacuation policy from a 90-day policy, AD–I factors for the shorter policy are substituted at the 90-day interval of the *second* preceding month and at the 60 and 90-day interval of the *month immediately preceding the month* of change. Under a decrease in length of evacuation policy from a 60-day policy, AD–I factors for the shorter policy are substituted at the 60-day interval of only the *month immediately preceding the month of change.* In all instances CONUS AD–I factors beyond the respective intervals requiring change are alike regardless of length of evacuation policy and, therefore, no further adjustment is required. The month of decrease in length of evacuation policy and succeeding months under the shorter policy would, of course, require AD–I factors for the shorter policy beginning with the first 30-day interval of each full month under the shorter policy.

(4) Example 16 (figs. 36 and 37) : To illustrate the substitution of AD–I factors, as given in example 16, figure 36, shows B&NBI AD–I factors for each 30-day interval included in a 180-day period of estimate for each month of a six months' operation under a 120-day evacuation policy. Figure 37 shows the appropriate substitution of D&NBI AD–I factors for a 60-day evacuation policy in effect beginning with the fourth month of operations. It should be noted that the "intervals requiring change" pertain to the intervals of the period of estimate as governed by the month of admission in relation to the time period covered. The AD–I factors in this example were obtained from table XLIX.

150. Nonfixed Bed Requirements

Requirements for units capable of providing nonfixed beds are in accordance with the troop strength supported and the proportion of troop strength allocated to the Medical Service.

151. Transportation Means for Evacuation of Patients

a. General. Except for ambulances, the Medical Service controls no other transportation means for evacuation of patients from the combat zone to the communications zone or from the communications zone to the zone of interior. For additional means of evacuation it must depend upon the particular service (Air Force or Navy) controlling aircraft and ships or the command controlling

Mo of opn	Evac policy	Mo intervals of 180 day pd of est	Months of operation					
			1	2	3	4	5	6
1	120	30–180	0.13	0.63	1.04	1.26	0.99	0.62
2	120	30–150		0.13	0.63	1.04	1.26	0.99
3	120	30–120			0.13	0.63	1.04	1.26
4	120	30–90				0.13	0.63	1.04
5	120	30–60					0.13	0.63
6	120	30						0.13

Figure 36. Example 16. D and NBI AD–I factors under 120 days evacuation policy.

Mo of opn	Evac policy	Mo intervals of 180 day pd of est	Months of operation						Intervals requiring change
			Pd of 120 day evac policy			Pd of 60 day evac policy			
			1	2	3	4	5	6	
1	120	30–180	0.13	0.63	1.04	1.53	0.99	0.62	120
2	120	30–150		0.13	0.63	2.25	1.53	0.99	90, 120
3	120	30–120			0.13	2.10	2.25	1.53	60, 90, 120
4	60	30–90				0.45	2.10	2.25	30, 60, 90
5	60	30–60					0.45	2.10	30, 60
6	60	30						0.45	30

Figure 37. Example 17. D and NBI AD–I factors under 60 days evacuation policy.

trains and other forms of transportation. Coordination with these other services and commands is usually accomplished through the Medical Regulating Section (par. 141). The surgeon, however, must forecast the requirements for land, air, and water evacuation so that coordination for its procurement may be done in advance of the need. Aircraft are requested on the basis of anticipated needs and to meet emergencies such as occur in nuclear warfare where field army hospitals are suddenly filled to capacity. In general, air transportation of patients is preferred. Air ambulance service supplements, but does not replace surface evacuation. Adequate ground transportation must always be available also in case varying conditions make air transportation inadequate or impossible. It is advisable to establish holding installations adjacent to air evacuation loading points to expedite loading and to provide medical care for patients who are awaiting transportation if aircraft fails to arrive.

b. Capacity of Transportation. Table LVIII lists the types of transportation usually available to the Medical Service for the evacuation of patients and shows their capacity.

Table LVIII. Types of Transportation and Their Capacity

1	1	2	3
1	Type of transportation	Men	
		Sitting	Recumbent
2	Transport airplane (C–46)	40	33
3	Transport airplane (C–47)	24	24
4	Transport airplane (C–54)	49	36
5	Transport airplane (C–82)	42	34
6	Transport airplane (C–97)	134	83
7	Transport airplane (C–119)	62	35
8	Transport airplane (C–123)	60	50
9	Transport airplane (C–124)	200	132
10	Transport airplane (C–130)	92	74
11	Army aircraft (L–19)	1	
12	Army aircraft (L–20A)	5	2
13	Army aircraft (L–23D)	5	
14	Army aircraft (U–1A)	13	6
15	Army helicopter (H–13G)	2	2
16	Army helicopter (H–19D)	8	6
17	Army helicopter (H–21C)	13	12
18	Army helicopter (H–23B)	2	2
19	Army helicopter (H–34A)	12	8
20	Army helicopter (H–37)	24	24
21	Army helicopter (H–40)	5	2
22	Truck, ambulance heavy, 18 litter	37	18

Table LVIII. Types of Transportation and Their Capacity—Continued

1	1 Type of transportation	2 Men Sitting	3 Men Recumbent
23	Truck, ambulance, wheeled	7	3
24	Truck, ambulance, field ¾-ton, 4 x 4	8	5
25	Truck, ambulance, light, 3 litter	3	3
26	Truck, cargo, 2½-ton, 6 x 6	16	18
27	Landing vehicle, wheeled	12	12
28	Railway car, coach (US)	52	
29	Railway car, coach (foreign)	54–72	
30	Pullman car (US)	48	32
31	Sleeping car (foreign)	32	32
32	Ambulance car, ward (US)	35	35
33	Ambulance car, award (foreign)	30	30
34	Ambulance car, personnel (foreign)	21	21
35	LVT	12	6
36	LCVP	36	[1] 17
37	LCM	60	15
38	LST	[2] 180	[3] 120

[1] Only seven litters if LCVP is to be hoisted aboard for loading.
[2] In addition to recumbent patients.
[3] In addition to sitting patients.

c. Time Element of Evacuation. Following are factors for evacuation of personnel (including loading and unloading)—

(1) *Litter squads.*

(*a*) Average terrain, 4-man squad—1,000 yards and return in 1 hour.

(*b*) Mountainous terrain, 6-man squad—400 yards and return in 1 hour.

(2) *Ambulance, motor, during combat, in division area.* Five miles and return in 1 hour.

(3) *Aircraft.*

(*a*) Helicopter—50 miles 1 way in 1 hour.

(*b*) Transport airplane—100 miles 1 way in 1 hour.

(*c*) Army aircraft—75 miles 1 way in 1 hour.

d. Computation of Requirements by Formula. The time, and the number of units of transport required to evacuate a given number of casualties may be computed also by formula.

(1) *Time required:*

$$T = \frac{N \times t}{U \times n}$$

(2) *Units required:*

$$U = \frac{N \times t}{T \times n}$$

N = Total number of casualties to be evacuated.
n = Number that can be transported in one load.
T = Total time.
t = Time required for one round trip.
U = Number of units of transport (litters, ambulances, etc.).

e. Patient Airlift Planning Factors. Table LIX, based on experience factors in World War II and the Korean War, shows rates of evacuation for evacuee patients from admissions during a single month of operations and may be used as patient airlift planning factors.

Table LIX. Patient Airlift Planning Factors

A. BATTLE INJURIES AND WOUNDS

Evacuated from Theater out of Admissions During one Month of Operations Percentage during or at end of interval

Evac policy	30 days	60 days	90 days	120 days	150 days	Total evacuated from theater
120 days	5.15	12.62	4.06	1.34	0.23	23.40
90 days	7.07	16.74	5.07	0.98		29.86
60 days	11.56	25.84	4.60			42.00
30 days	26.90	39.10				66.00

B. DISEASE AND NONBATTLE INJURIES

Evacuated from Theater out of Admissions During one Month of Operations Percentage during or at end of interval

Evac policy	30 days	60 days	90 days	120 days	150 days	Total evacuated from theater
120 days	0.44	1.73	1.49	0.88	0.19	4.73
90 days	0.74	2.83	2.26	0.60		6.43
60 days	1.51	5.57	2.16			9.24
30 days	7.22	10.08				17.30

Section III. EVACUATION AND HOSPITALIZATION OF PRISONERS OF WAR

152. Responsibility

Many prisoners of war will be wounded, injured, or ill, and will require medical treatment and care. Although G1 has primary

general staff responsibility for the supervision of plans for prisoner of war handling, the Army Medical Service is charged with the responsibilty of providing adequate medical treatment and prompt evacuation. Hospitalization must be provided for prisoners of war. Medical personnel screened out by the Provost Marshal from the prisoners of war are used to supplement these medical units which provide medical care for the patients in prisoner of war hospitals. They work under the supervision of Army Medical Service personnel.

153. Requirements

a. General. Medical evacuation and hospitalization of prisoners of war will parallel similar functions for United States and allied personnel. Separate facilities for medical evacuation and hospitalization of prisoners of war will normally be established only when the prisoner of war patient load justifies separate handling as a measure of economy of manpower facilities and/or time, or when security requirements so dictate.

b. Hospital Beds. Medical planning for prisoner of war patients should provide hospital beds for 4 percent of the total prisoner population exclusive of any consideration of dispersion allowance. The percentage of total bed requirements that should be made available for specialized care will vary with the geographical area of operations, the nationality of enemy troops, and the types of injuries and wounds resulting from the tactical situation.

c. Transportation Means. Prisoner of war patients will be transported through normal United States medical evacuation channels. Air evacuation will be used only for emergency type cases and will depend on the requirements of the military situation.

d. Security.

(1) Whether guards are required for prisoners of war during hospitalization or medical evacuation will be determined in accordance with policies established by the senior commander of the units being supported. Normally, the commander will notify the Provost Marshal of requirements for guards as indicated. Slightly wounded United States military personnel may be used for prisoner of war guards when feasible.

(2) Separate guarded medical treatment facilities may be established when necessary, either by designation of an entire hospital as a prisoner of war hospital or by establishment of guarded areas within an established

facility. In such event, security personnel will be furnished from other than medical sources.

154. Staff Coordination

G1 is the general staff officer primarily responsible for the supervision of plans for prisoners of war, and for the coordination of such plans with the following general and special staff officers:

a. G2, for estimate of number of prisoners of war anticipated and the interrogation of prisoners of war, friendly and enemy civilians from enemy-held territory, and recovery United States and allied personnel.

b. G3, for additional troops to be used as guards when large numbers of prisoners of war are captured.

c. G4, for supply, construction of installations, hospitalization, labor, and transportation (including evacuation).

d. Provost Marshal, for location of sites of collecting points, cages or camps, and for evacuation, guarding, processing, education, and administration of prisoners of war.

e. Judge Advocate, for advice on legal questions relative to prisoners.

f. Chaplain, for advice and services pertaining to the religious needs of prisoners.

g. American Red Cross representatives, for services as permitted by the Geneva Conventions.

h. The surgeon is responsible for procurement of medical supplies and for the treatment, hospitalization, and evacuation of sick and wounded prisoners of war.

155. Estimation of Prisoner of War (POW) Patients

a. General. The medical workload involved in the treatment and care of enemy prisoner of war patients can be estimated from the following basic data:

(1) *The prisoner of war population.*
  (*a*) Advance estimates.
  (*b*) Actual numbers in confinement.

(2) *The rate of generation of patients.*
  (*a*) POW outpatient visit rate.
  (*b*) POW inpatient admission rate.

(3) *The bed requirement rate.*
  (*a*) Total bed requirements.
  (*b*) Specialized bed requirements.

b. The Prisoner of War Population.

(1) Estimates of the number of enemy prisoners of war anticipated is a responsibility of G2. For planning purposes, the following capture rates expressed as number of prisoners captured per month are provided:

Type of action	*Inf Div*	*Armd Div*	*Airbn Div*
Offense	2,850	3,600	2,550
Defense	185	117	155
Capitulation—First Month	6,000	6,000	6,000
Capitulation—Second and Successive Months	30,000	30,000	30,000

(2) When phasing capture estimates over a period of time, the planner should be aware of the marked variation inherent in estimates of this nature, not only related to the stage of the operation, but also the kind of conflict. Experience data on the monthly percentage of prisoners of war captured by American Forces in the European Theater of Operations during World War II, and on prisoners of war captured and interned by the United Nations Command in Korea, provide examples of this and may be of some assistance in arriving at the required estimates (table LX).

Table LX. Monthly Percentage of Captured and Interned Prisoners of War, World War II and Korea—Percentage During Period Shown

Month of opn	European theater		Korea	
	Prior to capitulation Jun 44-Feb 45	Entire period Jun 44-May 45	Prior to truce talks Jul 50-Jul 51	Entire period Jul 50-Jul 53
1	3.7	0.3	1.1 [a]	1.0 [a]
2	11.3	1.0	5.6	5.3
3	11.2	1.0	31.9	30.2
4	14.7	1.3	21.9	20.7
5	4.8	0.4	24.0	22.7
6	15.0	1.4	0.1	0.1
7	11.9	1.1	1.4	1.4
8	11.9	1.1	2.6	2.5
9	15.5	1.4	1.1	1.0
10	----------	8.1	4.1	3.8
11	----------	35.4	5.8	5.5
12	----------	47.5	0.4	0.4
13–24	----------	----------	----------	5.1
25–36	----------	----------	----------	0.3
Total	100.0	100.0	100.0	100.0

[a] Includes a small number of prisoners captured during period 25-31 July 1950 in addition to all prisoners captured during August 1950. The two periods are combined since data for July 1950 represents only one week of operation.

c. The Rate of Generation of Patients.

(1) The rate of generation of patients is influenced mainly by the health conditions among enemy troops. While battle casualty cases among prisoners of war vary with the tactical situation, their numbers are usually small and the predominant cause of morbidity is from disease conditions. The controlled environment of prisoners, who live in confined areas with restricted activity, results in extremely low injury rates. However, when prisoners are used in labor service units, provision should be made for increased rates of disease as well as increased injury rates. In either case, an important feature of confinement is the greater opportunity offered for the use of outpatient clinic procedures among the less severe cases of illness. This latter practice materially reduces the inpatient medical workload and, consequently, the prisoner of war bed requirements. In table LXI are presented the various patient rates expressed as visits and cases, respectively, per thousand prisoner strength per month.

Table LXI. Prisoner of War Patient Rates

Type of rate	Rate per 1,000 per month	
	POW restricted activity	POW in labor service units
Outpatient visits	1,392	1,824
Admissions to Medical Treatment Facilities:		
All causes	29	38
Battle	2	
NB injury	1	2
Disease	26	36

(2) The incidence of communicable disease among enemy prisoners of war may be expected to vary not only with season and geography but also according to the national health standards and practices prevalent among the troops of the enemy involved. Interesting differences existed between enemy prisoners admitted to medical treatment facilities in Korea during the period September 1950-July 1953 and enemy prisoners admitted to medical treatment facilities in continental United States during the period January 1944-August 1945. For example, dysentery was an important cause of morbidity

among enemy prisoners in Korea obtaining an admission rate of 9 per thousand prisoner strength per month; whereas for the enemy prisoners (German, Italian, and Japanese) in continental United States during World War II, the admission rate was less than one per thousand per month. Furthermore, tuberculosis as a cause of morbidity produced a rate of 4 per thousand strength per month among Chinese and North Korean prisoners in Korea compared with 2 per thousand per month among Japanese prisoners in continental United States during World War II. The tuberculosis admission rate for German and Italian prisoners was negligible. On the other hand, the admission rate for malaria among Japanese prisoners in World War II was 5 per thousand strength per month and in Korea the malaria rate among enemy prisoners of war was less than one per thousand per month.

(3) In estimating bed requirements on the basis of admission rates among prisoner of war populations, additional assumptions regarding the expected total duration of treatment are required. Following these assumptions, the method to be used involves the same procedures as that presented in section II for computing fixed bed requirements.

d. The Bed Requirement Rate. Bed requirements for the total prisoner of war patient load can be estimated grossly on the basis of 4 percent of the total prisoner of war population at any given time multiplied by the appropriate dispersion factor. The dispersion factor would, however, be small since the prisoner of war population is homogeneous and the geographic considerations favor stability of location. The proportion of total bed requirements that are made available for specialized care will depend upon local conditions. Provision is made for specialized treatment beds on the basis of medical intelligence reports of morbidity among enemy troops, diseases endemic to the area of operations, and type of injuries and wounds resulting from the tactical situation.

CHAPTER 9
DENTAL SERVICE STAFF PLANNING

Section I. GENERAL PRINCIPLES OF DENTAL STAFF PLANNING

156. Relationship to Medical Service Staff Planning

Although the Dental Service is a part of the Army Medical Service, it must be organized in such a manner that dental matters are administered and controlled by an individual best qualified to do this—the dental surgeon. As a special staff officer, the dental surgeon advises the commander on matters pertaining to the dental service of the command and the surgeon on all matters that may have a bearing on the health of the command from a dental standpoint (AR 40–3). The dental surgeon is included early in the planning for an operation, and he must be cognizant of the operational and tactical plans so as to make the dental service plan conform to them. He cooperates with the surgeon in making the medical plan, which may include the dental plan, or a portion of it, as a special paragraph or an annex to the medical plan. (For definitions of terms and details concerning the medical plan, refer to chapter 2.)

157. Importance of Advance Planning

Dental preparations and planning must be initiated early and must be specifically designed to support the tactical operation. They must be formulated in sufficient time to permit coordination with other members of the staff and to obtain the approval of the commander. Dental plans must be made available to subordinates in sufficient time to permit them to formulate adequate implementing plans.

158. Planning Criteria

Dental planning to support an operation must be concurrent with the operation planning, and must provide for alternate courses of action. Like any military plan, the dental plan must be sound, complete, brief, flexible, and timely (par. 9).

159. Basis for Dental Staff Planning

a. Premises. Dental staff planning is founded on certain basic

factors and premises. First, it must be recognized that a careful *dental estimate* is of primary consideration in dental planning (sec. II). Second, dental staff officers must have access to the necessary details of operational planning in order to coordinate the dental with the operations plan and provide the required dental support. Third, full command support must be given dental officers for the accomplishment of their tasks. Fourth, dental services must be integrated with those of the Naval and Air Forces to effect uniformity of effort.

b. Basic Factors.

(1) The tactical mission which has been assigned to the combat forces must be the basic consideration of all dental staff planning. This mission will guide the dental surgeon in changing and adjusting dental support as required and in making dental estimates and recommending plans. This knowledge will also guide him in granting priorities to combat troops and others as the need arises. Dental support missions are classified as direct support, general support, or reinforcing. As dental support can be effective only when dental personnel can be actively employed in performing the dental mission, the commander must provide for the centralized control of his dental service, organizing it with flexibility and with the necessary mobility to exploit opportunities to furnish dental treatment wherever he finds it possible to spare personnel who need to receive it. There are certain periods when personnel are engaged in combat or in the logistical support of it and therefore cannot be made available for dental treatment. Dental planning must make provision for dental service wherever and whenever it can have its maximum effect. To the greatest extent possible, the dental service provides dental care during periods of ineffectiveness. A patient in a hospital for other causes should receive the dental treatment considered necessary while he is in a noneffective status as a patient. Troops in a rest area or in a reserve receive the bulk of their dental service while in such status rather than while engaged in active combat. If replacements are surveyed and held for necessary treatment at replacement centers, much dental work in forward areas is eliminated and time loss to units is reduced.

(2) A characteristic of the dental service which has a profound effect on planning is that which permits a certain amount of freedom in selecting the time and place where

the great majority of such service may be supplied. Although emergency dental patients require immediate treatment, by far the great majority of dental treatment is rendered when there is a certain amount of leeway as to the time and place it is to be furnished. This characteristic of dental service combined with that of flexibility and mobility permits the maximum and most economical utilization of dental personnel.

(3) Dental units are brought to the troops rather than having troops go to the dental facilities. In this way transportation means are conserved, and better use can be made of dental units which can move to another area when they are no longer needed or when the troops are engaged and cannot be spared to receive dental treatment. By attacking the most serious dental problems first and by endeavoring to provide dental service as close to areas of troop concentration as possible, thousands of man hours can be conserved and the soldier kept on his assigned duties.

(4) Since dental support planning must conform to the general plans and policies of the commander, the dental surgeon must have an exact knowledge of the policies established by the commander and, in addition, must know his decisions on new situations for which the commander has not established a policy. All planning must be based on accurate information as to the status of the dental health of the troops. Those in greatest need must be provided for first.

(5) Other factors which influence dental planning are the type and duration of the operation, the area of operation, and the organization of the theater. Against these factors must be weighed the means available to the dental surgeon to accomplish the dental mission.

Section II. THE DENTAL ESTIMATE OF THE SITUATION

160. General

a. The dental estimate of the situation is a logical process of reasoning by which the dental surgeon considers all the circumstances affecting the dental situation and decides what has to be done to accomplish his mission. The estimate is not intended to be an isolated, cumbersome administrative burden, but a checklist of the steps in the thought process used by a dental surgeon in planning dental service. Circumstances vary with the type of the

command, but the fundamental steps of the thought process in preparing the estimate remain unchanged: the mission, the situation and considerations, the analysis, the comparison, and the conclusions. These steps are discussed separately in paragraphs 161 through 165.

b. Since the dental surgeon is under the general staff supervision of G4, the format of the dental estimate will follow that of the logistical estimate prepared by G4, which is also the format of the commander's estimate of the situation. Refer to FM 101–5 for detailed explanation and sample format of the logistical estimate. See appendix XI for suggested format for the Dental Estimate.

c. Normally, a good dental surgeon is so familiar with the tactical and administrative situation that he usually has his estimate well under way by the time the commander's decision is announced. To wait until the decision is published is likely to delay dental planning too much to provide adequate support. Moreover, the dental plan is usually begun before the dental estimate is completed. As each problem is recognized and solved, a part of the dental plan is automatically formulated. As soon as these fragments of information are accumulated, they should be passed on to subordinate dental surgeons to help them prepare their own estimates and plans.

161. The Mission

The dental mission is stated in the first paragraph. Like the mission of the medical estimate, it is always stated in terms of the tactical situation. Broadly speaking, the mission of all dental units is to provide dental service to the troops which they support. The mission of the troops served determines the general type of dental operations. A clear statement as to what type of operation is to be supported must be included: for example, "To provide dental support to the Thirtieth US Army in offensive operations to the East to seize Algeria." The mission is the primary guiding consideration for the remainder of the dental estimate. It must be stated as clearly and as concisely as possible. If several categories of personnel are to be provided different types of dental service, the fact should be stated in this paragraph.

162. The Situation and Considerations

a. General. The situation and considerations (paragraph 2 of the dental estimate) consist of an enumeration of the various factors affecting the dental service of the particular operation. Here are set forth in an orderly manner those facts, assumptions,

and deductions which can influence the dental staff officer in choosing the best way to accomplish his stated mission. Paragraph 2 is broken down into factors or elements selected by the dental surgeon as important ones to the situation. The consideration of each factor or element divides itself into a statement of facts as known and a deduction from these facts.

b. The Intelligence Situation. Information for this part of the estimate is received from G2. When the estimate is written, a brief summary or reference to the latest periodic intelligence report may be sufficient. Considered here will be (1) characteristics of the area of operations, particularly the weather and terrain; (2) enemy strengths and dispositions; and (3) enemy capabilities which might affect ability of the Dental Service to accomplish its mission (e.g., nuclear or guerrilla capabilities).

c. The Tactical Situation. Information for this portion is obtained from the commander's planning guidance and from G3. It includes (1) present disposition of the troops to be supported; (2) possible courses of action which they may be contemplating; and (3) projected operations, if known, and other planning factors as required for coordination and integration of staff estimates.

d. The Personnel Situation. This information is received from G1. Consideration is given here to the following: (1) the present dispositions of administrative units and installations (other than logistical or Civil Affairs responsibilities) for which dental support must be provided; (2) the strength to be supported (includes at least dental condition of arriving troops, POR dental requirements, availability of troops to receive dental care, and troop phasing into the area, including the flow of replacements); and (3) projected developments within the personnel field which may influence dental support of the operation (e.g., sudden changes of troop strength or institution of a rest and rehabilitation leave policy). Dental requirements for the estimated number of prisoners of war will also be considered here.

e. Civil Affairs Situation. This includes the present disposition of Civil Affairs units and installations for whom dental care must be furnished. It also considers any projected developments which might influence such care.

f. The Logistical Situation. This information is received from G4 and other special staff officers. It includes information such as strength, locations, and missions of logistical units and installations, but it may consist only of a reference to the current administrative order.

g. Assumptions. Assumptions may be required in the preparation of an estimate, but they should be eliminated or modified as appropriate when factual data and specific planning guidance become available.

h. Special Factors. At this stage of the dental estimate, it is advisable to link up the current dental situation with all that has been considered above. This should include the strength, location, and mission of the dental units available; quality and status of training of dental units; local civilian dental personnel available; attitudes and capabilities of the civilian population; buildings and utilities; construction and use of existing facilities; base development; degree of permanency; and back up support (i.e., central dental laboratories, maxillo-facial service, etc.).

i. Re-evaluation. With the information thus far set forth, the dental staff officer can visualize all reasonable and practical courses of action or ways in which dental support can be provided, which, if successful, would accomplish the dental mission. He then eliminates from further consideration those courses of action which are obviously inferior to the others being considered. In certain situations there may be only one reasonable and practical course open to the dental staff officer. In such a case the conclusion should not be stated until the course of action is completely analyzed and compared in paragraphs 3 and 4 of the dental estimate.

163. Analysis

The analysis (paragraph 3 of the dental estimate) is a logical comparison of the estimated dental requirements of the command with the dental means available for support of the operation. Under each of the following subheads and for each course of action the requirements, availability, or capability will be determined and any limiting features indicated.

a. Materiel and Services.

(1) *Supply.* The dental surgeon considers here whether normal supply requirements are being met for this operation or whether certain supply shortages are causing a reduced capacity of dental units to perform their mission. He also considers any unusual supply requirements for this particular operation. Since the dental service is not primarily responsible for its supply requirements, the surgeon must be properly and completely informed in this regard. Providing him this information is the responsibility of the dental surgeon. Therefore, any equip-

ment or supply discrepancies which are likely to influence the successful accomplishment of the dental mission should be immediately brought to the attention of the surgeon.

(2) *Transportation.* Transportation requirements are determined for the different courses of action chosen. The availability of additional transportation, if required, is considered. The vehicle status of the individual dental units is a big factor. For example, if several vehicles of a dental unit are deadlined for maintenance, this unit may need additional transportation; whereas if priority were to be given to the repair of those vehicles, no additional transportation would be needed. The actual condition of the roads and bridges may be a limiting factor on the transportation means available to move the dental units and supplies.

(3) *Services.* From information received from other special staff officers regarding the location, capabilities, and limitations of their services, various courses of action with the dental unit requirements for services are analyzed. For example, it is determined which organizations are best located and capable of providing the necessary logistical support for dental units (i.e., rations, administration, and motor maintenance).

b. Medical/Evacuation and Hospitalization. This includes a consideration of diseases likely to affect the operation, status, and capability of hospital dental services; any unusual requirements for maxillo-facial teams; and plans for hospitalization (extent and locations).

c. Miscellaneous. Included here are any special or unusual organizational or other logistical considerations which might affect the ability of the dental service to accomplish its mission. The dental staff officer should consider at least the following factors when evaluating and determining the troop requirements for the dental service: (1) determination of the *functions and tasks* to be performed; (2) determination of the quantitative *workload;* (3) selection of the type of *operating unit(s)* having the capabilities required; (4) calculation of the *number* of operating units required, including any augmentation required; and (5) provision for adequate *command* and *control.* The dental surgeon must consider not only the dental units organic to or attached to the command but also those dental units supporting the command (i.e., central dental laboratories, or supporting Naval or Air Force

dental units). He must review the dental troop ceiling (applicable to a command such as field army and higher) to determine the possibility of securing additional dental units, if required. Securing of such additional dental units must be considered early to insure adequate dental service when needed. The dental surgeon must also consider the use of indigenous (local civilian, refugees, enemy nationals, and displaced persons) and prisoner of war dental personnel and supplies for taking care of those personnel in particular. Use of such personnel and supplies to the greatest extent possible will promote maximum effectiveness of the Army Dental Service in caring for the command.

d. Dental Courses of Action. From the foregoing comparison of requirements versus means, the dental surgeon has determined what his major dental problems will be. He must now develop the general courses of action which are available to compromise these two elements and provide proper dental support for the operation. The general policies and procedures that will do the job best are listed here. A comparison of the various courses of action listed is not made in this paragraph, but in paragraph 4 of the dental estimate.

164. Comparison

Paragraph 4 of the dental estimate contains a dental evaluation of the courses of action under consideration by the dental surgeon. The outstanding dental elements and the controlling limiting features considered in paragraph 3 of the estimate are listed. The courses of action listed at the end of paragraph 3 are then compared with one another in the light of these major dental elements, and advantages and disadvantages of each are noted. Conclusions are not drawn at this step but are deferred until the evaluation of all courses of action in the light of the controlling dental elements is complete.

165. Conclusions

The conclusions of the dental surgeon are set forth in paragraph 5 of the estimate. This is the end of the thought process of the estimate and is the basis for the development of the dental plan. It is the decision of the dental surgeon and corresponds with the decision paragraph of the commander's estimate, but the paragraph is usually designated as "conclusions" rather than "decision" due to the dental surgeon's position as special staff officer of the command. This paragraph provides the general staff and commander with a statement as to whether the operation, as envisaged, can be supported with an adequate dental service. If

it cannot, a clear outline of the reasons must be given. The dental surgeon makes a general statement here of the course of action which will best support the commander's mission with the maximum economy of dental means. Economy of dental means, while secondary to provision of good dental support, is of extreme importance both to the dental surgeon and to his commander. It helps to insure dental means for the next operation. This "decision" or conclusion of the dental surgeon guides subordinate dental surgeons in their planning. Listed in this paragraph also are the unavoidable dental limitations or deficiencies which must be recognized by everyone associated with the dental service of the command. Such a listing will insure coordinated efforts by all to reduce the effects of such limitations.

Section III. THE DENTAL PLAN

166. General

a. After determining the nature and extent of the dental problem (the dental estimate), the procedures to be followed, and the requirements for additional dental support, the final stage is the fixing of responsibility for dental functions and services. This is done by considering the resources available to each subordinate tactical and dental unit commander and the tasks to be performed. The statement of dental support and service policies and the specific fixing of responsibilities for dental functions is the generally accepted form in which the *dental plan* is presented. Dental plans are not usually formal or written at echelons lower than that of field army. Regardless of whether or not the plan is written in detail and published, the dental surgeon should carry out the planning procedure to insure that all pertinent points are covered. A standard format for the dental plan is of value as a checklist for any dental surgeon arranging dental support of a military operation. This format also facilitates use by lower echelons of the information it contains. Planners should consider the completed format presented in appendix XII as a checklist and use only such portions as are applicable to their particular situations. Inappropriate subparagraphs may be omitted entirely and subsequent subparagraphs numbered accordingly. Standing operating procedures (SOP's) may be referred to whenever practicable to preserve brevity and clarity in the body of the document. (See appendix XIII for a sample SOP.)

b. The security classification of the plan will be designated by headquarters and should be placed at the top and bottom of each page of the plan. The heading is self-explanatory. The designa-

tion of the plan will vary with the nature of the document to which it is appended. Numbers and letters will be designated by headquarters. Maps are listed to include the sheets involved when reference is made to locations by map coordinates. Otherwise, this portion of the plan is omitted. The dental task organization is not included unless the document is the initial dental plan for a command, or unless a major reorganization is to be effected. If the task organization is lengthy, it is usually attached to the plan as an inclosure with an appropriate reference. In the troop list inclosure, the command structure is indicated by appropriate indentations. This command structure is important in that the mission prescribed for subordinate elements of a unit is included in the overall mission of the major parent unit. Should attachments be for limited administration or control, such fact must be indicated.

167. The General Situation

This paragraph includes that information upon which the plan is based and that which is of value to subordinate planners in implementing the plan. Enemy capabilities bearing on planning are given. The responsibilities and functions of higher and adjacent echelons of command are included to assist subordinate planners. References which will amplify the plan or clarify its provisions are listed. This preserves brevity by precluding the repetition of lengthy data that is already available in other publications. Assumptions are limited to those factors beyond the control of the commander. Assumptions are progressively confirmed or ruled out as the planning proceeds. The published plan contains few or no assumptions.

168. The Mission

Paragraph 2 states the overall dental mission of the command. Appropriate subparagraphs describe specific dental responsibilities for each different category of personnel. This paragraph is the overall guide to subordinate dental planners and focuses their attention as they prepare the details of the operation. It is the basis of the policies and procedures contained in the remainder of the plan.

169. Assignment of Responsibilities

Paragraph 3, "Execution," states the dental surgeon's concept of dental support and assigns specific dental responsibilities to major subordinate units. The responsibilities prescribed reflect the dental means available to subordinate commanders. Technical tasks for dental units are not listed in this paragraph, but are

covered in subsequent paragraphs in conjunction with specific dental activities. Thus far, the dental plan follows the format of the prescribed operation plan. This information is of advantage in logistical planning, assists subordinate dental planners, and ensures conformity within the dental plan. From this point on, the dental plan follows the format of the logistics plan, to which it is most commonly appended. Should the plan be published as an annex to the administrative order, the first three paragraphs are commonly omitted, having served their purpose. In such case, the remaining paragraphs are published in sequence with notation of omitted paragraph where indicated.

170. Material, Transportation, and Service

Paragraph 4 includes instructions regarding materiel, transportation, and service. The supply subparagraph is concerned with appropriate instructions to dental units regarding such matters as general supply priorities for dental units, special distribution instructions for dental units, and dental supply instructions applicable to the specific operation. Appropriate reference to an SOP will simplify and abbreviate this subparagraph. Another subparagraph is headed "transportation." It includes instructions for the use of nondental transportation in a dental support role. The final subparagraph is concerned with service. It includes information regarding services rendered by other branches to dental units during the operation, and instructions to dental service units. This subparagraph is considerably abbreviated when the majority of dental units are attached to appropriate medical service groups. In such case the dental units attached to each group are listed, together with a statement of the dental mission to be carried out by the medical service group.

171. Evacuation and Hospitalization

Paragraph 5 is concerned with evacuation and hospitalization matters and is normally a paragraph of the medical plan. Therefore, this may need only to be referred to in the dental plan.

172. Miscellaneous Dental Matters

Paragraph 6 covers miscellaneous dental matters. Dental personnel procedures are prescribed if varying from those in appropriate SOPs. Procedures for defense of dental installations and dental participation in area defense and area damage control are normally prescribed in an SOP. An SOP may very likely be in effect governing the custody of dental records (particularly the Health Record-Dental) during active combat periods which would

cover most situations. However, any peculiar safeguards or procedures should be prescribed in this subparagraph. A dental annex to a field army SOP is another way of prescribing certain routine and continuing procedures. A sample of such an SOP is found as appendix XIII. In lower echelons a separate Dental SOP is more often the method of publication of such material. (For details on dental service participation during mass casualty situations, refer to FM 8–10.)

173. Special Dental Reports

Special dental reports are prescribed in a separate subparagraph. These matters may be included in the last subparagraph of paragraph 3; however, it is deemed more advisable to cover reports in paragraph 6, as the first three paragraphs of the plan may be omitted when publishing the dental plan as an annex to the administrative order.

174. The Ending of the Dental Plan

The ending of the dental plan contains the signature, a list of inclosures (if any), the distribution, and the authentication. When the plan is published as an annex to the administrative order, the signature is that of the commander or his chief of staff. The authentication is by the G4, inasmuch as technical service appendixes are normally attached to the logistic plan or administrative order, both of which are authenticated by the G4.

175. Alternate Plans

Alternate dental plans should be prepared to take care of situations in which the mission cannot be completely supported or to use when unforeseen conditions arise which interfere with performing the complete mission. While these alternate plans frequently may not permit as satisfactory an execution of the dental mission, they must be carefully prepared and must represent the best that could be done under the circumstances.

176. Publication of the Dental Plan

When of sufficient length and complexity, the dental plan is published as a dental annex to the logistics plan and is effective upon receipt at all echelons for planning purposes only. It is then executed at some later date upon order. When a separate dental plan is not required and published, the essential dental service information which would be contained in paragraph 4 of the dental plan may be published as a separate subparagraph of the medical plan or of the medical annex to the logistics plan.

177. Implementation

The dental plan is implemented by lower echelon headquarters through correlation of existing standing operating procedures, or by local publication of a separate plan when required.

Section IV. EXPERIENCE FACTORS

178. General

See Ch #3

Experience factors derived from data collected during World War II, the Korean War, and during peactime are presented in this section. Although the use of nuclear and more destructive non-nuclear weapons by the enemy could produce increased requirements in maxillo-facial surgery, the incidence of dental disease and the requirements for routine dental care might very well remain the same. The data presented here may be used as a basis for planning the Dental Service both in a theater of operations and in the zone of interior until experience factors of the type needed for the particular situation encountered can be formulated.

179. Average Output per Dental Officer, World War II

The average number of the five principal dental operations completed per dental officer per year from 1 January 1943 to 31 August 1945 was as follows:

Permanent fillings	1067
Extractions	232
Dentures	42
Dentures repaired	26
Fixed bridges	3

It must be realized that such averages are subject to extreme variation and also that the above has been applied to *all* dental officers on duty during the entire period. It must be taken into account that such figures cannot be applied to a small group of operators or to any one category of persons such as those performing operative dentistry or prosthodontics exclusively. Such figures should not be used to project the accomplishments of a unit or clinic but only to provide a very general understanding of worldwide dental operations during a specific period of time, and to apply them with thorough understanding.

180. Prosthodontic Considerations, World War II

a. Data on laboratory specialists are limited to larger laboratories in the zone of interior and include all dentures, repairs, and bridges. Each specialist completed an average of—

58.6 cases per month in 1943
51.0 cases per month in 1944

The decrease in 1944 was probably due to a slackening in demand, and because a very considerable amount of overtime operation of dental laboratories was carried out during 1943.

b. The dental laboratory specialist functioning in the field with field-type laboratory equipment is not able to complete as large a number of prosthodontic appliances. However, on the average the dental laboratory specialist in the field is usually able to fabricate 30 cases per month. This includes full and partial dentures, denture repairs, and bridges.

c. The following prosthodontic operations were completed for each 1000 men overseas during the period 1943–1945—

Year	Full dentures	Partial dentures	Repairs	Total
1943	10.0	28.1	19.9	58.0
1944	12.3	37.9	29.4	79.6
1945	9.2	40.3	33.6	83.1
Yearly average	10.5	35.4	27.6	73.6

d. Authentic theater reports during World War II show that the proportion of overseas personnel wearing prosthodontic appliances was about 10 percent. On a worldwide basis, however, it is estimated that 15 percent of all military personnel wore dentures.

181. Incidence of Important Dental Diseases, World War II

a. In the following tables "incidence" figures include new cases, readmissions, and both inpatients and outpatients. Figures for "Army" consist of Army personnel and a negligible number of Navy and Allied military personnel. "Others" consists of dependents, civilian employees, prisoners of war, and all other personnel not part of the Allied Armed Forces. The incidence and rates for Vincent's Stomatitis are not considered entirely valid because a high number of cases so reported should more properly have been listed as Gingivitis.

Table LXII. Incidence of the Principal Dental Diseases
1 January 1942 through 31 August 1945
(Overseas)

	Army		Others
	Number	Number per 1000 mean strength per year	Number
Cellulitis of dental origin	15,240	1.6	1,778
Vincent's Stomatitis	301,458	31	11,210
Osteomyelitis of oral structures	764	0.08	92

Table LXIII. Dental Operations Completed
1 January 1942 through 31 August 1945
(Overseas)

	Army		Others
	Number	Number per 1000 mean strength per year	Number
Permanent fillings	12,698,735	1290	187,771
Extractions	2,562,643	262	335,428
Full Dentures	101,561	10	1,256
Partial Dentures	360,405	36	10,275
Dentures Repaired	278,562	28	5,755
Fixed Bridges	36,504	3.7	406
*Teeth Replaced	3,245,822	332	25,110
Dental Prophylaxis	2,188,841	224	41,694

* By bridges and partial dentures only.

b. The incidence of mandibular fractures overseas averaged only .915 per 1000 men per year for the period January 1942—December 1945. The incidence of maxillary fractures for the same period was .215.

182. Important Dental Treatment Rendered in 1952 in Korea (Eighth Army)

Figures are not available covering the Army Dental Service for the entire Korean War; however, the annual report of the Dental Surgeon of the Eighth United States Army, 1952, includes the data below. Dental officers in Korea in the year 1952 averaged about 115–120 permanent fillings per month.

a. Important Dental Treatments.

Total restorations (fillings, crowns)	253,652
Total teeth replaced by bridges and partial dentures	36,258
Surgical treatments (includes extractions and fracture reductions)	302,465
General	
Inpatient admissions	8,508
Outpatient admissions	133,720
Sittings	493,441
Examinations	334,712

b. Dental Diseases and Injuries. There was a very low incidence of oral infection in 1952. Vincent's infections varied from 70 to 176 during any reporting period which is less than 1 per 1000 per month during the year 1952—a fairly average year. In 1952 the incidence of jaw fractures was approximately .247 per 1000 men per year, which was slightly higher than in 1951. Perhaps the increased close combat and heavier concentrations of artillery fire during 1952 caused this increase in the jaw fracture rate, but in any event it was still considered low since it was less than the World War II rate.

183. Dental Condition of Replacement Personnel

The dental condition (health) of incoming replacement personnel is seldom as good as would be desired. In Korea it was generally found that in any group of replacements from 1 to 4 percent of them were likely to require immediate dental attention. Another 2 to 4 percent were found to be in Class 4, requiring the insertion of one or more prosthodontic appliances in order to enable them to masticate food properly. Some 11 to 15 percent (including the above) were usually found to be the number requiring early dental treatment. The expediency of providing as much of this dental care to replacement personnel before their assignment to combat units was recognized and amply demonstrated. The formula which follows presents one method of determining the number of dental officers required to implement this principle under certain circumstances. It is dependent upon a concentration of dental personnel in a replacement unit and upon maximum individual effort by dental personnel. It also presumes that the estimated amount of dental treatment can be rendered in the estimated number of chair hours.

Formula for Estimating Number of Dental Officers Required Under Given Conditions

2400 —Maximum number of anticipated replacements per month.
x 12% —Average number of replacements needing Class 3, 4, and 5 treatment.
288 —Estimated number of patients to be handled
x 6 —Estimated number of chair hours required for each patient.
1728 —Total chair hours required for all patients
÷ 300 —Maximum number of chair hours by one dental officer per month.
5.76—Number of dental officers required to perform the contemplated treatment in one month.

184. Statistical Analysis of Dental Procedures Accomplished During a Typical Peacetime Year

a. The basic information for table LXIV was derived from the Dental Service Report DD Form 477 for the period of one fiscal year and is considered to be a typical peacetime year. During this particular period approximately 2400 dental officers were on duty, two-thirds within CONUS and one-third overseas. The time aspects (columns 10, 11 and 12) were arrived at by utilizing engineered time standards for each individual procedure recorded on DD Form 477. The results are illustrated by grouping the procedures according to the DD Form 477. It may be noted that despite the variations of the percent of procedures accomplished by group, the total percent of procedures accomplished was the same as the ratio of distribution of dental officers.

b. More detailed analysis of these figures show the average monthly deviations of these groups of procedures to be as follows:

Operative, Crown and Bridge	2.65%
Prosthodontics	5.51%
Oral Surgery	4.93%
Periodontics and Oral Hygiene	2.56%
Radiodontics	2.81%
Examination	4.32%
Orthodontics	12.30%
Overall average monthly deviation	5.01%

c. For broad planning purposes it is considered that the information presented in columns 10, 11, and 12 of table LXIV could be utilized to determine the ratio of dental officers required by Military Occupational Specialty (MOS). However, consideration must be given to various circumstances and existing local conditions such as the degree and types of dental support received in the combat zone as compared to that received in the communications zone during an active warfare situation.

Table LXIV. Statistical Analysis of Procedures Accomplished

	Raw procedures accomplished			Percent of total accomplished		Percentage distribution by procedure			Percentage distribution by time		
	Worldwide	CONUS	Overseas	CONUS	Overseas	Worldwide	CONUS	Overseas	Worldwide	CONUS	Overseas
Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12
Operative											
Crown and Bridge	5,094,392	2,835,114	2,259,278	55.65	44.35	37.08	31.12	48.74	57.5	53.5	65.8
Prosthodontics	182,570	117,105	65,465	64.14	35.86	1.32	1.29	1.41	9.9	10.9	8.4
Oral Surgery	1,312,727	930,857	381,870	70.91	29.09	9.56	10.22	8.24	8.7	8.9	6.2
Periodontics and Oral Hygiene	995,157	510,141	485,016	51.26	48.74	7.23	5.61	10.46	7.8	6.6	9.6
Radiodontics	3,348,480	2,586,893	761,587	77.26	22.74	24.37	28.41	16.43	5.3	6.8	3.1
Examinations	2,780,036	2,113,889	666,147	76.04	23.96	20.24	23.21	14.38	10.4	13.0	6.4
Orthodontics	28,920	13,122	15,798	45.37	54.63	.20	.14	.34	.4	.3	.5
Total	13,742,282	9,107,121	4,635,161	66.27	33.73	100	100	100	100	100	100

185. Average Capabilities of Continental United States Dental Facilities in Peacetime

The data included in table LXV show the average capabilities of continental United States dental facilities in peacetime per working day, by size of facility. In general, it might be concluded that dental officers are most efficient when working in groups of from 16 to 25. It is also indicated that a ratio of 1.51 ancillary personnel (less laboratory personnel) per dental officer may be a valid planning factor. However, when using the information in columns 2, 3, and 4 of table LXV for planning purposes for oversea operations during wartime, allowances should be made for utilization of field equipment, amount of movement, climatic conditions, etc.

Table LXV. Average Capabilities of Conus Dental Facilities in Peacetime per Working Day—BY SIZE OF FACILITY

1	Number of dental officers at the facility	Daily average procedure units per dental officer	Daily average prosthetic units per laboratory personnel	Daily average dental care composite units per total personnel	Average ratio of ancillary personnel (less laboratory personnel)
2	Col 1	Col 2	Col 3	Col 4	Col 5
3	1–5	22.4	5.1	8.3	1.92
4	6–10	27.4	10.9	10.4	1.78
5	11–15	28.7	11.4	10.8	1.69
6	16–25	31.2	13.7	10.3	1.51
7	26–35	28.7	16.6	12.0	1.52
8	36–55	27.6	11.4	10.8	1.62
9	Average	27.7	11.5	10.4	1.63

CHAPTER 10
VETERINARY SERVICE STAFF PLANNING

Section I. BASIS FOR VETERINARY STAFF PLANNING

186. General

Before any planning can be done for the Veterinary Service in a theater of operations, consideration must be given to the following factors: the mission of the command, the commander's concept of the operation, the type and duration of the operation to be supported, the mode of employment, the organization of the theater, as well as the veterinary mission and the means available to accomplish it. All veterinary planning will evolve from these basic factors. Like all logistical planning, veterinary staff planning must be closely related to tactical planning and must be carried on concurrently with it. The most influential factor is the mission of the command. Determining as it does the scope and duration of the operation, it is basic to all planning. If, for example, the mission requires an operation which is to be a long and detailed one involving many months, all logistical planning (including veterinary) must be more extensive. If the combat force to be supported is small, carrying combat rations for the limited operational period, the need for food inspection and other veterinary services might be rather limited. Certain types of action might also influence veterinary plans. Should the logistical mission be to support an amphibious force landing where there is strong enemy resistance, supplies might have to be landed in small amounts at various points. Planning veterinary service, especially food inspection, for such an operation would differ widely from one where a regular port with dock facilities is to be used. Moreover, the size and organization of the theater forces influence veterinary planning. The number of tactical divisions or the estimated strength of a theater, the deployment of troop units, and the proposed use of military or indigenous animals also affect the scope and extent of veterinary service planning.

187. Relationship of Veterinary Service Planning to Medical Service Planning

As a component part of the Army Medical Service, the Veteri-

nary Service has an important role in formulating the medical plan for the theater of operations. Like the dental surgeon, the veterinarian should be included in the early stages of planning by the surgeon and his staff. Staff veterinarians are assigned to the surgeon's staff at theater Army headquarters, each field army headquarters, and the theater logistical command headquarters. For organization, mission, and responsibilities of the Veterinary Service at these various levels in a theater of operations, refer to FM 8–10. Normally, the staff veterinarian advises the commander on all matters pertaining solely to the conservation of public and indigenous animals of the command.

Section III

188. Relationship to Other Staff Sections

Close cooperation and coordination of the veterinarian with certain other staff sections that are concerned with the functions of the Veterinary Service are necessary.

a. The Quartermaster. The Veterinary Service functions in close cooperation with the Quartermaster inasmuch as this service is concerned with the purchased and distribution of food supplies used by the Army. The veterinarian acts as a technical adviser on certain matters which are the responsibility of the Quartermaster. For example, the veterinarian inspects food products for fitness for human consumption; he also determines that food procured in the theater complies with contractual agreement as to type, class, grade, and package; and he inspects food storage facilities to determine their adequacy in order that losses through spoilage and deterioration will be minimized. His service as it concerns public animals is extended through all stages of procurement, transportation, processing, and issue to using organizations. Veterinary personnel needed in Quartermaster facilities are attached to these units.

b. The Transportation Officer. The veterinarian deals with the transportation officer in the transportation and dock storage of food products to preclude spoilage or deterioration in transit; and in the veterinary supervision of the transportation of animals. Normally, one or more veterinary officers and three or four enlisted men, or a veterinary Food Inspection Detachment will be assigned to a Headquarters, Transportation Terminal Command, at ports or on beaches where Army subsistence is received. They inspect food and the transportation facilities carrying it. Port and beach operations lacking organic veterinary service must have veterinary personnel attached or assigned, individually or as a team, to accomplish the food inspection mission.

c. The Engineer. The veterinarian confers with the engineer,

advising him on the sanitary standards and other features in the construction of abattoirs, cold storage plants, milk plants, and other facilities incident to food handling, or facilities for animals.

d. Civil Affairs. The veterinarian advises the Civil Affairs officer on veterinary matters and sometimes is asked to furnish technical assistance and/or veterinary personnel to that office to assist in the following: rehabilitation of the civilian livestock industry, establishment of reestablishment of civilian veterinary service, reopening of veterinary schools and colleges, reestablishment of livestock sanitary control regulations, veterinary drug, biological, and instrument supply, and a national food inspection service. He may also be asked to implement veterinary preventive medicine programs, such as control and prevention of zoonoses. In connection with this he may need to conduct an epizootiological survey (app. XIV).

e. References: AR 40–90, AR 40–905, AR 40–950, AR 40–960, AR 40–980; SR 40–930–1, SR 40–940–5, and SR 40–950–1.

Section II. THE VETERINARY ESTIMATE

189. General

The medical estimate (ch. 2) should include specific information of a veterinary nature. This can be presented in a separate paragraph, can be included along with the medical and dental aspects in parts of several paragraphs, or can be worked out as a separate appendage to the medical estimate. The format shown in appendix XV includes the major points to be considered in arriving at a logical conclusion concerning the best possible veterinary service for a given operation. The veterinary service planner should adapt this format to his particular situation, omitting those portions which do not apply or expanding those which require more detail. The Plans and Operations Division of the surgeon's staff should not overlook the fact that plans and estimates which they prepare require definite data relating to the Veterinary Service. These data should be provided by the staff veterinarian, who should be furnished sufficient information to guide him in presenting the veterinary portion of the estimate or plan.

190. Mission

The veterinary mission will parallel and support the surgeon's mission and, in turn, the commander's mission. The veterinary mission is primarily to conserve manpower so far as it can be influenced by the condition and quality of foodstuffs. If there are public animals in the theater, the veterinary mission will incor-

porate the conservation of these animals, which will include the prevention of their diability; and the care, treatment, hospitalization, and evacuation of the sick or wounded animals. The veterinary mission also includes the inspection or examination of captured foodstuffs and/or captured animals, and the provision of a health service to control diseases of animals transmissible to man.

191. Situation and Conisderations

The veterinary situation may comprise a few or many elements. Some of the principal ones are as follows:

a. The Enemy Situation. The strength and disposition of animals belonging to the enemy and the state of health of these animals is of great concern to the veterinarian. Disease can be spread from captured enemy animals to indigenous animals or to animals of friendly forces. Furthermore, many of the diseases suffered by animals may be transmitted to humans. Some of these diseases, such as glanders, may prove fatal to humans contracting them. Animals captured from the enemy or abandoned by them are usually in very poor condition.

b. The Friendly Situation. The scope of food inspection service to be planned is determined to a great extent by the following factors:

(1) The number of troops.

(2) The nationality of the troops. (National customs of supported friendly troops frequently influence the type of rations required for them.)

(3) Type of rations (hard, such as types C and B; or A rations, which include perishables).

(4) Extent to which locally-procured foodstuffs may be used. When animals are being used by friendly forces, the veterinarian will be concerned with the species involved, their strengths and disposition, and their state of health. Regardless of whether the animals are used for transport, scout duty, guard duty, messenger carriers, laboratory animals, or food, they are a possible source of disease that can be transmitted to man. If at all practical, an epizootiological survey should be accomplished to provide data upon which preventive medicine measures can be established. This survey (see app. XIV) could be conducted by assigning each available veterinary officer a zone of responsibility. Under combat conditions and in war-torn countries it becomes very difficulty to obtain reliable information that can be used in such a survey;

but proper staff coordination with preventive medicine teams, medical intelligence teams, Civil Affairs units, indigenous public health, agriculture and animal industry authorities, may produce data regarding animal diseases, etc., and a survey accomplished.

c. Strengths to be Supported This includes both troop strength and animal strength. The number and kind of military and/or indigenous animals being used in the operation and their location affect plans for their care, treatment, and evacuation (AR 40–905). Plans for small animal hospitals in the communcations zone may be required. Provision must be made for veterinary supplies. Standards have been established concerning the capabilities of food inspection teams (par. 198). By comparing these with the estimated amount of food inspection required, the veterinarian can plan for adequate veterinary personnel to accomplish this part of the veterinary mission.

d. Physical Condition of the Command (if applicable). Here the veterinarian must consider the physical condition of all military and/or indigenous animals, the presence of disease, the status of immunizations, and the status of diagnostic tests. The status of nutrition of these animals must also be examined and the care and management procedures that are being employed. In addition, fatigue and varying climatic factors should be noted.

e. Assumptions. Assumptions necessary for completing the veterinary estimate should be considered.

f. Special Factors. The particular operation being planned will have certain items of special importance. These items should be listed and taken into consideration by the veterinary planner in making the estimate.

192. Veterinary Analysis

a. Estimates. The veterinary analysis is a logical comparison of the estimated veterinary requirements of the command and the veterinary means available for the operation. In making this analysis, the veterinarian must consider the following factors: (1) estimate of animal casualties (if military and/or indigenous animals are being used) and their evacuation; (2) the distribution of class I installations; (3) the distribution of subsistence (both perishable and nonperishable); (4) plans for and extent of local procurement; and (5) possible concentration of indigenous animals and probable or possible zoonoses to be encountered.

b. Requirements. The veterinarian must estimate what the requirements will be for the situation. These requirements are

calculated from the factors listed in *a* above and the data contained in paragraph concerning situation and considerations. He should consider separately the requirements for veterinary supply, hospitalization and treatment of animals, food inspection, preventive medicine, and Civil Affairs.

c. Means Available. Having estimated the veterinary means required, the veterinarian then considers the veterinary means at hand or readily available. He must plan so that maximum use of veterinary personnel will be made. He lists the organic veterinary personnel who would normally be found in the units present in the theater. To this list he adds the attached veterinary units and the supporting veterinary units. Consideration must also be given to civil veterinary public health personnel. Civilian veterinary facilities and personnel can sometimes be used to augment the military where indigenous animals are concerned; in many cases, however, military veterinary personnel must be supplied to assist or supervise the civilians in their function. The veterinarian must then determine if the total number required for veterinary service support falls within the veterinary troop ceiling. Finally, he must examine the status of veterinary supplies.

d. Courses of Action. A careful comparison of the veterinary requirements with the veterinary means available enables the veterinary planner to determine his major problems and subsequently to develop several available courses of action which will provide the desired veterinary support.

193. Veterinary Evaluation

This part of the veterinary estimate is often included in the "Medical Evaluation" paragraph of the Medical Estimate. A determination can be made here of the oustanding elements and the controlling and limiting features, and a comparison made of the advantages and disadvantages of each course of action as described in the preceding paragraph.

194. Veterinary Conclusions

At this point the veterinarian decides which course of action will best support the commander's mission with the maximum economy of veterinary means. The veterinarian's decision will serve as a guide to veterinarians in subordinate commands. Any of the major veterinary features which should be brought to the attention of the commander are listed, and unavoidable veterinary service limitations or deficiencies are indicated. The information in this paragraph is frequently incorporated in the medical conclusions paragraph of the medical estimate.

Section III. THE VETERINARY PLAN

195. General

The veterinary plan is a part of the medical plan and is included in it or, if very detailed, appended to it. It bears the same relationship to the veterinary estimate as the medical plan does to the medical estimate. When approved, it becomes a directive to veterinarians in subordinate commands and serves as a guide to them in working out the details of their particular functions within the veterinary service of the command. It is the responsibility of the theater Army veterinarian to prepare a veterinary plan. Veterinary plans are also prepared by subordinate commands but are usually less detailed and included as a part of the medical plan.

196. Format for Veterinary Plan

a. In the medical service appendix to the logistic plan is included a paragraph devoted to the Veterinary Service. Essentially it will be divided into four parts: (1) food inspection service, (2) evacuation, (3) hospitalization, (4) dispensary service. (See app. XVI.) The last three parts may be omitted if no military or indigenous animals are being used in the operation.

b. The food inspection portion of the veterinary plan includes a statement of the procurement inspection policy and the captured and/or contaminated ration inspection policy. It lists the veterinary food inspection units and gives their location, mission, hours of opening and closing, and their attachments.

c. When animals are used, a statment of the evacuation policy for them is included, the requirements for their evacuation, and the units participating in this function. Separate subparagraphs are included giving location, mission, and attachments of each subordinate evacuation unit.

d. Regarding hospitalization of military and/or indigenous animals, subparagraphs are included for each hospital. The location, mission, hours of opening or closing, and attachments are also listed.

e. When dispensary service is to be furnished for military and/or indigenous animals, separate subparagraphs describing the location of each facility, its mission, the hours of opening and closing, and the attachments or animals to be supported are included.

Section IV. VETERINARY TROOP PLANNING

197. Veterinary Service Troop Requirements

In determining requirements quantitatively for specific types

of veterinary units, the principal factors which must be considered are the mission, the troop strength, the animal strength, the extent and geographical location of the area, the nature of the operation, and the composition of the force to be supported.

a. The Mission. All logistical planning (including veterinary) is based on the mission of the command. The ultimate objective is considered by each service as it makes plans to support adequately the tactical units. Constant coordination between tactical and logistical planners is, therefore, essential.

b. Troop and Animal Strength. Troop strength is a governing factor in the preparation of the troop basis for service and administrative units required to support an operation. When the supported troop strength and the animal strength have been determined, the veterinarian can begin estimating the requirements for veterinary personnel and service. Veterinary units and veterinary personnel are included in the allocation of the medical service personnel for the command.

c. The Extent and Geographical Location of the Area. The extent of the area for which plans are made influences veterinary troop planning in several ways. A large number of small quartermaster subsistence installations widely dispersed in the area of operations would require more veterinary support, for example, than if these installations were larger and more centralized. Difficult climatic conditions in various areas may also increase veterinary personnel requirements for food inspection functions. An area in which zoonoses are prevalent would present an additional demand for more veterinary personnel.

d. The Nature of the Operation. When the operation is a lengthy one in which troops will be stationed in an area having a good livestock or poultry industry, local procurement of food of animal origin must be considered. If, on the other hand, the operation is a short over-the-beach operation, in which hard rations (B or C rations) are to be issued, then the need for food inspection service will be very slight.

e. Composition of the Force to be Supported. After the veterinary troop list has been formulated and the veterinarian has considered what veterinary service is organic to the various installations within the theater, he can then determine the utilization of veterinary personnel for food inspection functions. For example, Headquarters Transportation Terminal Command A has organic to it one veterinary officer and three enlisted men; Command B has one veterinary officer and three enlisted men; Command C has two

veterinary officers and four enlisted men. Normally, all subsistence arriving through terminal commands can be inspected by the organic veterinary service. However, subsidiary ports or beaches may be operated by one or more of the Headquarters Transportation Terminal Commands. In this instance the theater Army veterinarian may need to augment these facilities with a detachment of veterinary food inspection personnel. He may assign a Veterinary Food Inspection Team JA or personnel from a Team JB. Team JA is usually preferred for this assignment since it normally operates under the direct control of the organic veterinarian. Other units having organic veterinary personnel are the Medical Laboratory and the Headquarters, Hospital Center. Manifestly, in planning the Veterinary Service, the veterinarian must examine the composition of the troops to be supported.

198. Formulation of Troop Unit Factors for Initial Planning Purposes

a. Explanation. Based on the number of combat divisions to be employed veterinary troop unit factors for a field army and a communications zone can be formulated.

b. Troop Unit Factor (Veterinary).

(1) *Food inspection service.*

(*a*) *Field army:*

1. The number of food inspection units (Team JA) required within a field army (fig. 38) divided by the number of tactical divisions, i.e., 11 Veterinary Food Inspection Detachments, Team JA (field army) divided by 12 divisions equal 0.9 (army unit factor).

Unit	TOE	Field Army
VFID, Team JA	8-500	11

Figure 38. Veterinary food inspection team JA (field army).

2. The number of food inspection units (Team JB) required within a field army (fig. 39) divided by the number of tactical divisions, i.e., 1 Veterinary Food Inspection Detachment, Team JB (field army) divided by 12 divisions equals 0.83 (army unit factor).

Unit	TOE	Field Army
VFID, Team JB	8-500	1

Figure 39. Veterinary food inspection team JB (field army).

(*b*) *Communications zone.*

1. The number of food inspection units (Team JA) required within the communications zone (fig. 40) divided by the number of tactical divisions within the field army area, i.e., 20 Veterinary Food Inspection Detachments. Team JA (communications zone) divided by 12 divisions equals 1.7 (ComZ area unit factor).

Unit	TOE	ComZ
VFID, Team JA	8–500	20

Figure 40. Veterinary food inspection team JA (ComZ).

2. The number of food inspection units (Team JB) required in the communications zone (fig. 41) divided by the number of tactical divisions within the field army area, i.e., 2 Veterinary Food Inspection Detachments, Team JB (communications zone) divided by 12 divisions equals 0.17 (ComZ area unit factor).

Unit	TOE	ComZ
VFID, Team JB	8–500	2

Figure 41. Veterinary food inspection team JB (ComZ).

(2) *Animal service.*

Troop unit basis:

The number and type of veterinary treatment and hospitalization units required within a combat and communications zone are based upon the animal strength of supported units. See TOE 8–500 for veterinary units and bases of their allocation.

(3) *Administrative.*

Troop unit basis:

The number of Headquarters Veterinary Service, Team AF, required within a combat and communications zone is based upon the number and type of veterinary teams. See TOE 8–500 for basis of allocation.

c. Utilization of Charts. Use of the troop unit factors as explained in *b* above is primarily to form an initial approximation

in troop planning. When planning becomes more detailed, consideration must be given to tonnage requirements for quartermaster class I supplies, average daily port clearance, theater movement program, characteristics of the ration, location of supply installations, local procurement, and animal strength.

APPENDIX I

REFERENCES

AR 40–2	Medical Corps.
AR 40–3	Dental Corps.
AR 40–90	Veterinary Corps—General Provisions.
AR 40–400	Individual Medical Records.
AR 40–417	Morbidity Reports, Tables, and Charts.
AR 40–418	Beds and Patients Report.
AR 40–419	Outpatient Report.
AR 40–423	Recording of Anatomical Locations.
AR 40–424	Preparation and Maintenance of Clinical Records.
AR 40–578	Control of Animal Reservoirs and Vectors of Disease.
AR 40–905	Veterinary Service for Public Animals.
AR 40–950	Veterinary Meat and Dairy Hygiene; General.
AR 40–960	Veterinary Forage Inspection.
AR 40–980	Veterinary Hospitals.
AR 310–1	Military Publication—General Policies.
AR 310–2	Department of the Army Publications Media and Numbering.
AR 310–3	Military Publications; Preparation and Processing.
AR 320–5	Dictionary of United States Army Terms.
AR 320–50	Authorized Abbreviations and Brevity Codes.
AR 325–10	Standard Computation of Rates.
AR 330–10	Machine Records Unit.
AR 335–15	Reports Control System.
AR 345–5	Personnel Management—Personnel Records.
AR 600–65	Casualties.
AR 600–66	Reports of Casualties Originating in Combat Areas.
AR 700–4	Interservice Supply Support.
AR 700–845	Responsibility for Equipping Major Medical Units.
AR 705–5	Army Research and Development.

AR 710–60	Installation Stock Control and Supply Procedures.
AR 711–16	Replacement Factors and Consumption Rates for Army Materiel.
AR 715–835	Local Procurement of Medical Supplies and Equipment.
AR 730–83	Marking of Medical Assemblies.
AR 730–890	Army Medical Service Items Required in Continental United States.
AR 746–80	Marking of Oversea Supply.
AR 750-Series	Maintenance of Supplies and Equipment.
AR 755–7	Surplus Personal Property.
SR 40–930–1	Veterinary Food Inspection.
SR 40–940–5	Communicable Diseases of Animals.
SR 40–950–1	Veterinary Meat and Dairy Hygiene; General.
SR 700–51–Series	List of Supplies.
SR 742–607–1	Serviceability Standards for Classification of Technical Medical Equipment.
FM 5–35	Engineers Reference and Logistical Data.
FM 8–5	Medical Service Units, Theater of Operations.
FM 8–10	Medical Service, Theater of Operations.
FM 20–15	Tents and Tent Pitching.
FM 21–5	Military Training.
FM 21–6	Techniques of Military Instruction.
FM 21–30	Military Symbols.
FM 27–10	The Law of Land Warfare.
FM 30–5	Combat Intelligence.
FM 31–8	Medical Service in Joint Oversea Operations.
FM 41–5	Joint Manual of Civil Affairs.
FM 41–10	Civil Affairs Operations.
FM 41–15	Civil Affairs Units.
FM 57–30	Airborne Operations.
FM 60–5	Amphibious Operations, Battalion in Assault Landing.
FM 60–10	Amphibious Operations, Regiment in Assault Landing (U).
FM 60–30	Amphibious Operations: Embarkation and Ship-Loading (Unit Loading Officer).
FM 100–5	Field Service Regulations: Operations.
FM 100–10	Field Service Regulations: Administration.
FM 101–1	The G1 Manual.
FM 101–5	Staff Officers Field Manual: Staff Organization and Procedure.

FM 101–10	Staff Officers Field Manual: Organization, Technical, and Logistical Data.
FM 101–10	Staff Officers Field Manual: Nuclear Weapons Employment (U).
FM 110–101	Intelligence: Joint Landing Force Manual.
TM 3–220	Decontamination.
TM 3–304	Protective Clothing and Accessories.
TM 5–302	Construction in the Theater of Operations.
TM 8–285	Treatment of Chemical Warfare Casualties.
TM 23–200	Capabilities of Atomic Weapons (U).
DA Pam 39–1	Nuclear Weapons Employment.
DA Pam 39–3	The Effects of Nuclear Weapons.
DA Pam 108–1	Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings.
DA Pam 310–1	Index of Administrative Publications.
DA Pam 310–3	Index of Training Publications.
DA Pam 310–4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
SB 8–Series	Supply Bulletins.
SM 8–1 and –5	Armed Services Medical Stock List.
SM 8–4–Series	DA Supply Manual.

The Adjutant General. *Army Battle Casualties and Nonbattle Deaths in World War II, Final Report,* December 7, 1941 to December 31, 1946.

The Adjutant General. *Battle Casualties of the Army,* CTQ 39. September 30, 1954.

Beebe, Gilbert W., and DeBakey, Michael E. *Battle Casualties.* Springfield (Ill.): Charles C. Thomas, 1952.

Beebe, Gilbert W., Leith, Carroll I., and Reister, Frank A. "Influence of Type of Ground Operation on the Wounded in Action, U. S. Divisions in World War II," *Military Medicine,* 121:361–370, December, 1957.

Jeffcott, George F. *United States Army Dental Service in World War II.* Vol. IV of *History of the Medical Department of the US Army in World War II.* Prepared by the Historical Unit, Army Medical Service. Washington, D. C.: Government Printing Office, 1955.

APPENDIX II

FORMAT FOR THE MEDICAL ESTIMATE

(Classification)
Med Sec_____
Location
Date and time

MAP:

1. Mission (The specific medical, dental, veterinary support mission)

2. Situation and Considerations (Factors affecting medical service)

a. Enemy situation.
(1) Strength and disposition.
(2) Combat efficiency.
(3) Capabilities.
(4) State of supply.
(5) State of health.
(6) Weapons.

b. Friendly situation.
(1) Strength and dispositions.
(2) Combat efficiency.
(3) Plan of action.
(4) State of supply.
(5) Weapons.

c. Characteristics of the area of operations.
(1) Terrain.
(2) Climate and weather.
(3) Civilian population.
(4) Flora and fauna.
(5) Local resources.

d. Strengths to be supported. (Normally a table includes food inspection support.)
(1) Army.
(2) Navy.

(Classification)

(3) Air Force.
(4) Allied.
(5) Prisoners of war.
(6) Civilians.
(7) Others, including partisans.

e. Physical condition of the command.
(1) Origin of troops.
(2) Presence of disease.
(3) Status of immunizations.
(4) Status of nutrition.
(5) Clothing and equipment.
(6) Fatigue.
(7) Morale.
(8) Other, as indicated.

f. Assumptions. (Those necessary for completing the estimate.)

g. Special factors. (Items of special importance in the particular operation under consideration.)

3. Medical Analysis

a. Casualty estimates. (Rates and numbers by type units.)
(1) Number of casualties.
(2) Distribution in space.
(3) Distribution in time.
(4) Areas of casualty density.
(5) Lines of drift or evacuation.

b. Medical requirements. (Estimate requirements for) :
(1) Medical, dental, veterinary supply.
(2) Hospitalization and treatment.
(3) Evacuation.
(4) Service.
(5) Food inspection.
(6) Preventive medicine.
(7) Civil Affairs.
(8) Other.

c. Medical means available. (Consider Air Force, Navy support, plus).
(1) Organic medical, dental, veterinary units or personnel.
(2) Attached medical, dental, veterinary units.
(3) Supporting medical, dental, veterinary units.
(4) Civil public health, including veterinary.
(5) POW medical personnel.

(Classification)

(6) The medical, dental, veterinary troop ceiling.

(7) Status of medical, dental, veterinary supply.

d. Medical, dental, veterinary courses of action. (List those policies and procedures which will accomplish the medical mission.)

4. Medical Evaluation

a. Determine the outstanding medical, dental, veterinary elements and controlling limiting features.

b. Compare the relative advantages and disadvantages of each medical course of action available.

5. Conclusions

a. Can the commander's mission be supported medically?

b. Which course of action will best support the commander's mission with the most economy in medical, dental, veterinary means?

c. What major medical, dental, veterinary features should be brought to the attention of the commander?

d. Outline unavoidable medical, dental, veterinary limitations or deficiencies.

_____

Surgeon

(Classification)

APPENDIX III

FORMAT FOR THE MEDICAL PLAN

Headquarters
Location
Date and Time

Appendix_____ (Medical) to Annex_____ (Logistic Plan) to Operation Plan_____.

Maps: (Only if plan includes reference to location by map coordinates.)

Task Organization: (Initially and in event of major reorganization.)

1. General Situation

(Information essential to understanding of plan.)

a. Enemy forces. (Emphasis on capabilities bearing on plan.)

b. Friendly forces. (Emphasis on medical support functions and responsibilities of higher and adjacent units.)

c. References. (Directives, other than from DA, which amplify plan.)

d. Assumptions. (Minimum required for planning purposes.)

2. Mission

a. Mission. (Statement of the overall inclusive medical mission.)

b. Policies and procedures. (Broad statements covering principles on which plan is based. Those necessary for understanding.)

3. Execution

a. Surgeon's concept of support. (Separate subparagraph for each major subordinate tactical unit.)

b. (Technical missions for medical units are covered in other paragraphs.)

c. (Last subparagraph contains instructions applicable to two or more subordinate units. May include reports, etc.)

4. Material and Service

a. Supply. (Refer to SOP whenever practical.)

(1) General supply. (Special instructions applicable to medical units.)

(2) Medical supply. (Special procedures applicable to this operation.)

(*a*) Requirements.

(*b*) Procurement.

(*c*) Storage.

(*d*) Distribution.

(3) Medical supply installations. (Separate subparagraph giving locations, mission, hours of opening and closing, and troops supported for each medical supply installation.)

(4) Salvage of medical equipment and supplies.

(5) Captured enemy medical supplies.

(6) Civilian medical supplies.

(7) Other medical supply matters.

b. Transportation. (Cover medical use of various transportation means.)

(1) General.

(2) Highway.

(3) Rail.

(4) Water (inland and/or ocean).

(5) Air.

(6) Movement control and traffic regulation.

c. Service.

(1) Service to medical units and installations (i.e., include laundry, bath, utilities, fire-fighting, construction, real estate, etc.).

(2) Medical equipment maintenance. (Include in separate subparagraphs the location, mission, hours of opening or closing of medical maintenance and/or optical repair teams, unless included as attachments to medical supply units.)

(3) Dispensary service. (Separate subparagraphs giving location, mission, hours of opening or closing, and troops suported by dispensaries.)

(4) Preventive medicine. (May refer to current sanitary order.)

(*a*) Special procedures. (Sanitary measures, immunizations, etc., for this particular operation.)

(*b*) Units. (Separate subparagraphs giving location, mis-

sion, and responsibilities for each preventive medicine unit in the command.)

(*c*) Responsibilities.

(5) Dental. (If incorporated in medical plan.)

(6) Veterinary services.

(*a*) Food inspection.

(*b*) Evacuation.

(*c*) Hospitalization.

(*d*) Dispensary service.

(7) Medical intelligence.

5. Medical Evacuation and Hospitalization

a. Evacuation.

(1) Evacuation policy, by phase of operation.

(2) Evacuation of Navy, Air Force, allied civilians, POW's and allied forces.

(3) *Requirements.* (Estimate of requirements, including percentage evacuated by air or ocean transportation.)

(4) *Units.* (Separate subparagraphs giving location, mission, and attachments if indicated for each subordinate evacuation unit.)

b. Hospitalization.

(1) *Policies.* (Hospitalization of civilians, POW's, etc.)

(2) *Units.* (Separate subparagraphs for each hospital, giving location, mission, hours of opening or closing, and attachments if indicated.)

6. Miscellaneous

(Such details as claims, supply economy, and special reports, if not given in paragraph 3*c*, above.)

Inclosures:

Distribution:

Authentication:

_____

Commander

APPENDIX IV

OUTLINE FOR BASE DEVELOPMENT STUDY

1. Introduction

a. References. (Include important references pertinent to study such as JCS Directives, Concept of Operation, National Intelligence Surveys, etc.).

b. Purpose. (In broad terms, the reason or reasons for making the study).

c. Scope. (General statement of information to be included in the study).

2. Concept of Tactical Operations

a. General. (Relationship between tactics and base development).

b. Hostile Operations. (What tactics the enemy will employ that may affect the base development program).

c. Own Operations. (Indicate under headings below that portion of concept of operations of our forces that will affect the base development program).

(1) *Mission*
(2) *Objectives*
(3) *Scheme of Maneuver*

3. Review of Area

a. General Description. (Indicate under headings below general information concerning the area or areas under consideration).

(1) *Location*
(2) *Strategic Importance*
(3) *Table of Distances.*
(4) *Geography*
(5) *Security Aspects*

b. Detailed Description of Subareas. (Include under headings below detailed information pertinent to base development).

(1) *Topography.* (Rivers, mountains, plains, etc. Include topographic maps if available).

(2) *Climate and Weather.* (Rainfall, snowfall, seasons, wind,

dust, etc. Supplement with charts and tables as appropriate).

(3) *Hydrography and Oceanography.* (Surf, tides, currents, depths, etc. Supplement with charts and tables as appropriate).

(4) *Vegetation.* (Types, distribution, and other factors related to base development).

(5) *Soil.* (Types, distribution, trafficability, and other factors related to base development, especially construction).

(6) *Natural Resources.* (Location, quantities, usefulness in base development, etc., under headings listed below).

(*a*) *Construction Materials.* (Aggregates, rock, timber, cement, brick, etc. Include charts and tabulations if practicable).

(*b*) *Water Supply.* (Streams, springs, wells and other development information. Include charts if practicable).

(*c*) *Other Resources.* (Food, minerals, etc.).

(7) *Industrial Potential.* (Related to (6) above; indicate location, quantities and usefulness in base development of lumber, cement, brick, petroleum products, ship repair facilities, etc.).

(8) *Manpower.* (Location, numbers, skills, trades, availability of manpower in objective area that would be useful in base development).

(9) *Existing Facilities and Conditions in Objective Area.* (Include information pertinent to base development under headings listed below).

(*a*) *Landing Beaches.* (Brief general information as to locations, exits, hydrography, and adjacent terrain as related to base development).

(*b*) *Ports and Harbors.* (Location, capacity, depths, wharves, warehouses, etc., for each harbor that is of interest in base development).

(*c*) *Roads.* (Location, width, surfacing, capacity, limitations, important bridges and key points, etc.; include maps).

(*d*) *Railroads.* (Location, gauge, capacity, rolling stock, limitations, important bridges and key points, etc.; include maps).

(*e*) *Inland Waterways.* (Location, depths, limitations, available craft, etc.; include maps).

(*f*) *Airfields and Air Transport Route Information.* (Location, general runway information, limitations, etc.; include location maps).

(*g*) *POL Storage and Distribution.* (Location, distribution system, capacities, etc.; include map if practicable).

(*h*) *Communications.* (General description, capacities, network, radio, telephone, telegraph, etc.; include network map).

(*i*) *Utilities.* (Existing facilities for water supply, power, sewage, etc.).

(*j*) *Storage and Warehousing.* (Indicate location, type and capacity of facilities available).

(*k*) *Housing.* (Indicate types and probable usefulness).

(*l*) *Health, Sanitation and Hospitalization.* (General statements pertinent to base development with location and capacity of more important hospitals).

(*m*) *Political, Economic and Social.* (Broad general statements if pertinent to base development).

c. Summary. (Summarize briefly the good and bad points of the area that affect its suitability for base development of the scale contemplated).

4. Concept of Base Development

a. Purpose of Base Development. (Based on the mission and makeup of the forces involved in the operation, outline in general terms the needs of the three Services that must be met by the base development program).

b. Location of Major Base Facilities. (Based on mission, forces available, and review of area, indicate in general terms the proposed location of the major base facilities required for the three Services. Consideration must be given to *c* and *d* below).

c. Distribution of Forces. (Based on mission, tactical concept, forces available and review of area, indicate the distribution of major units in objective area at critical and final stages of the proposed operation. Consideration must be given to *b* above).

d. Duration of Use of Facilities. (General statement, with dates if appropriate, as to the probable length of time that major base facilities are to be used and the forces that will be based on them).

e. Joint Features of Development. (Reference to existing policy relative to joint and combined support responsibilities, plus

such additional delineation of policies as pertain to contemplated base development in objective area).

f. General Construction Standards. (General statements as to temporary or permanent nature of facilities, use of existing facilities, living accommodations, limitations on use of materials and labor, etc., should be related to construction policy and in some measure to *d* above).

g. General Priority of Construction. (By phases if practicable; priorities indicated should be general, not detailed, in keeping with the nature of the study).

h. Proposed Command Structure. (An organization chart of the organization in the objective area with sufficient notes to indicate in the broad sense where responsibility for base development will rest).

5. Analysis of Base Development Mission

a. Operational Requirements. (A brief summary of the development required based on the concept outlined above. A general listing of all *types* of development that must be considered as per the concept. Omit locations and details).

b. General Support Plans. (Outline the general plans for the support of each service to include supply responsibilities, supply levels, methods of supply, floating support elements, and other matters that are pertinent to base development planners).

c. Factors Affecting Base Development. (Under the headings listed below summarize briefly those factors or limitations relative to the objective area which should be considered in base development planning and execution).

(1) *Length of supply lines.*
(2) *Physical features.*
(3) *Weather limitations.*
(4) *Beach capacities.*
(5) *Port capacities.*
(6) *Roads, railroads, and inland waterways.*
(7) *Natural resources, industries, and manpower.*
(8) *Water supply.*
(9) *Health and Sanitation.*
(10) *Internal Security.*

d. Logistic Planning Factors. (List such broad planning factors as will be used as a basis for determination of the actual base development requirements. This might involve reference to some existing planning manuals and reference to factors appearing later in this study).

e. Contemplated Base Development. (Sufficient information to be included under the headings listed below to insure broad analysis and understanding of the base development requirements. Information furnished here will be the basis for determination of construction troop and materiel requirements, service troop requirements, shipping requirements, etc., to be included in latter part of study. Where appropriate, assumptions should be made as to damage to existing facilities prior to use).

(1) *Air Force Facilities.* (Does not include naval air).

(*a*) *Air Bases.* (Include approximate location of each airfield, type unit and number of planes scheduled to use each field, characteristics of existing fields, development required, and target dates. Include appropriate maps as appendixes).

(*b*) *Air Defense Installation.* (Includes air warning, fighter direction, antiaircraft, and related facilities).

(*c*) *Air Depots.* (Location and general description of facilities required and target dates).

(*d*) *Headquarters Installations.* (Facilities for major headquarters not included above and estimated dates for completion).

(*e*) *Auxiliary or Isolated Weather, Communications and Navigational Aid Facilities.*

(2) *Army Facilities.* (Facilities for support of ground operations. Includes numerous facilities for joint use).

(*a*) *Ports.* (Indicate location, estimated capacity required, major facilities required, and target dates. Include general layout maps as tabs. This does not include port facilities for naval operating bases).

(*b*) *Storage.* (Estimate covered and open storage requirements, except POL, refrigeration, and ammunition, for all classes of supply. Target dates and general locations as appropriate).

(*c*) *Ammunition Storage.* (Estimate ammunition storage requirements, covered and open, including roads. Target dates and general locations as appropriate).

(*d*) *POL Storage and Distribution.* (Estimate general storage and distribution requirements, with target dates. Include general layout map as a tab).

(*e*) *Refrigeration.* (Estimate cold storage requirements indicating location and target dates as appropriate).

(*f*) *Hospitals.* (Indicate in broad terms the requirement for fixed hospitals, with approximate locations and target dates).

(*g*) *Shops.* (Estimate requirements for fixed shop facilities not included under other headings such as air depots, naval installations, etc.).

(*h*) *Laundries.* (Estimate laundry facilities required and target dates).

(*i*) *Housing.* (Estimate housing requirements in objective area, with appropriate target dates).

(*j*) *Headquarters.* (Estimate requirements for major headquarters not included elsewhere in study, with target dates).

(*k*) *Water Supply.* (Indicate requirements and estimate facilities for water supply and distribution).

(*l*) *Power.* (Indicate supply basis and facilities required to furnished).

(*m*) *Roads.* (General analysis of main road system to be developed, including general specifications, bridge requirements, etc., including target dates. Map included as a tab).

(*n*) *Railways.* (General analysis of railway system to be developed, including rolling stock, gauges, bridge requirements, repair facilities, etc., including target dates. Map included as a tab).

(*o*) *Communications.* (Facilities required for telecommunications of all types. Principal networks included on map as a tab).

(*p*) *Civil Affairs.* (Estimate of facilities required with target dates).

(*q*) *Natural Resources Development.* (Estimate of facilities required for exploitation of local resources such as saw mills, drilling equipment, etc.).

(*r*) *Reconstruction of Industry.* (Estimate of development required to operate factories, mines, shipyards, and other industries of objective area to facilitate logistical support of our forces).

(*s*) *Sanitation and Control of Epidemics.* (Estimate of materiel required).

(*t*) *Miscellaneous Services.* (Estimate of facilities required for map reproduction, handling of prisoners of war, press facilities, special services, fire fighting, etc.).

(*u*) *Special Requirements.* (Estimate of facilities for special needs such as assembly plants, impregnation plants, schools, etc.).

(3) *Navy Facilities.* (Facilities required for support of

naval operations, including naval air, as outlined under headings below. Shore-based facilities normally grouped under one heading, as a LION, CUB, ACORN, etc. Include map or maps as tabs in appropriate cases).

(*a*) *Repair Base.* (Include estimate of major facilities to be provided and target dates).

(*b*) *Harbor and Anchorage.* (Include estimate of area requirements and installations required such as nets, mooring facilities, etc.).

(*c*) *Operating Base.* (General statement of facilities required and target dates).

(*d*) *Naval Air Station.* (General outline of requirements, including number and general specification of runways, service facilities, fuel storage, fixed installations, sea dromes and sea plane facilities where required, repair and maintenance installations).

(*e*) *Supply Base.* (General statement of facilities required and target dates).

(*f*) *Headquarters.* (Brief outline of requirements, with target dates).

(*g*) *Miscellaneous.* (Additional requirements such as housing, training areas, rest and recreation facilities, etc.).

f. Construction Troops and Materiel. (A general estimate of the construction effort required for each of the facilities listed in *e* above, in terms of battalion months and tons of materiel other than TOE equipment, will be prepared under each of the headings listed. This information will be consolidated in tabs giving a construction materiel summary, construction equipment summary in excess of TOE, and a construction effort chart).

g. Operating and Service Troops. (An estimate of the troop units required to service and operate the facilities to be provided as indicated in *f* above, broken down under each heading. This does not include service troops with combat forces. Completed estimates should include all the service troops required to operate the logistical framework in support of the combat forces. It should include truck companies and similar mobile units that are related to above-listed facilities. Target dates for arrival in objective area should be included. Summary should be included in a tab).

h. Troop and Tonnage Summary. (Under this heading, as broken down below, the troop and tonnage summary will be determined for each month by compiling the summarized information in *f* and *g* above with the information obtained from other sources

relative to movement of the combat forces. To this must be added the lift requirements for resupply and build-up of supply levels in objective area. Use of slices (division and wing) will assist in this compilation but such slices will not normally include resupply, build-up, and construction materials).

(1) *Logistic Planning Factors Assumed.* (List the planning factors to be used in computing shipping requirements that have not been used in compiling *f* and *g*. For example, resupply, build-up, slice figures, equipment factors, etc.).

(2) *Troop and Tonnage Lists.* (Summarize the tonnages to be moved to the objective area each month. Much of this information may be included in a tab).

i. Shipping Requirements. (Under this heading, the shipping required to move the tonnage summarized in *h* above will be determined with emphasis on the base development shipping requirements).

(1) *Planning Factors Assumed.* (Include estimates as to echeloning, beach capacity, port capacity, shipping characteristics, etc., that must be considered in arriving at capabilities of shipping).

(2) *Shipping Requirements.* (Summarize the shipping requirements with special reference to the base development program. Much of this information may be included in a tab).

6. Conclusions

(Based on the analysis of requirements for facilities, construction troops, construction materiel, service troops, and shipping indicate in general terms the feasibility of the proposed base development program).

7. Recommendations

(Outline in summary form the base development program that can and should be accomplished for the support of operations contemplated. These recommendations should indicate in outline form the scope of the development with target dates. These recommendations form the basis for the base development directive and plan which will normally follow the study). *TABS.* (The folowing types of tabs will normally be part of a base development study).

a. General area map showing water and air transportation routes with distance tables.

b. Physical relief map showing roads, railroads, and river systems.

c. Construction materials chart with summary tables.

d. Water supply maps and water data tables.

e. Resources map.

f. Base development summary.

g. Beach area maps.

h. Port and major base development schedules.

i. Port and harbor layouts.

j. Base layouts.

k. Principal road net to be developed.

l. Principal railway net to be developed.

m. POL facilities schedule.

n. Communications—electronics facilities to be developed.

o. Air field development schedule.

p. Map study of possible airfield locations—showing possible POL distribution lines.

q. Construction troops schedule.

r. Construction materials schedule.

s. Construction equipment summary (other than TOE).

t. Service troops schedule (other than construction).

u. Consolidated construction effort chart.

APPENDIX V

OUTLINE FOR BASE DEVELOPMENT PLAN

Section I. GENERAL INFORMATION

110.0 Basic Considerations.
111.0 Mission of Bases.
112.0 General Concept and Scope of Base Development.
113.0 Tactical Situation.
114.0 Degree of Permanency of Construction.
115.0 Time Factors Influencing Plans.
116.0 General Limitations.
117.0 Physical and Economic Features of Area.
118.0 Summary of Agreements with Local or Friendly Governments Affecting the Base.
120.0 Command Relationships.
130.0 Responsibilities of Task Force and Major Subordinate Commanders.
140.0 Responsibilities of Component Force Commanders.
150.0 General Layout Plans.
160.0 Priority of Development.
170.0 Recapitulation of Troops.
180.0 Pertinent Directives and Publications.
190.0 Instructions on Changes and Reports.

Section II. GENERAL COMMAND AND ADMINISTRATIVE ORGANIZATION AND INSTALLATIONS

210.0 General Command and Administrative Organization.
220.0 Headquarters for Commands and Bases.
230.0 Relations of Construction Troops to Other Commands.
240.0 Civil Affairs.
250.0 Internal Security.

Section III. BASE DEFENSE ORGANIZATION AND INSTALLATIONS

310.0 Defensive Organization of Bases.
320.0 Air Defenses.
330.0 Ground Defenses.
340.0 Coast Defenses.
350.0 Local Naval Defenses.

Section IV. AIRFIELDS AND AIR BASES

410.0 Airfields and Seaplane Bases, General Consideration.
411.0 Aircraft Units Assigned to Fields and Bases by Phases.
412.0 Responsibility for Planning, Construction, and Operational Features.
420.0 Airfield A.
430.0 Airfield B.

Section V. SUPPLY AND MAINTENANCE ORGANIZATION AND INSTALLATIONS

510.0 General Supply and Maintenance Organizations.
520.0 Army Installations.
530.0 Air Force Installations.
540.0 Naval and Marine Aviation Installations.
550.0 Naval Installations, Other than Air.
560.0 Marine Corps Installations, Other than Air.
570.0 Logistic Support of Civilian Population.

Section VI. TRANSPORTATION FACILITIES, UTILITIES, NATURAL RESOURCES AND INDUSTRY

610.0 General Organization for Development and Maintenance.
620.0 Roads.
630.0 Railroads.
640.0 Waterways.
650.0 Pipelines.
660.0 Utilities.
670.0 Development of Natural Resources.
680.0 Development and Reconstruction of Industry.

Section VII. PORT AND HARBOR FACILITIES

710.0 Beaches and Assault Landing Areas.
720.0 General Organization.
730.0 Map of Port and Harbor Areas.
740.0 Port A.
750.0 Port B.

Section VIII. TRANSPORTATION

810.0 General.
811.0 Organization.
812.0 Polices and Control.
813.0 Movement Priorities.

820.0 Motor Transport.
830.0 Air Transport.
840.0 Sea and Water Transport.
850.0 Rail Transport.
860.0 Pipeline Transportation.

Section IX. COMMUNICATIONS—ELECTRONICS

910.0 General.
911.0 Organization and Information.
912.0 Communications—Electronics Policies.
913.0 Units Assigned.
920.0 General Communications—Electronics Plan.
930.0 Communications—Electronics Facilities, General.
940.0 Joint Facilities.
950.0 Army Facilities.
960.0 Air Force Facilities.
970.0 Naval and Marine Facilities.
980.0 Special Projects.

Section X. MEDICAL

1000.0 Index

List on separate sheet the following major paragraph headings—

- 1010.0 General.
- 1011.0 Organization.
- 1012.0 Hospital Construction Standards.
- 1013.0 Summary of Hospital Facilities.
- 1020.0 Joint Facilities.
- 1030.0 Army Facilities.
- 1040.0 Air Force Facilities.
- 1050.0 Naval Facilities.
- 1060.0 Sanitary and Epidemiological Control.
- 1070.0 Medical Facilities for Civil Population.
- 1080.0 Miscellaneous.

1010.0 General.

1011.0 Organization.

Show the organization within the base, including the local civilian government or insitutions, that are responsible for the development and operation of the medical and sanitation activities of the base area.

1012.0 Hospital Construction Standards.

Describe those construction standards of significance to the development of medical facilities.

1013.0 Summary of Hospital Facilities.
Summarize in tabular form the hospital and medical facilities to be developed at the base, giving type, size, location and organization responsible.

1020.0 Joint Facilities.
Describe the units assigned and the facilities to be developed.

1030.0 Army Facilities.
Similar to 1020.0.

1040.0 Air Forces Facilities.
Similar to 1020.0.

1050.0 Naval Facilities.
Similar to 1020.0.

1060.0 Sanitary and Epidemiological Control.
Describe the units assigned and the facilities for the sanitation program at the base. Give location and responsibility for their operation.

1070.0 Medical Facilities for Civil Population.
Describe the units assigned and the facilities required for the medical care of the civil population, their location and organization responsible.

1080.0 Miscellaneous.
Describe the facilities required and responsibility for such miscellaneous medical activities as blood distribution centers and research units.

Section XI. MISCELLANEOUS AND SPECIAL FACILITIES

1110.0 General Information.
1120.0 Mail and Censorship.
1130.0 Training and Education.
1140.0 Recreation.
1150.0 Religious Activities.
1160.0 Prisoner of War.
1170.0 Repatriates and Recovered Allied Prisoners of War.
1180.0 Displaced Persons.
1190.0 Other Special Activities.

Section XII. CONSTRUCTION TASK AND REQUIREMENTS SUMMARY

1210.0 General Organization and Information.
1220.0 Construction Policies and Standards.
1230.0 Construction Projects, General.
1240.0 Construction Materials Summary.

1250.0 Construction Troop Requirements.
1260.0 Consolidated Construction Schedule.
1270.0 Consolidated Echelon Schedule.
1280.0 Shipping Schedule.

APPENDIX VI

SUGGESTED PLAN FOR ESTABLISHING A FIELD HOSPITAL

1. Advance Party

a. The advance party will precede the main convoy to the bivouac area in sufficient time to accomplish its mission.

b. The advance party will select and mark all tent sites.

c. The advance party will dig and erect latrines.

d. The mess section will acompany the advance party and be established prior to the arrival of main convoy.

e. The advance party will scout the area and ascertain that it is free of aggressor personnel, prior to the arrival of the main convoy. A perimeter defense will be established by the advance party if situation warrants such action.

f. The advance party will lead in-coming vehicles to designated sites for unloading tentage and equipment. A maximum practical dispersion of vehicles will be maintained utilizing natural cover.

g. The advance party will post road guards and directional signs.

2. Location and Sections

The hospitalization unit commander will designate to all tent pitching teams their areas for erecting their tentages, these areas having been previously selected and marked by the advance party.

3. Hospital Plan

a. The field hospital will be established in accordance with one of the attached plans. (Incl 1)

b. In the event that one hospitalization unit must act and set up independently, it will be established according to the attached plan for one hospitalization unit. (Incl 1)

c. These plans may be varied to suit terrain features and/or strategic situation.

4. Erection and Striking of Tentage

Tentage will be erected and struck in accordance with procedures outlined in FM 20–15.

5. Phases of Establishment

a. Phase I:

(1) Personnel authorized by TOE 510R include 42 enlisted personnel for each hospitalization unit. The hospitalization unit commander may organize three (10 men) tent pitching teams and one (6 men) tent pitching team, consisting of personnel as follows:

(*a*) TEAM NR 1 (A&D and Receiving)

Clerks	Each 4
Dental Sp	Each 1
X-ray Sp	Each 1
Other	Each 4
TOTAL	10

(*b*) TEAM NR 2 (Phar-Lab-X-ray)

Phar Sp	Each 1
Lab Sp	Each 1
Other	Each 8
TOTAL	10

Note: Sections listed opposite each team plus one surgical ward constitute Phase I.

(*c*) TEAM NR 3 (Surgery and Central Materiel)

Op Rm Sp	Each 2
Other	Each 8
TOTAL	10

(*d*) TEAM NR 4 (Mess)

Mess Pers	Each 6

(*e*) The six remaining personnel may be assigned as follows:

Hospitalization unit NCO (in charge).	1
Dig and erect latrines	2
Perimeter Guard	3
TOTAL	6

(2) Upon completion of erection of the above sections, all available personnel will erect the surgical ward. When Phase I has been completed, the hospital unit is considered operational. Remainder of tentage will be erected as the situation and instructions dictate.

(3) A noncommissioned officer who is a member of each team will be placed in charge.

(4) These tent pitching teams will be thoroughly indoctrinated as to their specific duties and responsibilities to carry out Phases I, II, and III of this plan.

b. Phase II: (2 Wards). Phase II will begin when the tentage has been erected and equipment unloaded for the Phase I installa-

tions. The personnel who operate the Phase I installations will continue to set up their equipment. The remaining personnel will report to the hospitalization unit NCO who will assign them to teams for the erection of the Phase II installations. When the tents have been erected and the equipment unloaded for these installations (Phase II), the operating personnel will continue to set up their equipment operation.

c. Phase III: Phase III will consist of pitching the remaining tents and setting up the equipment. At the end of Phase II, those remaining personnel will report to the hospitalization NCO for their duties in the Phase III operation.

6. Helicopter-Port

Helicopter landing strip will be established as soon as unit arrives at the field site.

7. Phases

Phases for erection of hospitalization unit tentage will be in accordance with the plan as described by the legends in Layout Plans (figs. 42, 43, and 44).

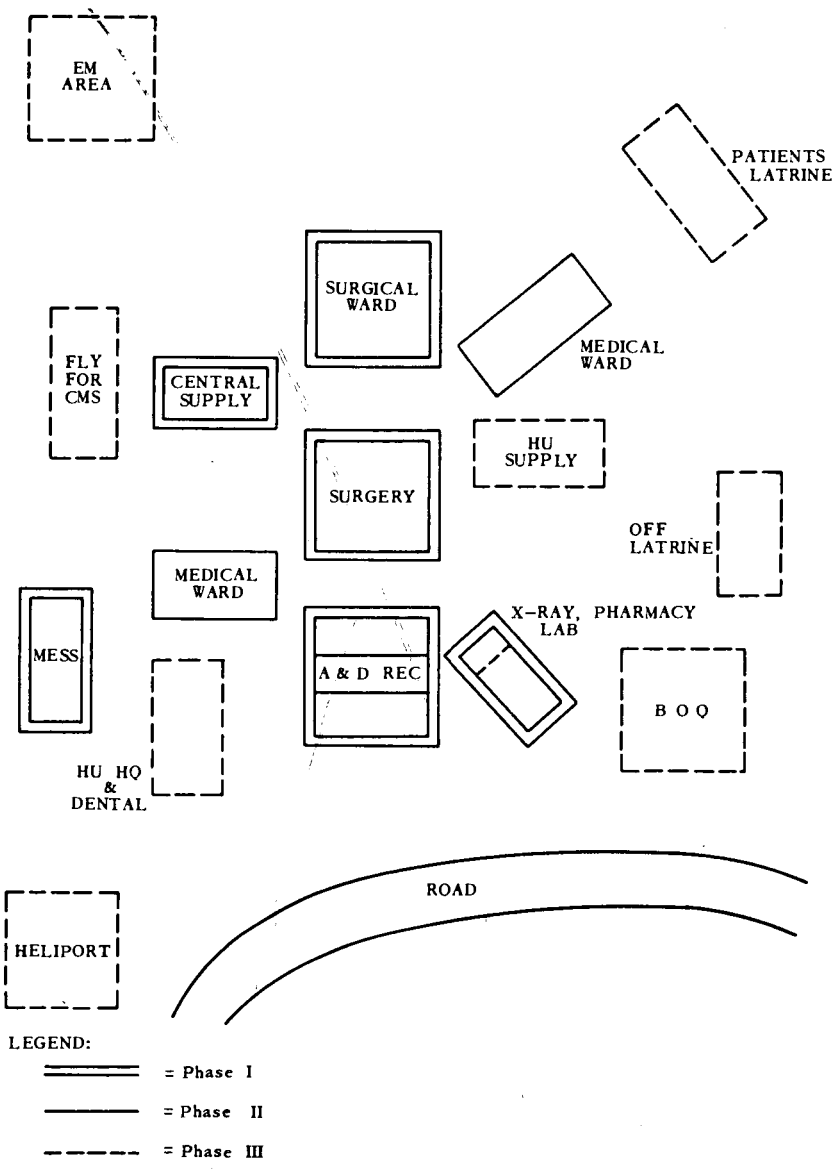

Figure 42. Plan "A" for 100-bed hospital.

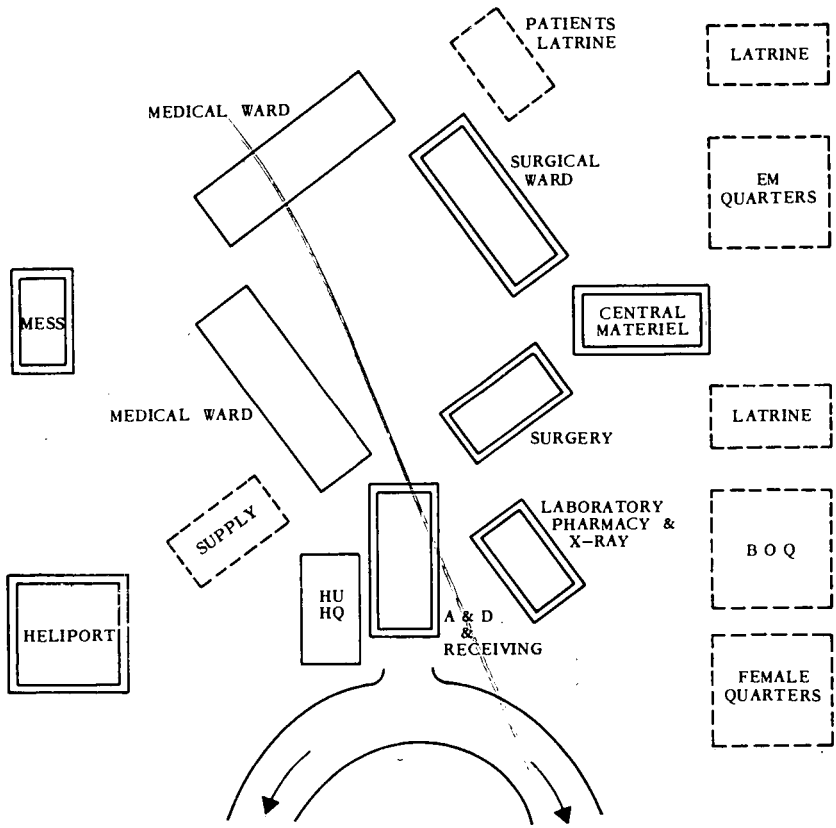

Figure 43. Plan "B" for 100-bed hospital.

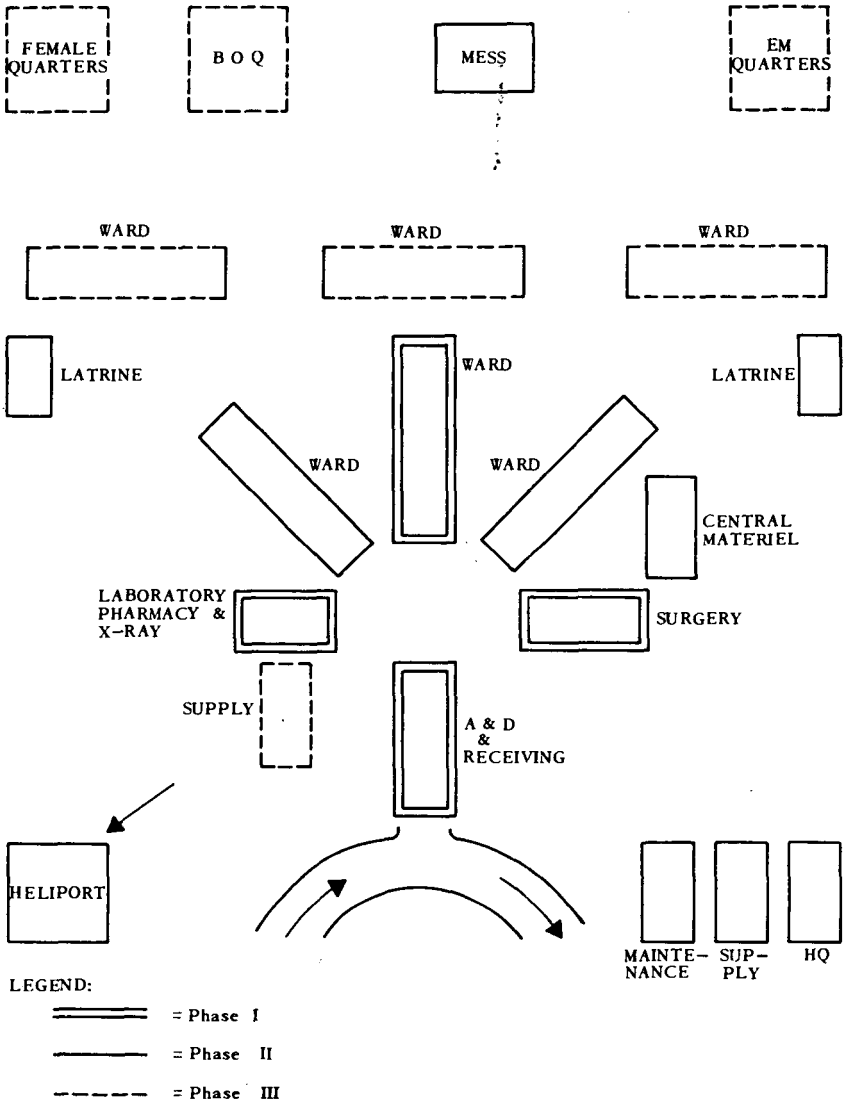

Figure 44. Plan "C" for 200-bed hospital.

APPENDIX VII
SUGGESTED TENT LAYOUTS FOR A 400-BED EVACUATION HOSPITAL

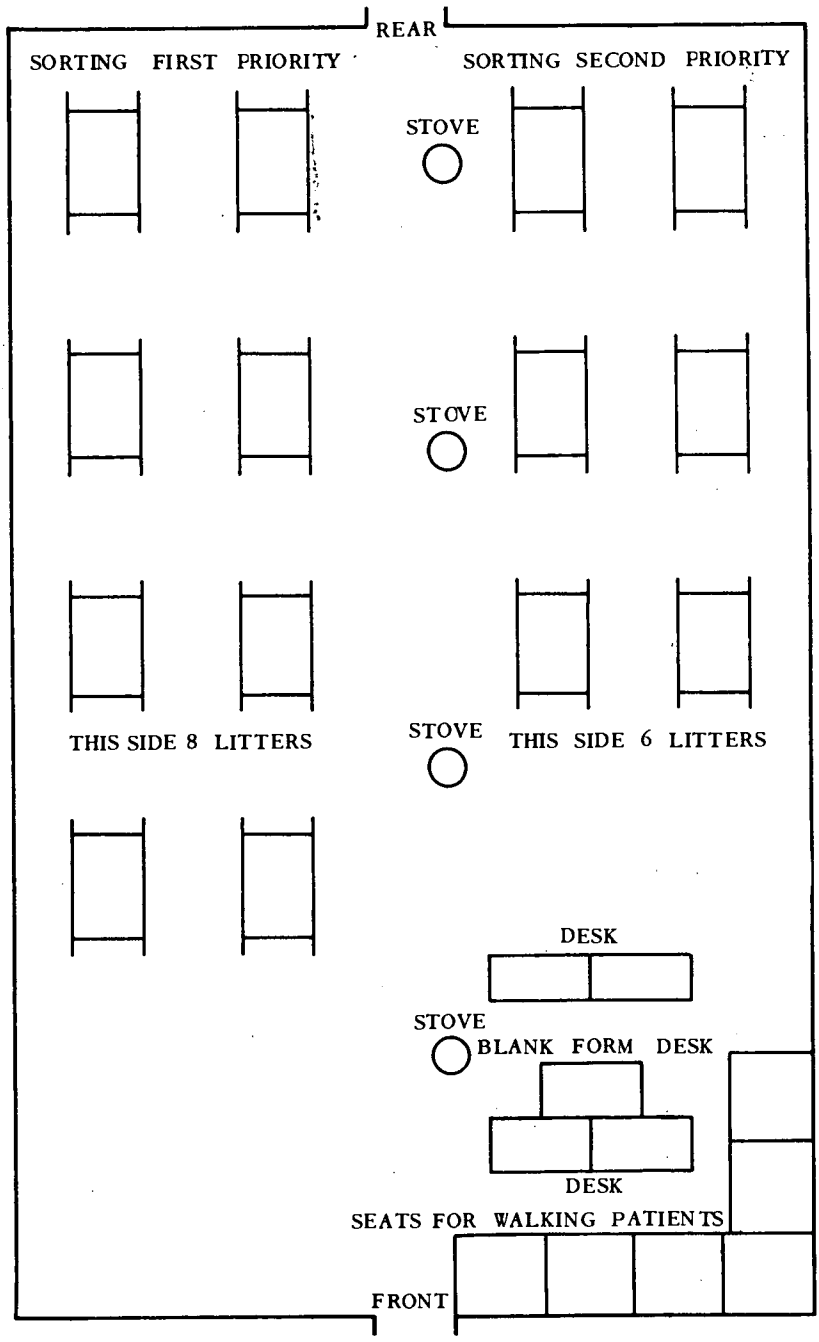

Figure 45. Internal tent layout of A&D (admission and disposition).

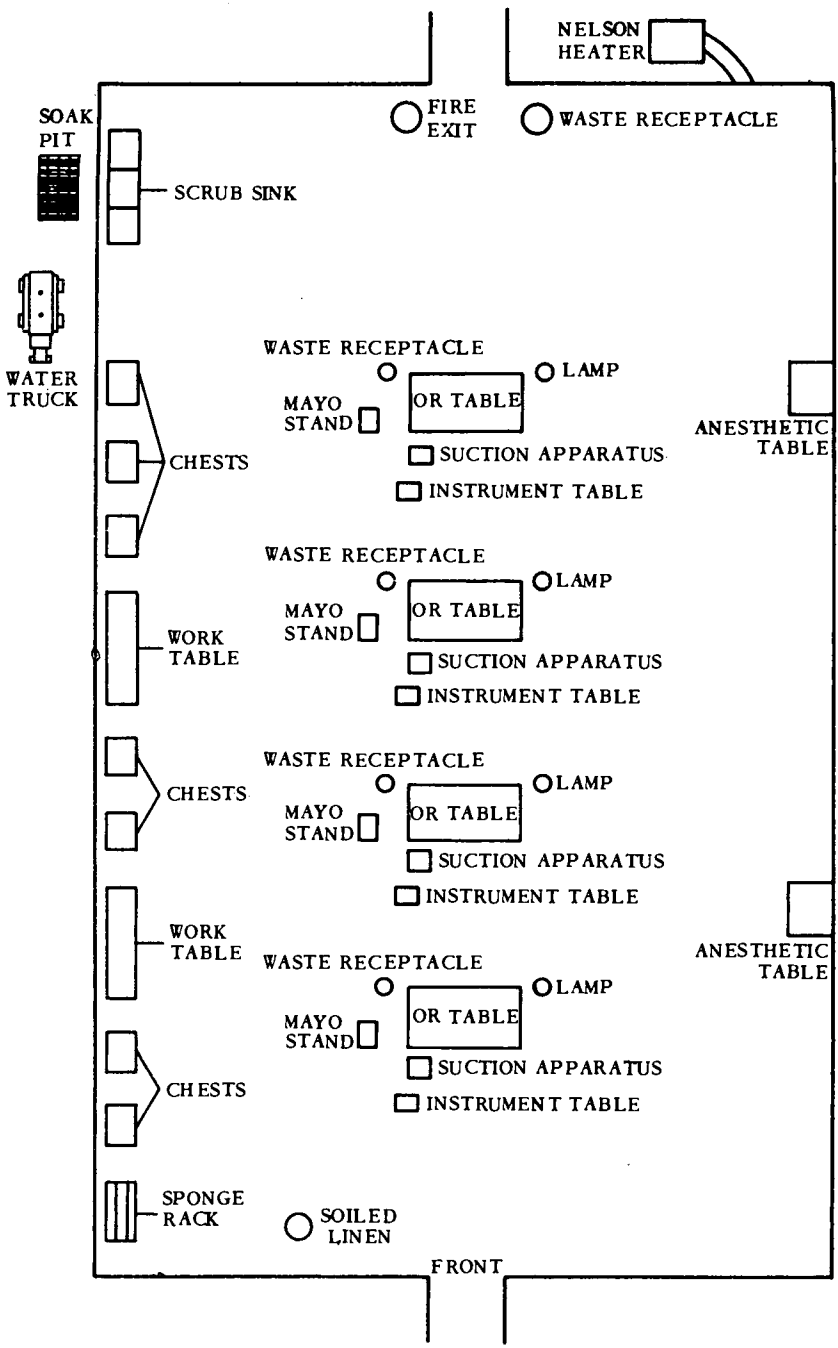

Figure 46. Internal tent layout of operating room No. 1.

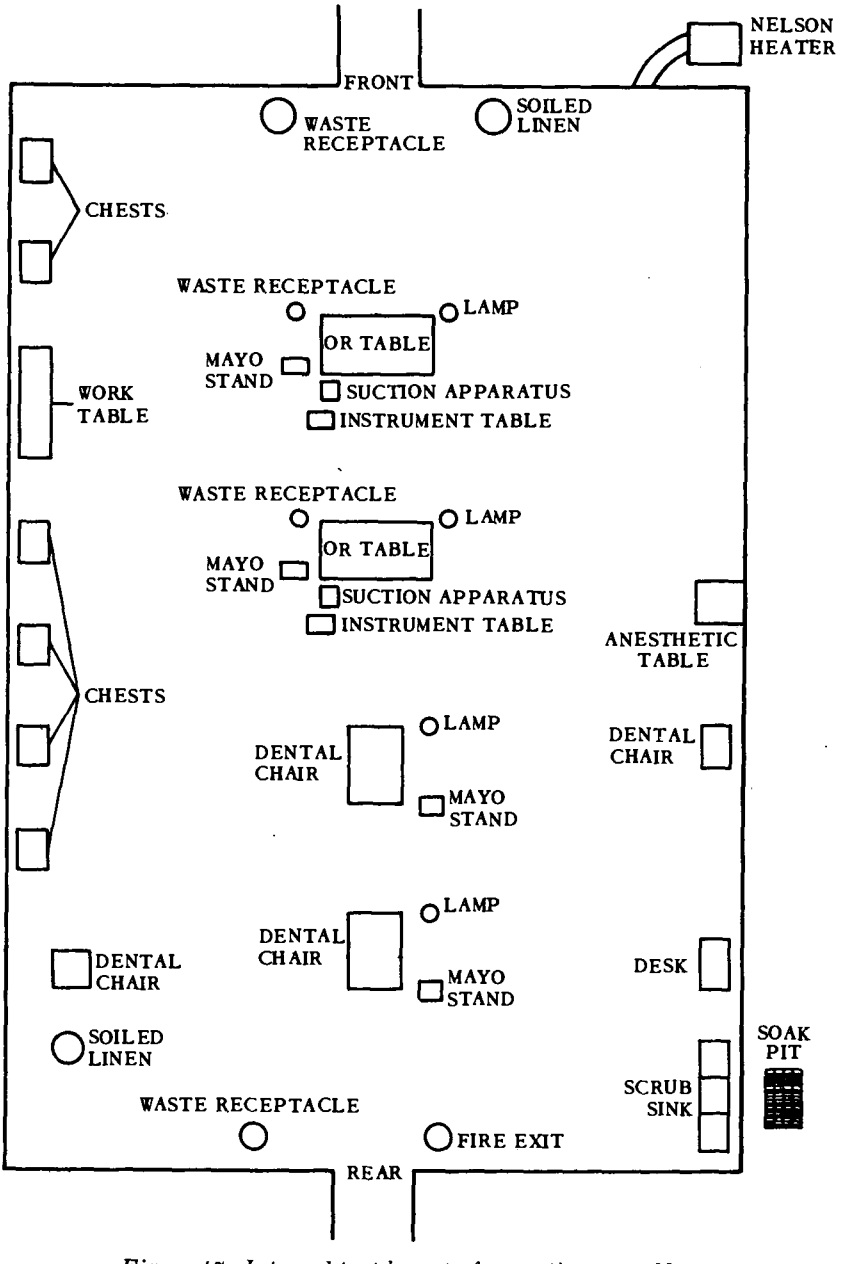

Figure 47. Internal tent layout of operating room No. 2.

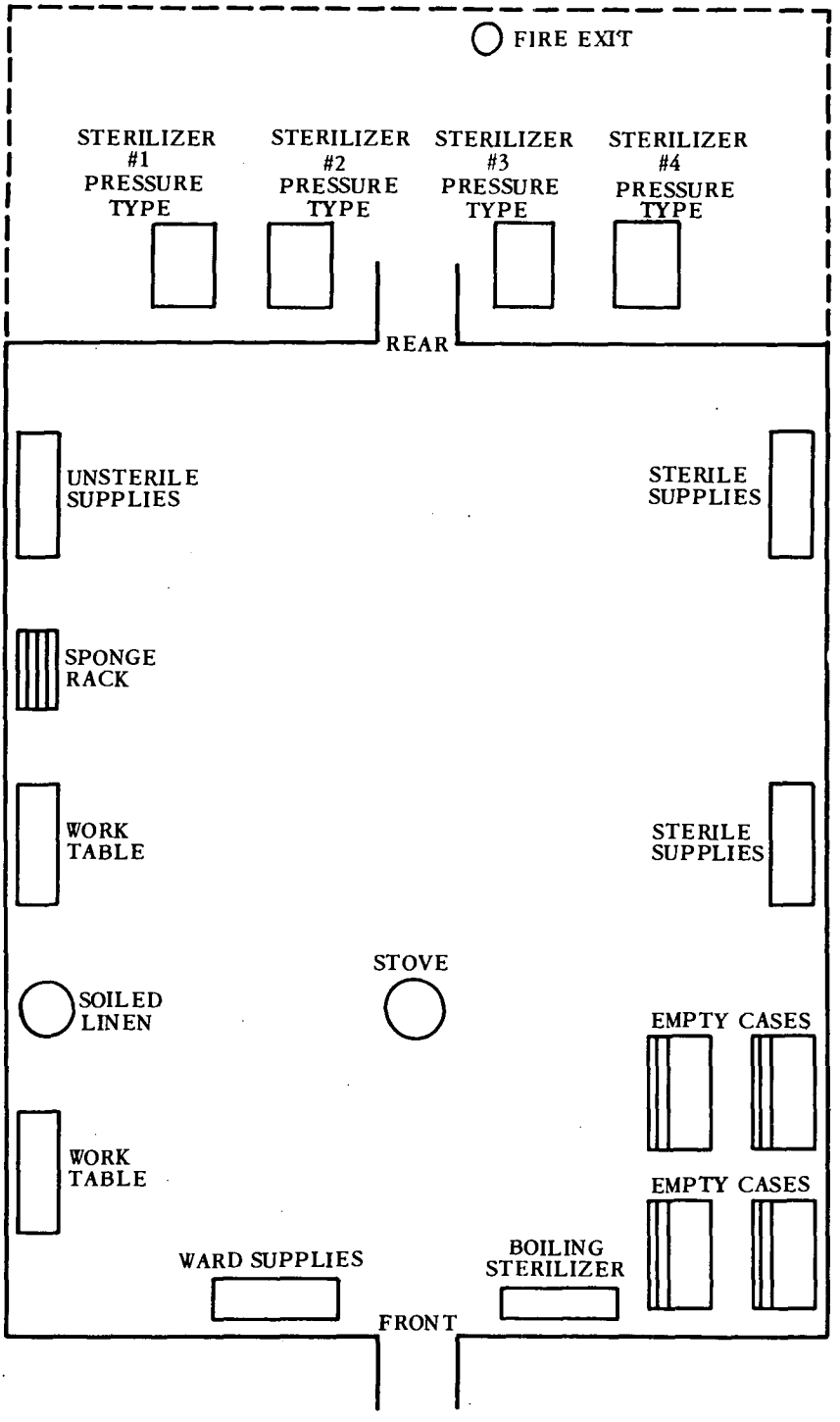

Figure 48. Internal tent layout of central materiel supply.

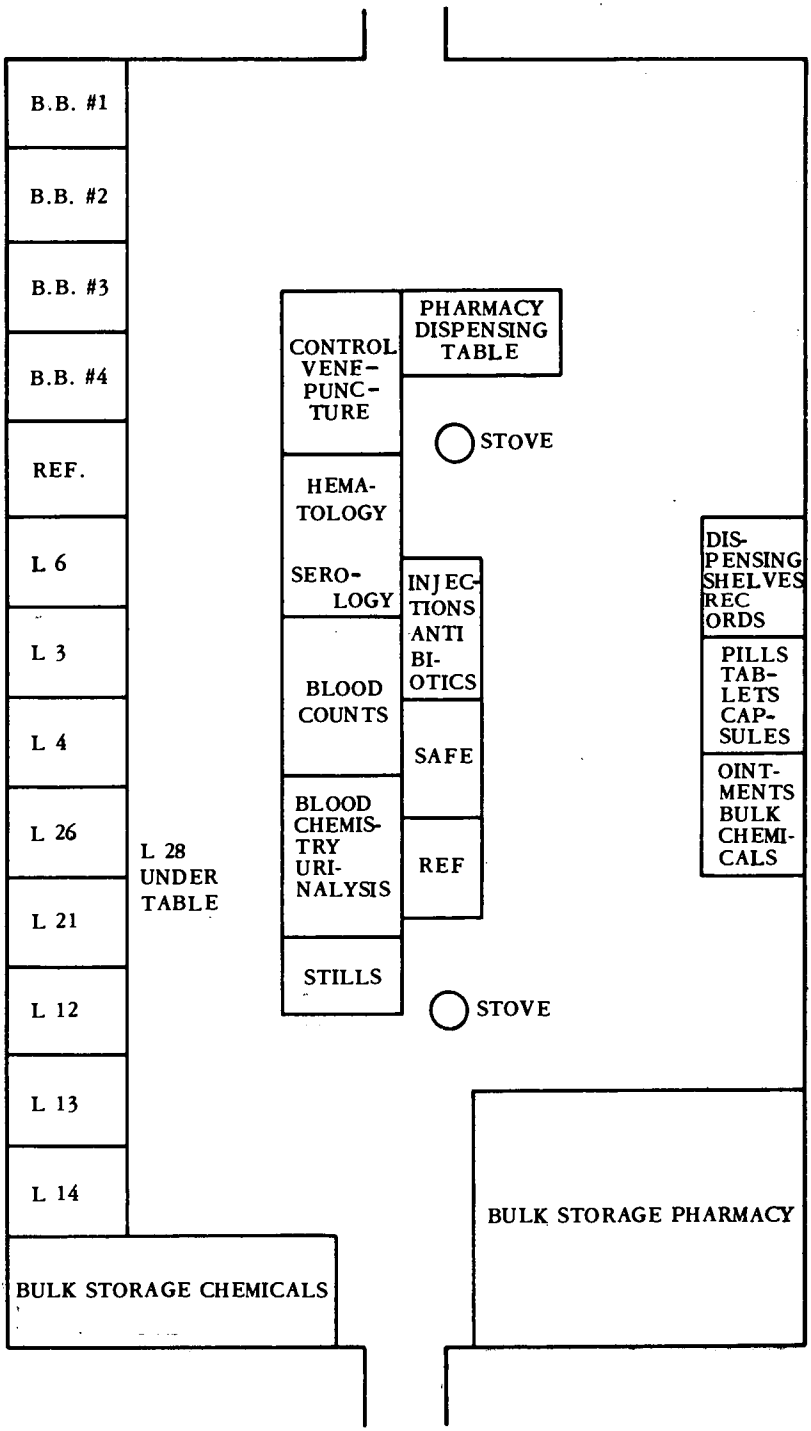

Figure 49. Internal tent layout of pharmacy and laboratory.

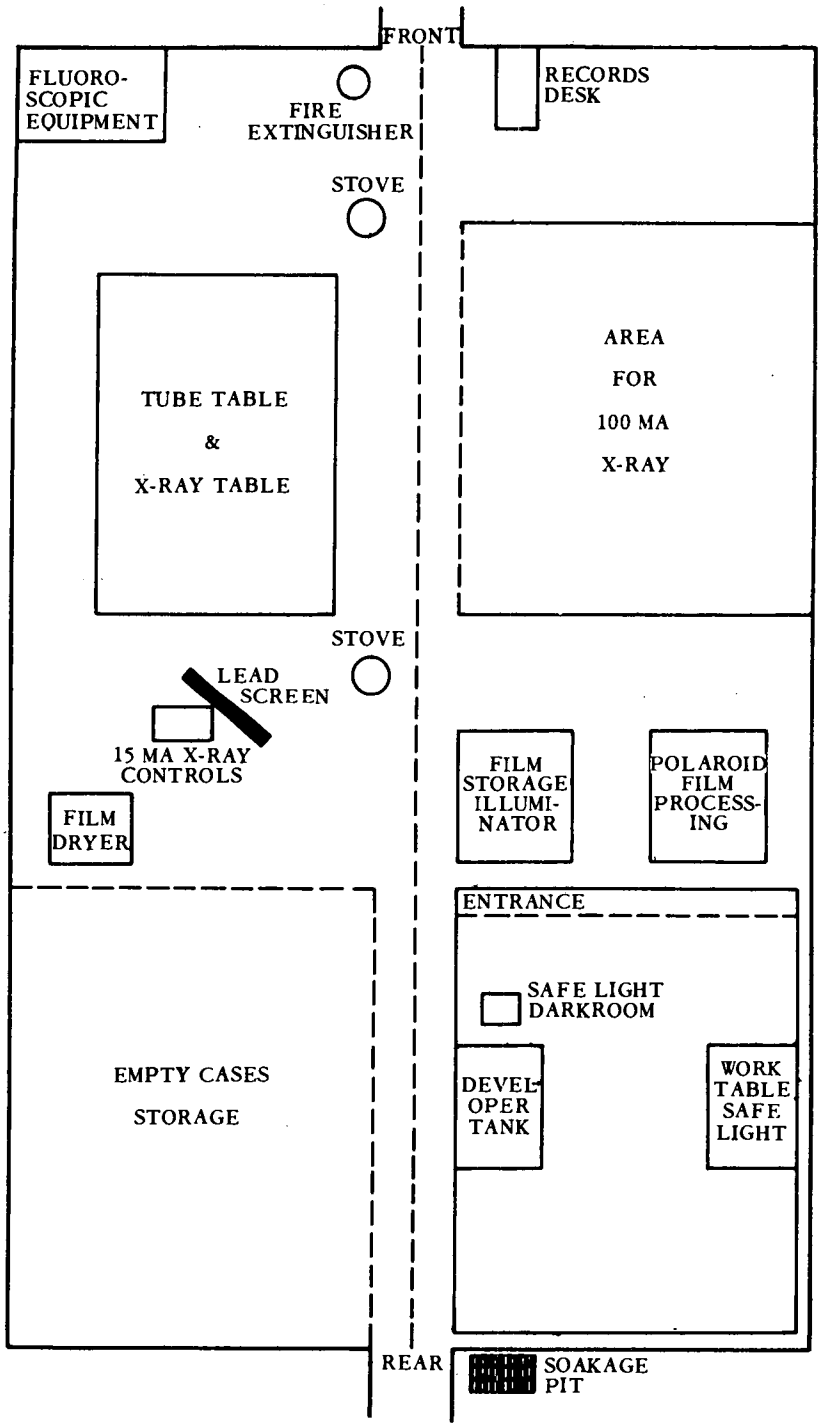

Figure 50. Internal tent layout of X-ray.

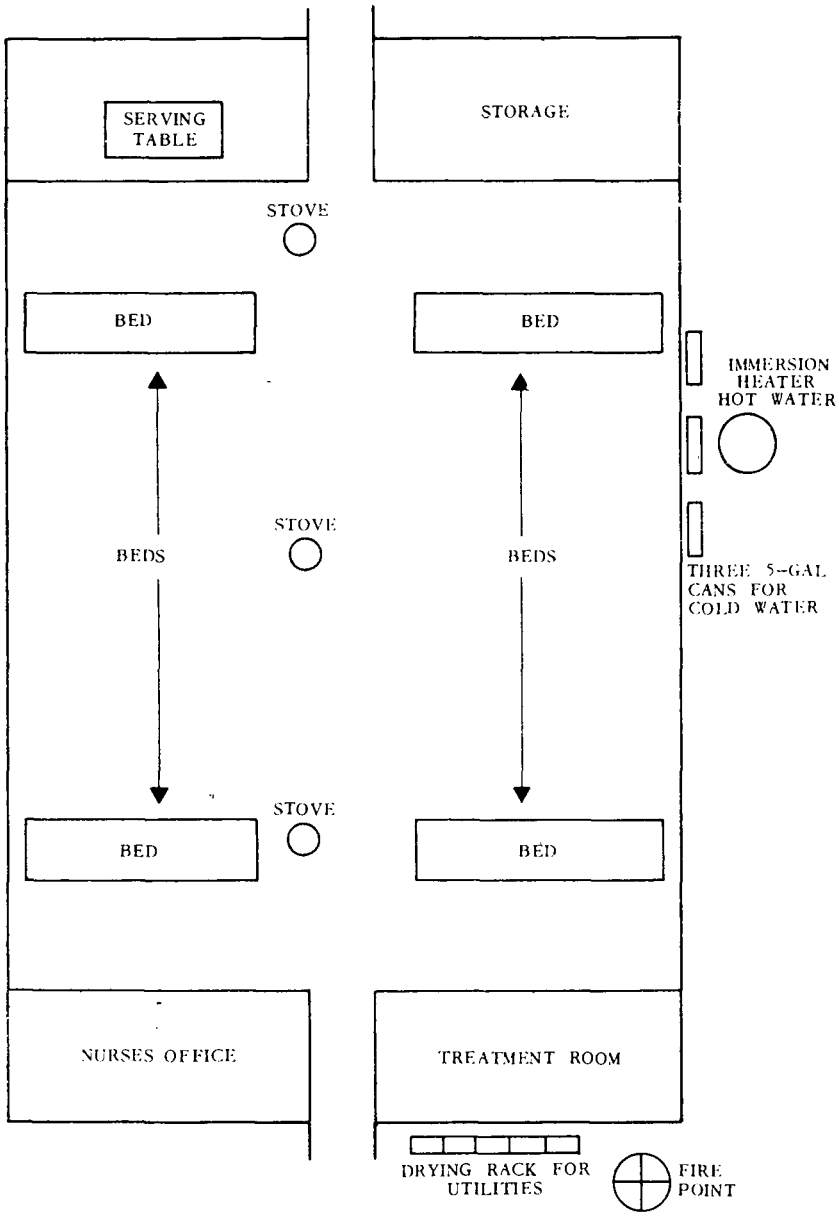

Figure 51. Internal tent layout of pre-op ward.

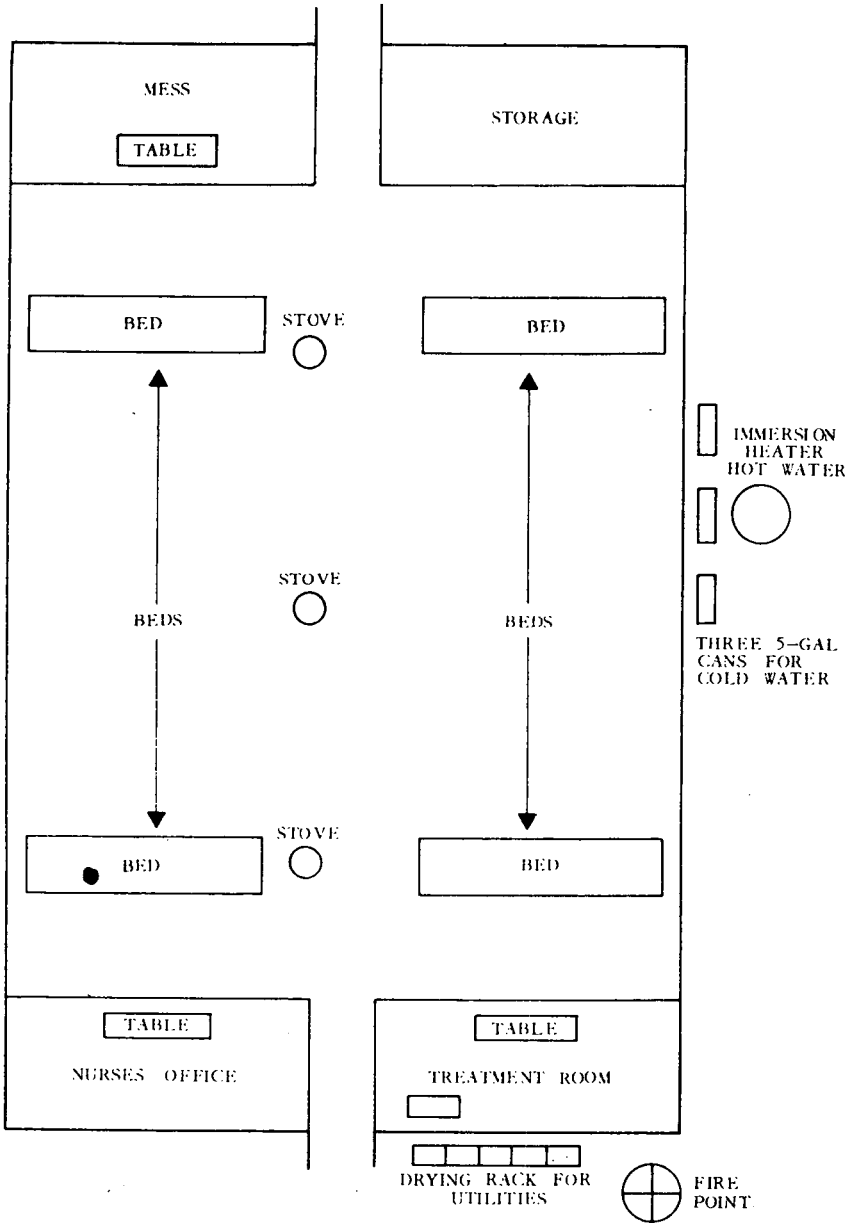

Figure 52. Internal tent layout of ward.

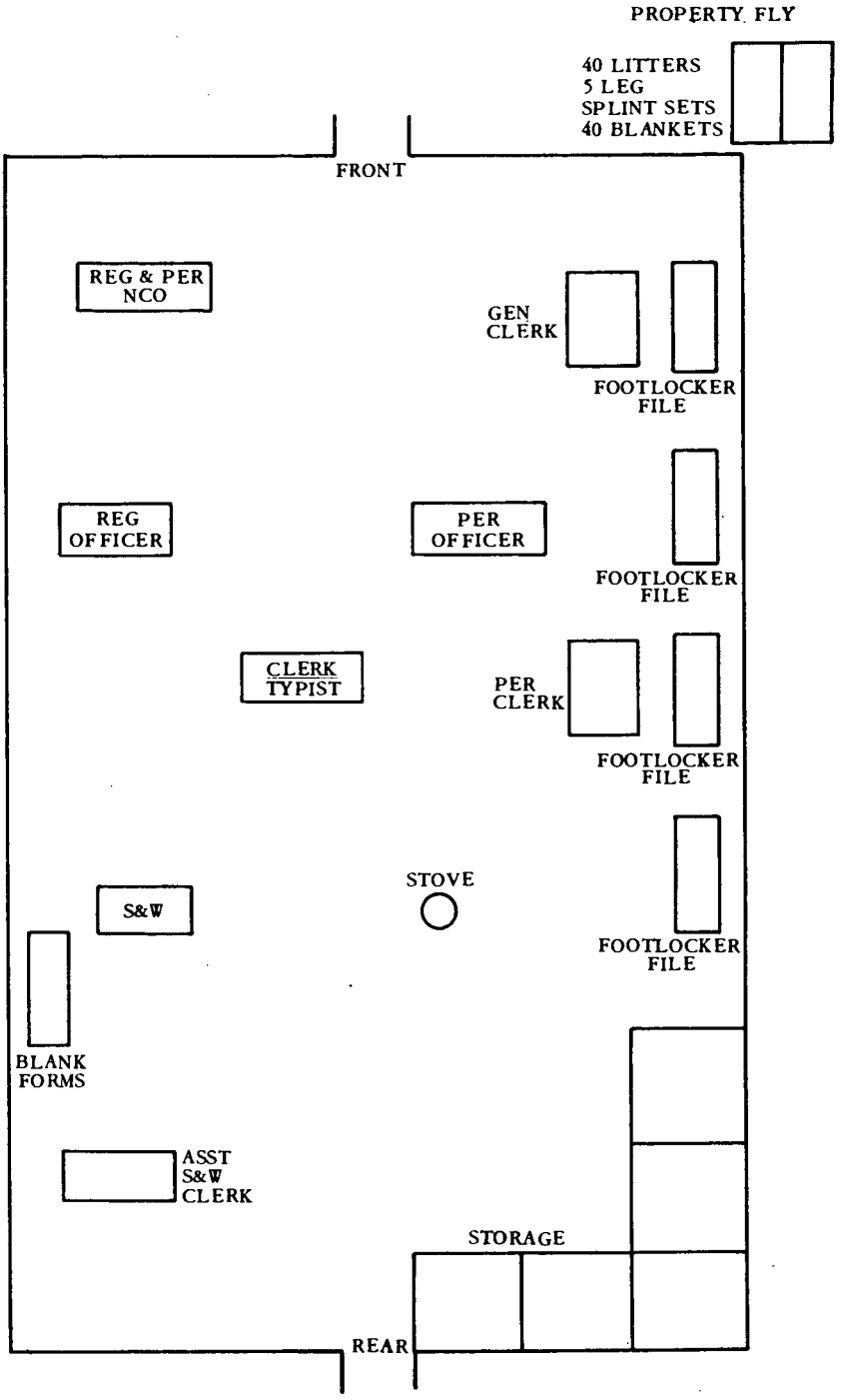

Figure 53. Internal tent layout of registrar.

APPENDIX VIII

SUGGESTED PROCEDURE AND LAYOUT FOR CBR DECONTAMINATION AND TREATMENT STATION

1. When an ambulance arrives in the area, a monitor meets the ambulance and stops it for a contamination check. The monitor is dressed in impregnated clothing (special purpose permeable protective outfit, TM 3–304), including a protective mask, protective hood, rubber apron, and rubber gloves. He carries a radiac detector and an M9A2 detector kit. If the ambulance shows evidence of contamination, it is sent to the CBR decontamination treatment station; if not, the ambulance is sent to the regular A&D tent.

2. When the monitor sends the ambulance carrying a casualty to the decontamination treatment station, the ambulance is met by a litter squad (completely dressed in the same clothing as the monitor) and the casualty is unloaded at the sorting and A&D tent. After admission and sorting, the casualty is then sent to the decontamination tent. The first step in decontamination of the casualty is the removal of all clothing and equipment. This contaminated clothing is placed in GI cans and removed. The casualty is then placed on a clean litter and covered with clean blankets. Should the casualty be an ambulatory case, his contaminated clothing and equipment are removed and he is sent to the walking-wounded section for treatment.

3. The next step is the bathing of the casualties. The walking-wounded have had their contaminated clothing removed, have been treated, and dressings changed in the walking-wounded section. They then move out into the bathing section and sit on stools that have been placed on duckboards over drains. The attendants remove a bucket of warm water from the GI cans (these cans of water are heated with immersion heaters), and mix a solution of sodium carbonate and detergent soap. Using a soft brush (a big wallpaper paste brush suffices), they cover the casualty completely with this soapy water solution, and then rinse the soapy water from the casualty. In the litter wounded section the process is much the same: the litter is placed over a duckboard drain; a piece of rubber sheeting is placed under the casualty; and he is given a bed bath with the warm soapy water

solution and rinsed with the clear warm water by the decontaminator. During the bathing process the foot of the litter is elevated on wood blocks and the upper half of the casualty bathed; when the lower half is bathed, the head of the litter is elevated. This process permits water to drain from the litter into the sump.

4. After the casualties have been bathed, they are again monitored. If they are found clean, they are dressed in either clean clothing, pajamas, or casualty evacuation bags and sent to either the holding or evacuation sections.

5. The ambulance decontamination is accomplished in the rear area or the downwind side of the station. Using long handled brushes and DANC solution, the ambulance drivers and attendants decontaminate their ambulances. Once the ambulance is clean, it is then allowed to go to property exchange and pick up clean litters and blankets.

6. During all treatment and decontamination processes it is necessary for attendants to wear complete outfits of special purpose protective clothing, including masks and hoods, rubber gloves and aprons, and rubber boots or boots treated with vesicant gas resistant leather dressing. All personnel must wear either film badges or dosimeters. (Film badges are the least desirable.) The dosimeter can be easily read without developing. Should the casualties be heavily contaminated, it would not be a matter of a few hours until the attendants would have become contaminated and would then have to be replaced.

See ch. #3

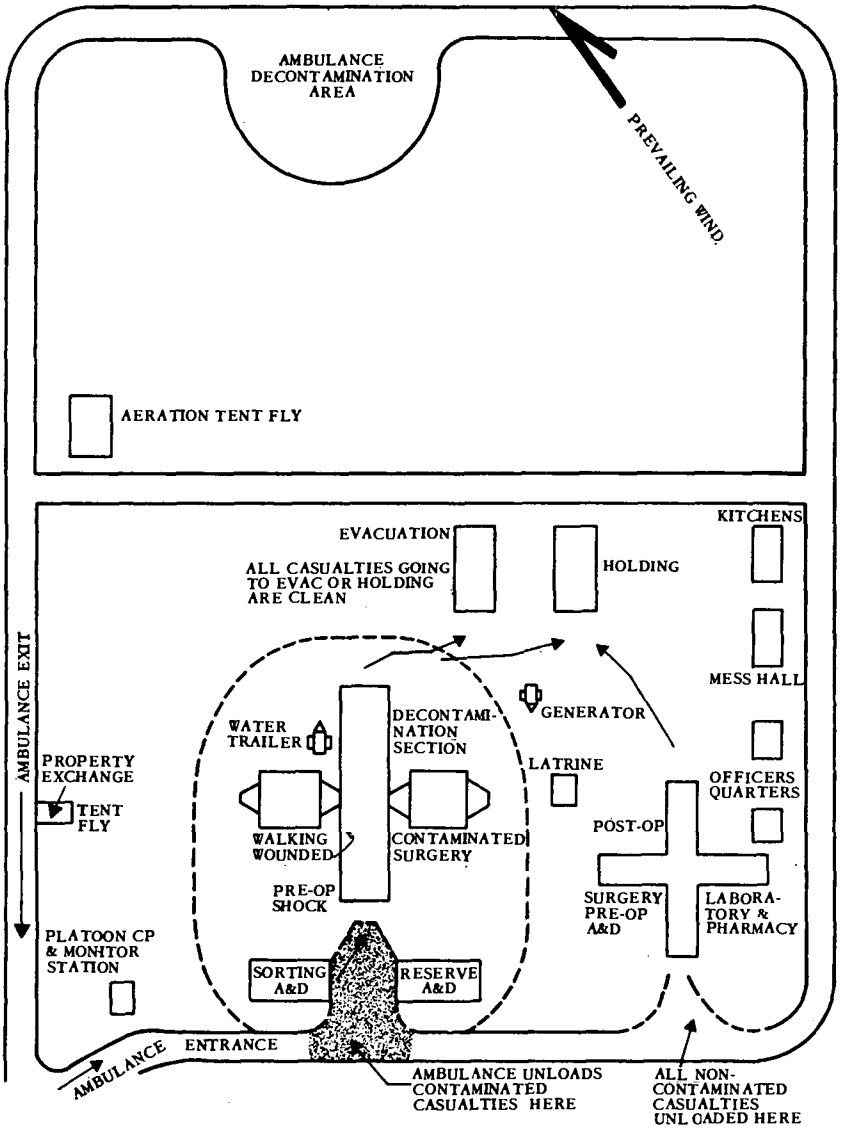

Figure 54. Layout for CBR decontamination and treatment station.

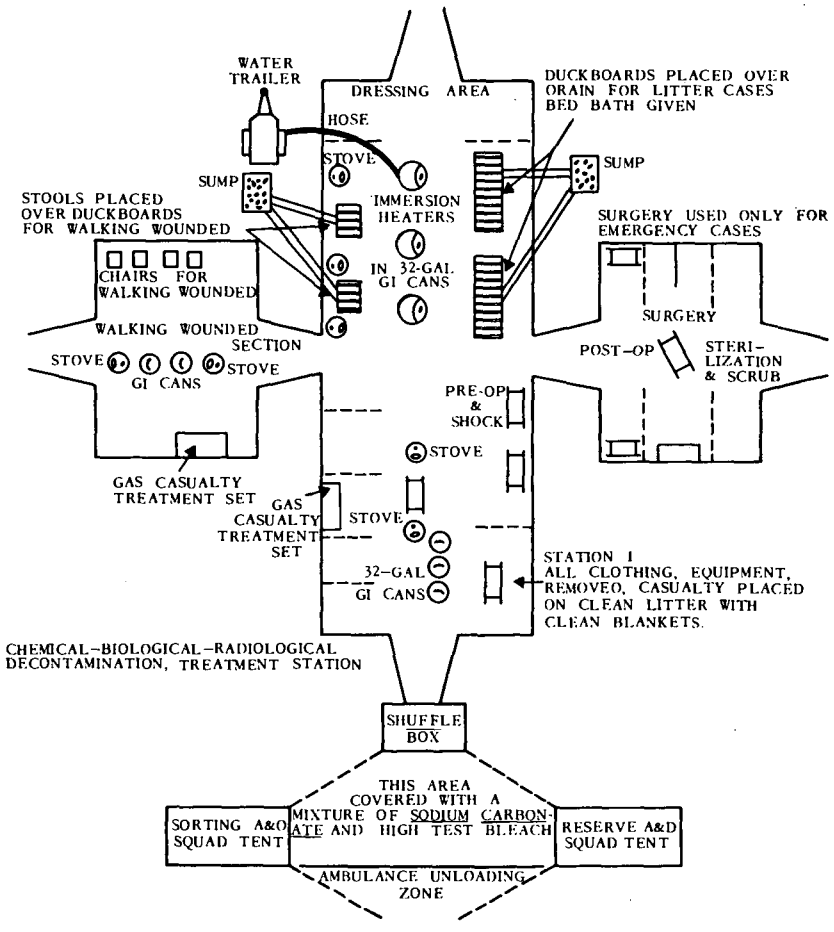

Figure 55. Internal tent layout for CBR decontamination and treatment station.

APPENDIX IX

LEVELS OF MEDICAL SERVICE

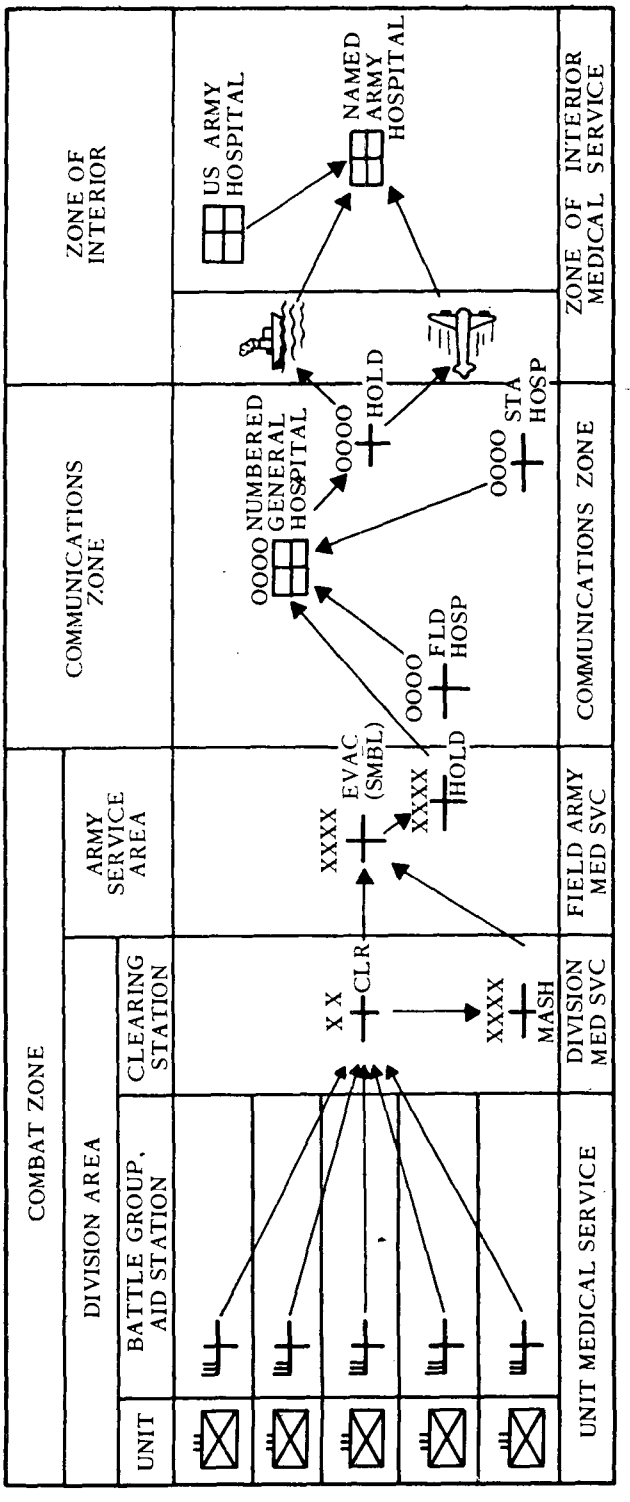

Figure 56. Levels of medical service.

APPENDIX X

ORGANIZATION OF ENGINEER AMPHIBIOUS SUPPORT COMMAND AND TYPICAL DIVISION SHORE PARTY

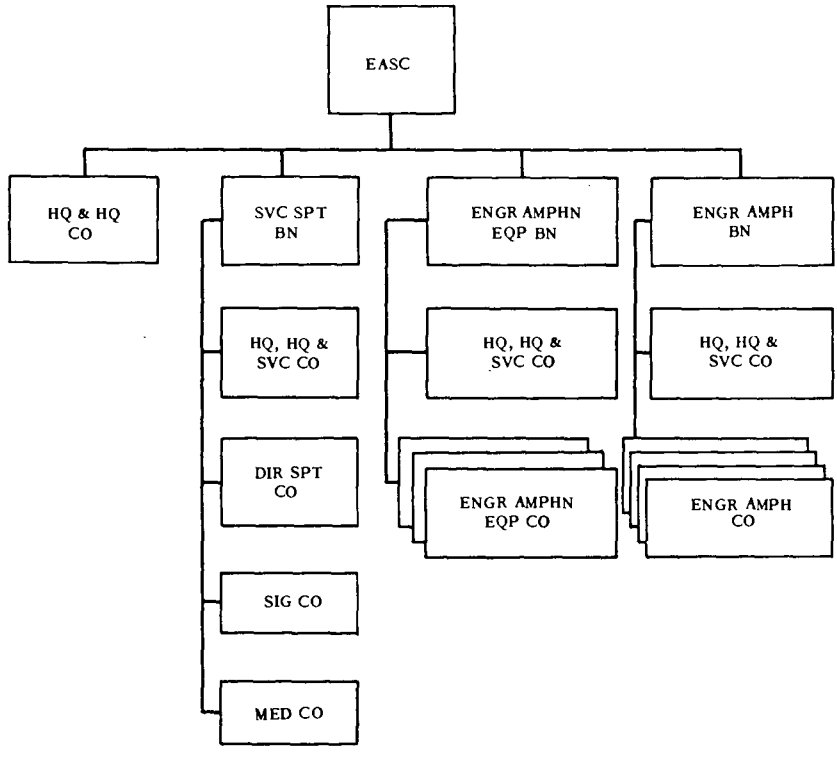

Figure 57. Organization of the Engineer amphibious support command.

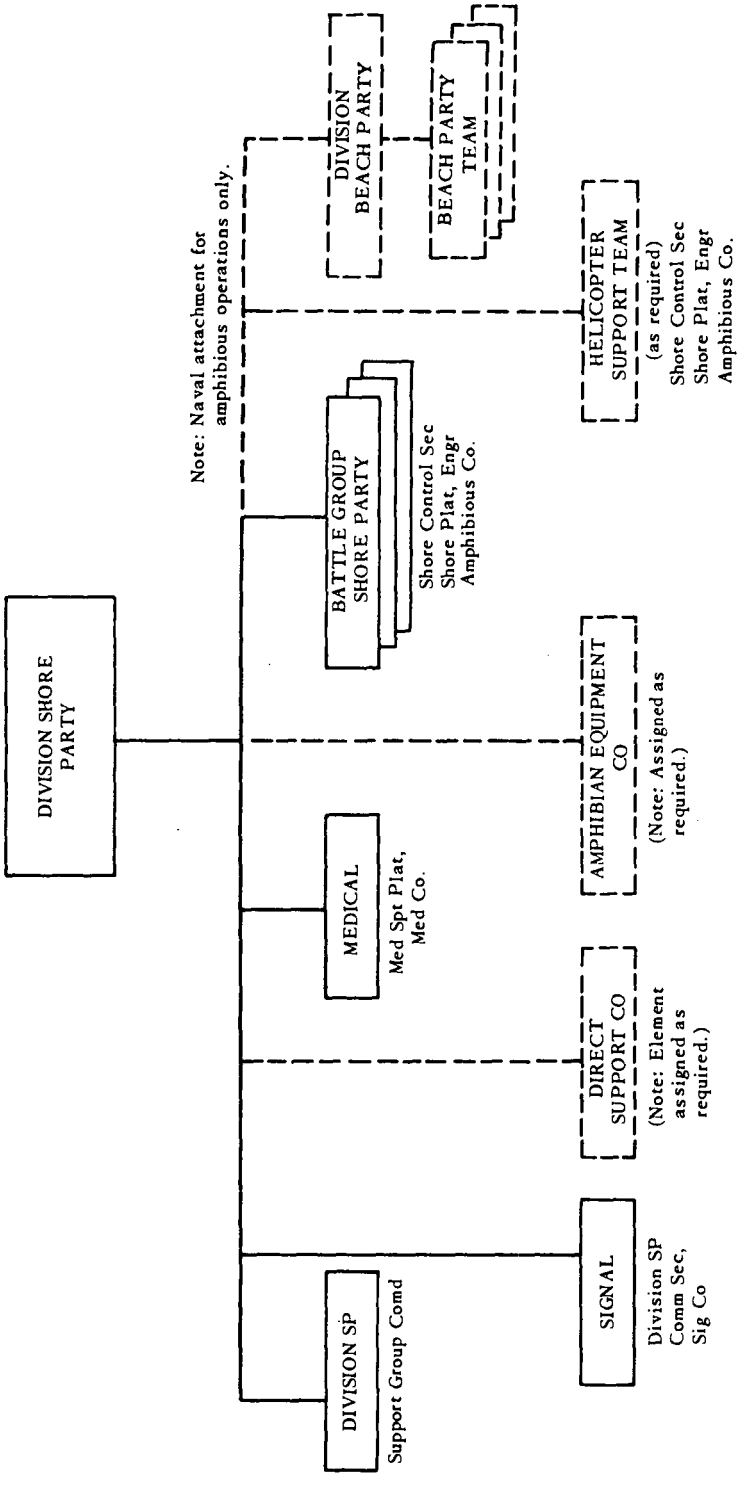

Figure 58. Typical EASC nucleus for division shore party.

APPENDIX XI

THE DENTAL ESTIMATE

Dental Surgeon
Thirtieth Army
Hintemorchent, Algeria
151200 June 58

Dental Estimate #6
Map: North Africa, Oran Area, Special 1:325,000

1. Mission

To provide dental suport to Thirtieth Army in offensive operations to the east to seize Algiers in conjunction with the British Tenth Army.

2. Situation and Considerations

a. Intelligence situation.

(1) *Characteristics of the area of operations.* See tactical Study of Weather and Terrain Annex A to Intel Est #19, 1 June 58.

(2) *Enemy strengths and dispositions.* See Annex A, Admin overlay to Admin O #7, 3 June 58, and Intel Est #19, 1 June 58.

(3) *Enemy capabilities.*

(*a*) En air, although greatly outnumbered, can be expected to continue harassing atk of the hit-and-run type on fwd and rear area installations.

(*b*) En nuclear capability has been reduced due to recent heavy expenditures and concentrated counter battery fire by our missile bns.

b. Tactical situation.

(1) Present disposition of major tactical elements. See Annex A, Admin overlay to Admin O #7, 3 June 58.

(2) Possible courses of action. See Opns Est #14, 14 June 58.

(3) Projected operations.

(*a*) Thirtieth Army will atk, target date 1 Aug, destroy Aggressor in zone and seize Algiers in conjunction with British Tenth Army.

(*b*) 21st and 74th Inf Divs and 32d Armd Div asgd to Thirtieth Army at points to be designated by Army 1 July 58.

c. Personnel situation.

(1) See Pers Est #14, 14 June 58.

(2) Strength to be supported.
16–30 June 267,772
1–31 July 371,408
1–15 Aug 385,304

(3) Present oral health of Thirtieth Army troops excellent.

(4) 21st Inf Div reportedly did not fully meet POR dental requirements upon arrival in theater 1 June 58.

(5) Dental health of 74th Inf Div and 32d Armd Div unknown.

d. Civil Affairs. See CA Est #9, 2 June 58.

e. Logistical situation. See Admin O #7, 3 June 58. Additional svc trp will be available to Thirtieth Army 26 June 58.

f. Assumptions. That dental health of 74th Inf Div & 32d Armd Div is average.

g. Special factors.

(1) Present status of dental service to Thirtieth Army is excellent. Dental units at 95% strength, no shortage of critical MOS, and units are well trained.

(2) 841st & 847th Evac Hosps short oral surgeons MOS 3171.

(3) 8173d Central Dental Laboratory (KN), Oran, will support Thirtieth Army.

(4) Additional dental units required because of increased troop strength will be newly arrived from CONUS and will require considerable orientation and acclimatization.

3. Analysis

a. Materiel and services.

(1) Supply.

(*a*) Requirements. Normal.

(*b*) Availability.
Current shortages of medical supplies of no consequence and will be made up prior to beginning of offensive.

(*c*) Limiting features. None.

(2) Transportation.

(*a*) Requirements.

1. 8143d Dent Svc Det short 1 truck 2½-ton and 2 trucks ¼-ton which were destroyed by enemy air action.

2. 8149th Dent Svc Det short 1 truck ¾-ton and 1 trailer, cargo ¾-ton damaged in accident.
3. 8162d Dent Pros Det short 1 truck 2½-ton deadlined for repairs.

(*b*) *Availability.*
TOE transportation currently available adequate for current operations.

(*c*) *Limiting factors.*
1. Shortages of vehicles must be made up prior to offensive as supported units will not be able to provide transportation at that time.
2. Deadlined vehicle not scheduled for release prior to offensive.

(3) Services.

(*a*) Requirements.
Increased number of svc trps will require additional dental support in army maintenance area.

(*b*) Availability.
Service troop availability for dental care will be less until approx 1 Aug due to increased activity in preparation for coming offensive.

(*c*) Limiting features. None.

b. Medical/evacuation and hospitalization.

(1) Requirements.

(*a*) Experience factors indicate above average number of maxillo-facial injuries occurring in this theater indicating need for additional Maxillo-facial Detachments (Team KD).

(*b*) Hospital dental svc adequate for present operation.

(2) Availability.
841st & 847th Evac Hosp short oral surgeons MOS 3171.

(3) Limiting features.
Shortage of oral surgeons limits capability of dental svcs of those hospitals.

c. Miscellaneous.

(1) Increased troop strength for the coming offensive requires increasing dental troop ceiling from 554 to 792.

(2) Following additional dental units will be required.

(*a*) 6 Dent Svc Det (Team KJ).

(*b*) 1 Dent Pros Det (Team KK).

4. Comparison

The limitations of dental support for the coming operation are minor and can be remedied to the extent that will cause no effect on the operation.

a. Sufficient time is available to receive and train the additional dental units required.

b. Concentration of dental support to troops phasing in will bring them up to acceptable level of dental health.

c. Coordination with TaLogCom to request adequate dental support to 74th Inf Div and 32d Armd Div will be effected.

d. Transportation and supply shortages may be alleviated in sufficient time.

e. Critical MOS personnel shortages must be eliminated.

5. Conclusions

a. The mission can be supported dentally.

b. The dental limitations are—

(1) Shortage of oral surgeons.
(2) Shortage of vehicles.
(3) Coordination must be effected with theater Army for additional dental units.

/s/ Moore
MOORE
Dental Surgeon

APPENDIX XII

THE DENTAL PLAN

Thirtieth Army
Himtemorchent, Algeria
171200 June 58

Annex _____ (Dental) to Logistics Plan _____

Map: North Africa, Oran Area, Special 1:325000

1. General Situation (omitted)

2. Mission

To provide dental support to Thirtieth Army in offensive operations to the east to seize Algeria, in conjunction with the British Tenth Army.

3. Execution

Dent Spt normally provided on area basis by TOE dent units. Hosp dent svc respons for dent trt of pts and asgd and attch pers. Dent units prepare to participate local area defense and damage control.

4. Materiel and Services

a. Medical Supply.

(1) Supply priorities and requisitioning procedure; SOP this headquarters.

(2) Regulated items. All requisitions for regulated items referred by medical supply officer to Dental Surgeon this hqs for approval prior to issue.

(3) Units.

(*a*) 840th Army Medical Depot, TLEMCEM J8289: Local issue and support forward medical supply points.

(*b*) 9411th Medical Supply Point, ST BARBE TLAT E3238: Local issue and support I Corps.

(*c*) 8412th Medical Supply Point, BLAUDENS E3110: Local issue and support II Corps.

(*d*) 8413th Medical Supply Point, LAMTAR E1205: Local issue and support III Corps upon commitment.

b. Transportation.

(1) *Organic transportation used to maximum.* Requests for transportation from supported units on emergency basis only, otherwise such requests through this hqs.

(2) Ten or more vehicles moving as a convoy must obtain road clearance from nearest highway regulating point. Unit commanders will furnish the following information:

(*a*) Unit designation.

(*b*) Number of vehicles by types.

(*c*) Origin (include coordinates).

(*d*) Destination (include coordinates).

(*e*) ETD origin.

(*f*) ETA destination.

c. Service.

(1) *Technical services.*

(*a*) *Engineer.* Requests for real estate submitted to Engineer through Dental Surgeon this hqs.

(*b*) *Medical.*

1. Medical equipment maintenance. Evacuation to medical depot or supply point by using unit for field maintenance.

2. Dispensary service. Medical group commands provides dispensary service and evacuation to units on request. Supported units notify supporting dispensary of arrival, departure, and unit strength.

3. Preventive medicine. See Sanitary Order Nr 31 this hqs dated 1 June 58.

4. Dental service.

(a) Dental Service Detachments (Team KJ) will be attached for necessary logistical support only. Subordinate teams of dental service detachments will be attached informally to supported units for rations only.

(*1*) 8140th Dental Service Detachment, MONTAGNAC (7504); Atch 821 Med Bn; Provide area dental service to subarea A.

(*2*) 8141st Dental Service Detachment, CHAPZY (1597); Atch 822 Med Bn; Provide area dental service to sub-area D.

(*3*) 8142d Dental Service Detachment, AUJA (4878); Atch 841 Evac Hosp; Provide area dental service to sub-area C west of vicinity of TUREENE (6988).

(*4*) 8143d Dental Service Detachment, TLEMCEN (8189); Atch 840 Med Depot; Support local troops.

(*5*) 8144th Dental Service Detachment, ST BARBE DE TIAT (3239); Atch Hq & Hq Co I Corps; Provide area dental service to I Corps troops.

(*6*) 8145th Dental Service Detachment, BLAUDENS (3110); Atch Hq & Hq Co II Corps; Provide area dental service II Corps troops.

(*7*) 8146th Dental Service Detachment, LAVAYSSIERE (7903); Atch 875 Clearing Co; Support local troops.

(*8*) 8147th Dental Service Detachment, AIN TEMOUCANET (9222); Atch 811 Med Bn; Support local troops.

(*9*) 8148th Dental Service Detachment, PARMENTIER (0906); Atch 850 Evac Hosp (Smbl); Support local troops.

(*10*) 8149th Dental Service Detachment, SIDI DEL ABBES (2012); Atch 803 Med Gp; Support local troops.

(*11*) 8150th Dental Service Detachment, ST BARBE DU TIAT (3239); Atch Hq Co 23d Armd Div Med Bn; Support 23d Armd Div.

(*12*) 8151st Dental Service Detachment, ST MEID (4409); Atch Hq Co 25th Armd Div Med Bn; Support 25th Armd Div.

(*13*) 8152d Dental Service Detachment, DES CARTES (0597); Atch Hq Co 21st Med Bn; Support 21st Inf Div.

(*14*) 8153d Dental Service Detachment, AIN EL ARBA (0729); Atch Hq Co 72d Med Bn; Support 72d Inf Div.

(*15*) 8154th Dental Service Detachment, BOV KHANGFIS (1604); Atch Hq Co 32d Med Bn; Support 32d Armd Div.

(*16*) 8155th Dental Service Detachment, BOV TIELIS (0641); Atch Hq Co 74th Med Bn; Support 74th Inf Div.

(*17*) 8156th Dental Service Detachment, SIDI DEL ABBES (2012); Atch III Corps; Support III Corps troops.

(*18*) 8157th Dental Service Detachment, HAMMAN

BOU HADJOR (0226); Atch Hq Co 72d Med Bn; Assist 8153d Dental Service Detachment in support of 72d Inf Div.

(*19*) 8158th Dental Service Detachment, SIDI DEL ABBES (2012); Atch 803d Med Gp; Closed.

(*20*) 8159th Dental Service Detachment, TASSIN (0702); Atch Hq 21st Med Bn; Assist 8152d Dental Service Detachment in support of 21st Inf Div.

(b) *Dental Prosthetic Detachments (Team KK).*

(*1*) 8162d Dental Prosthetic Detachment, CHAPZY (1597); Atch 8141st Dental Service Detachment.

(*2*) 8163d Dental Prosthetic Detachment, LANO-KICIERE (9494); Atch 805th Conv Ctr.

(*3*) 8164th Dental Prosthetic Detachment, ST BARB DU TIAT (3239); Atch 8150th Dental Service Detachment.

(c) Dental Service provided units on request this headquarters or CO of closest Dental Service Detachment.

(d) Supported units notify supporting unit of arrival, departure and unit strength.

(e) Units in support of divisions relieved of attachment when division is committed.

(*c*) *Ordnance.* 2d and 3d echelon motor maintenance from unit to which atchd.

(*d*) *Signal.* Signal communication only through supported units.

5. Evacuation and Hospitalization

See Annex _____ (Medical Plan).

6. Miscellaneous

a. Personnel. Report daily excess or shortage in critical MOS.

b. Defense.

(1) *Unit defense SOP.* Plans to dental surgeon this hqs for information.

(2) *Area defense and damage control.*

(*a*) Max participation all dental units in support of area defense and damage control operations.

(*b*) Unit commanders report to nearest area damage control officer upon relocation of unit.

(3) *Dental records* (*see Thirtieth Army SOP*).

c. This plan effective on receipt for planning and for execution on order.

/s/ Baker
BAKER
General, USA

APPENDIX XIII

SAMPLE STANDARD OPERATING PROCEDURE FOR DENTAL SERVICE IN AN ARMY AREA

Thirtieth Army
Hintemorchent, Algeria
10 May 19—

A. Annex K (Dental) to SOP.

1. General

a. This annex prescribes procedures for Dent Svc in Army area.

b. TOE dent orgn atch to other units for qtrs and rat only.

2. Operations

a. Prevention.

(1) *Oral Hygiene.* See par 6d(2), SOP.

(2) Units not having asgn Dent pers will receive tng in oral hygiene on call to Dent Surg. See Admin O.

b. Detection. Dent surveys will be accomplished:

(1) Annually.

(2) Upon 10 percent turnover in str of comd.

(3) By Dent Surg on call from units. See Admin O.

c. Treatment.

(1) Hosp Dent svc to pat and asgn or atch pers only.

(2) Units without Dent pers receive Dent Treatment on an area basis. See Admin O.

(3) Dent Care for PW only at camps or cages, except in case of emerg.

3. Records

a. The preparation, maint and dspn of Dent rod is the responsibility of the Dent fac serving the orgn, either organically or on an area basis.

b. Dent Health Rcd (SF 603), maint by the Dent Fac serving the orgn, will be kept current to reflect all Dent treatment recvd.

4. Supply

a. Captured Dent equip and sup will be used only after approval of Dent Surg, this hq.

b. Maintenance.

(1) 1st and 2d ech maint is responsibility of using Dent fac.

(2) Major maint and repair by nearest med sup dep.

ADAMS
GENERAL

DISTR: A
OFFICIAL:
/s/ Allen
G4

APPENDIX XIV

EPIZOOTIOLOGIC SURVEY

1. Number and percentage of animals of each species affected—cases of the disease.

2. Virulence or severity of the disease in the various species of animals.

3. Resistance of animals (native and imported) to the disease. (Natural immunity.)

4. Name and type of causative agent.

5. Methods of transmission.

6. Carrier problem.

a. Species of animals involved.

b. Percentage of recovered animals serving as carriers.

c. Percentage of species of animals not showing symptoms of the disease but are reservoirs of infection.

7. Vectors.

a. Those known to transmit the disease.

b. Those suspected of transmitting the disease.

8. Time of first introduction of the disease into the area or locality and time of introduction in current outbreak.

9. Means by which the disease was introduced into the area.

10. Geographical distribution of the disease in the country.

11. Seasonal occurrence of the disease.

12. History of the disease in the country.

13. Self-limiting aspects of disease.

14. Methods which are currently being used to diagnose the disease.

15. Measures which have been adopted and are currently being enforced to control disease and prevent its spread.

16. *a.* Biological products known to be efficacious.

b. Efficacy of products currently being used to control the disease.

17. Regulations—Federal, State, or local—presently in effect—to control disease; status of enforcement of such regulations.

18. *a.* Degree of susceptibility of man to the disease.

b. Method or methods by which man contracts the disease from animals.

19. Virulence or severity of the disease in man.

20. Overall efficacy of methods of control.

APPENDIX XV

THE VETERINARY ESTIMATE

1. Mission (The specific medical support mission)

2. Situation and Considerations

a. Characteristics of the Area of Operations (Same as for medical estimate).

b. Enemy Situation

(1) Strength and disposition of animals.
(2) State of health of animals.
(3) Capabilities.

c. Friendly Situation.

(1) Size and posture of class I supply system.
(2) Type of rations to be used.
(3) Status of class I supplies.
(4) Strength and disposition of animals (if applicable).
(5) Status of veterinary supply.

d. Strengths to be Supported (Normally a table to include food inspection support and animal support, if applicable).

(1) Army.
(2) Navy.
(3) Air Force.
(4) Allied.
(5) Civilians.
(6) Others.

e. Physical Condition of the Command (if applicable to this estimate).

(1) Origin of animals.
(2) Presence of disease.
(3) Status of immunizations.
(4) Status of diagnostic tests.
(5) Status of nutrition.
(6) Care and management.
(7) Fatigue.

f. Assumptions.

g. Special Factors.

3. Veterinary Analyses

a. Estimates.

(1) Distribution of class I installations.
(2) Distribution of subsistence (perish and nonperish).
(3) Local procurement.
(4) Extent of inspection load of indigenous foods for indigenous personnel (if applicable).
(5) Estimate of animal casualties (if applicable).
(6) Evacuation of animal casualties (if applicable).

b. Veterinary Requirements.

(1) Food inspection.
(2) Preventive medicine.
(3) Veterinary supply.
(4) Hospital treatment.
(5) Evacuation.
(6) Other (CA, etc.).

c. Veterinary Means Available.

(1) Organic veterinary personnel.
(2) Attached veterinary units.
(3) Supporting veterinary units.
(4) Civil veterinary public health personnel.
(5) The veterinary troop ceiling.
(6) Status of veterinary supply.

4. Veterinary Courses of Action (List those policies and procedures which will accomplish the veterinary mission)

5. Veterinary Evaluation

a. Outstanding veterinary elements and controlling limiting features.

b. Relative advantages and disadvantages of each course of action available.

6. Conclusions

APPENDIX XVI

THE VETERINARY PLAN

(Extracted from paragraph 4, appendix III)

c. *Service.*

(6) *Veterinary service.*

(*a*) *Food inspection*—

1. Procurement inspection policy.

2. Units. (Separate subparagraphs for each unit, giving location, mission, hours of opening or closing, and attachments if indicated.)

3. Captured and/or contaminated ration inspection policy.

(*b*) *Evacuation*—

1. Evacuation policy.

2. Requirements.

3. Units. (Separate subparagraphs giving location, mission, and attachments if indicated for each subordinate evacuation unit.)

(*c*) *Hospitalization*—

Units. (Separate subparagraphs for each hospital, giving location, mission, hours of opening or closing, and attachments if indicated.)

(*d*) *Dispensary service*—

Units. (Separate subparagraphs for each facility, giving location, mission, hours of opening or closing, and attachments or animals supported.)

By Order of *Wilber M. Brucker*, Secretary of the Army:

G. H. DECKER,
General, United States Army,
Chief of Staff.

Official:

R. V. LEE,
Major General, United States Army,
The Adjutant General.

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For explanation of abbreviations used, see AR 320–50.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1960—570516

FIELD MANUAL

ARMY MEDICAL SERVICE PLANNING GUIDE

FM 8–55
CHANGES No. 3

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., *9 August 1962*

FM 8–55, 23 October 1960, is changed as follows:

The following pen-and-ink changes will be made:

Page 19, paragraph 15*d*. (As changed by C 1, 22 Sep 61) Change "precedures" on line 6 to read procedures.

Page 19, paragraph 16. (As changed by C 1, 22 Sep 61) Change "outsanding" on line 4 to read outstanding.

Page 21, paragraph 20*e*. (As changed by C 1, 22 Sep 61) Change "precedures" on line 9 to read procedures.

Page 22, paragraph 20*g*. (As changed by C 1, 22 Sep 61) Change "installation" on line 20 to read installations. Substitute a comma for a period after word "locations" on line 20.

Page 27, paragraph 23*b*(2)(*a*). (As changed by C 1, 22 Sep 61) Insert craft between "landing" and "for".

Page 29, paragraph 23*c*. (As changed by C 1, 22 Sep 61) Delete comma after "exploitation" on line 7. Change "installation" on line 9 to read installations.

Page 49, paragraph 41. (As changed by C 1, 22 Sep 61) Change "current" on lines 2–3 to read currently.

Page 52, table II, Footnote 3. (As changed by C 1, 22 Sep 61) Insert comma after "South Atlantic" on line 2.

Pages 64–65, paragraph 55. (As changed by C 1, 22 Sep 61) Change "establishments" on line 2 to read establishment. Add (see AR 40–58 and AR 40–130.) at end of this paragraph.

Page 68, paragraph 63. (As changed by C 1, 22 Sep 61) Change reference to "DA Supply Manuals 8–4 Series" on lines 11–12 to read Department of the Army Supply Manuals, 8–4–6545-series.

Page 68, paragraph 64. (As changed by C 1, 22 Sep 61) Change "8–4 series" on line 4 to read 8–4–6545-series.

Page 68, paragraph 64. Change "(property copies of Army Shipping Documents)" on line 5 to read (copies of DD Form 1148 Invoice/Shipping Documents). Change "Army Shipping Documents (ASD)" on lines 9–10 to DD Form 1148, Invoice/Shipping Documents.

Page 70, paragraph 66*d*. (As changed by C 1, 22 Sep 61) Delete "civilian assistance programs" from line 6.

***These changes supersede C1, 22 September 1961 and C 2, 27 March 1962.**

Page 71, paragraph 67*c*. (As changed by C 1, 22 Sep 61) Change title "Reserve Assemblages" to read Replacement Requirements.

Page 72, paragraph 69. (As changed by C 1, 22 Sep 61) Add and control of intentionally induced infectious disease to end of first sentence. Insert chemical between "quartermaster" and "and" in second sentence.

Page 72, paragraph 70. (As changed by C 1, 22 Sep 61) Change "Shortage" in title to read Storage.

Page 73, paragraph 72. (As changed by C 1, 22 Sep 61) Change "(AR 715–830)" in second sentence to read (app. VI, AR 715–30).

Page 73, paragraph 72*a*. (As changed by C 1, 22 Sep 61) Change "AR 715–835" on line 2 to read appendix VI, AR 715–30.

Page 74, paragraph 74*b*(1). (As changed by C 1, 22 Sep 61) Change "Armed Services Medical Stock List" on lines 1–2 to read Federal Supply Catalog, Department of Defense Section, Medical Materiel.

Page 75, paragraph 75*e*. (As changed by C 1, 22 Sep 61) Change "wherby" on line 7 to read whereby.

Page 83, paragraph 80. (As changed by C 1, 22 Sep 61) Change "SR 700–51 Series" on line 14 to read AR 701-series.

Page 87, paragraph 84*d*. (As changed by C 1, 22 Sep 61) Insert a comma on line 4 between "repairs" and "as". Insert a comma on line 5 between "permits" and "eliminates".

Page 94, paragraph 94. Delete sentence "Use of DA Form 468 *** purpose is encouraged."

Page 95, paragraph 97. (As changed by C 1, 22 Sep 61) Change "grantd" on line 13 to read granted.

Page 100, paragraph 101*d*(1). (As changed by C 1, 22 Sep 61) Change "expresed" on line 7 to read expressed. Insert a line between "$\frac{1}{1}$" in the numerator of the first formula on line 10.

Page 105, paragraph 104*e*(1). (As changed by C 1, 22 Sep 61) Change "in the count noneffective" on line 19 to read in the count of noneffectives.

Pages 105–106, paragraph 104*e*(2). (As changed by C 1, 22 Sep 61) Change "day" on line 11 to read days. Change "devided" on line 15 to read divided. Change "noneffective" on line 24 to read noneffectives. Delete "division line" in formula on line 36. Formula should read: Noneffective rate = daily admission rate × average days per patient.

Page 106, paragraph 104*f*. (As changed by C 1, 22 Sep 61) Insert a period after word "cases" on line 7.

Page 107, paragraph 104*f*(2). (As changed by C 1, 22 Sep 61) Change second sentence on lines 6–9 to read: This, of course, is not a precise determination since the *f* factor does not represent all of the deaths which result among the particular group of cases *c*, nor is it the only number of deaths among these cases.

Page 108, paragraph 105. (As changed by C 1, 22 Sep 61) Change "diseases" on line 3 to read disease.

Page 109, paragraph 108*b*. (As changed by C 1, 22 Sep 61) Change "patient" on line 1 to read patients.

Page 110, paragraph 108*c*. (As changed by C 1, 22 Sep 61) Change "to the nonbattle" on line 10 to read to be nonbattle.

Page 114, table XVI, (As changed by C 1, 22 Sep 61) Insert footnote number 1 after word "Army" on line 1 of table title.

Page 122, paragraph 112. (As changed by C 1, 22 Sep 61) Change "Caucasion" on line 4 to read Caucasian.

Page 123, figure 5. (As changed by C 1, 22 Sep 61) Delete "BEE" before "Beebe" in the source note.

Page 125, table XXIV, footnote 1. (As changed by C 2, 27 Mar 62) Change parenthetical phrase on lines 2–3 to read (WD AGO Form 8–122 and DD Form 442).

Note. These forms have been superseded and are no longer in use.

Page 127, paragraph 117*a*. (As changed by C 1, 22 Sep 61) Change "Self-inflcted" on line 11 to read self-inflicted.

Page 128, paragraph 117*a*(1). (As changed by C 1, 22 Sep 61) Change "Adjustant" on line 14 to read Adjutant.

Page 130, paragraph 119. (As changed by C 1, 22 Sep 61) Change "estensive" on last line to read extensive.

Page 131, table XXVII, footnote 1. (As changed by C 1, 22 Sep 61) Change "occured" on line 3 to read occurred.

Page 135, table XXX, footnotes. (As changed by C 1, 22 Sep 61) Change "2. Total Hit:" on line 2 to read 1. Total Hit:

Page 137, paragraph 120. (As changed by C 1, 22 Sep 61) Insert word "*War*" between words "World" and "II" on line 39.

Page 143, paragraph 124*b*. (As changed by C 1, 22 Sep 61) Replace the semicolon after "War" on line 3 with a colon.

Pages 151–152, table XLIII. (As changed by C 1, 22 Sep 61 and C 2, 27 Mar 62) Change the word "wounded" in the heading of the third column to would. In footnote 1, change parenthetical phrase on line 2 to read (WD AGO Form 8–122 and DD Form 442).

Note. These forms have been superseded and are no longer in use.

Page 156, paragraph 129*b*(4). (As changed by C 1, 22 Sep 61) Change word "greately" on line 3 to read greatly.

Page 157, paragraph 129*c*. (As changed by C 1, 22 Sep 61) Change "diseases" on line 6 to read disease.

Page 157, paragraph 129*d*. Change "of unit" on line 3 to read of the unit.

Page 159, paragraph 133*a*(3). (As changed by C 1, 22 Sep 61) Change "FM–31(S)" on line 1 to read FM 101–31(S), and delete the period after word "Nuclear".

Page 159, paragraph 133*b*(2). (As changed by C 1, 22 Sep 61) Change "Atomic" on line 1 to read Nuclear.

Page 160, paragraph 133*c*. (As changed by C 1, 22 Sep 61) Change "Atomic" on line 13 to read Nuclear.

Page 161, paragraph 136*a*. (As changed by C 1, 22 Sep 61) Insert the word nevertheless inclosed in commas, between "given" and "of" on line 5.

Page 170, paragraph 138. (As changed by C 1, 22 Sep 61) Change "on" on line 7 to read or.

Page 171, paragraph 139*a*. Change lines 10–11 of paragraph to read "in increments of 30 days or, on occasion, the evacuation policy may be set at 15 days."

Page 171, paragraph 139*a*. (As changed by C 1, 22 Sep 61) Change "evacuaction" on line 43 of paragraph to read evacuation.

Pages 173–174, paragraph 139*f*. (As changed by C 1, 22 Sep 61) Change second sentence to read "These increased numbers, as such, are not of as great significance as the rate at which they are produced."

Page 175, paragraph 140*b*. (As changed by C 1, 22 Sep 61) Insert comma after word "moved" on line 15.

Page 178, paragraph 143*a*. (As changed by C 1, 22 Sep 61) Change "evacution" on line 15 to read evacuation.

Page 180, paragraph 143*c*. (As changed by C 1, 22 Sep 61) Insert phrase of course inclosed in commas, between words "will" and "increase" on last line.

Page 181, paragraph 143*f*. Change line 3 to read "requirements a 15-day or 30-day evacuation policy is normally used during"

Page 181, paragraph 143*f*. (As changed by C 1, 22 Sep 61) Insert phrase of course inclosed in commas, between ("Decumulation" and "is") on line 26.

Page 182, paragraph 143*f*(1). (As changed by C 1, 22 Sep 61) Insert after the between "time" and "beginning" on line 3.

Page 182, paragraph 143*f*(2). (As changed by C 1, 22 Sep 61) Insert comma between "(day X)" and "who" on line 3.

Page 186, table L. (As changed by C 1, 22 Sep 61) Change the factor "0.63" in column 12, item 3, to read 0.83.

Page 218, paragraph 147. (As changed by C 1, 22 Sep 61) Add the following sentence to the end of paragraph: See tables LVII.1 through LVII.4 for the disposition of evacuee patients in the zone of interior.

Page 221, table LVII. Add the following under indicated columns:

Line	*Col 1*	*Col 2*	*Col 3*	*Col 4*	*Col 5*	*Col 6*	*Col 7*	*Line*
6	15 day	1.871	0.496	0.004	0.052	1.125	2.452	6

Page 239, paragraph 149*c*(4). (As changed by C 1, 22 Sep 61) Change "B&NBI" on line 3 to read D&NBI.

Page 242, table LVIII. (As changed by C 1, 22 Sep 61) Change "award" on line 33 to read ward.

Page 243, table LIX, *A*. Add the following under indicated columns:

Evac policy	*30 days*	*60 days*	*Total evacuated from theater*
15 days	49.99	31.75	81.74

Page 243, table LIX, *B*. Add the following under indicated columns:

Evac policy	*30 days*	*60 days*	*Total evacuated from theater*
15 days	26.89	10.61	37.50

Page 245, paragraph 154*a*. (As changed by C 1, 22 Sep 61) Change "recovery" on line 3 to read recovered.

Page 261, paragraph 178. (As changed by C 1, 22 Sep 61) Change "peactime" on line 3 to read peacetime.

Page 270, paragraph 188.*a* (As changed by C 1, 22 Sep 61) Change "purchased" on line 3 to read purchase.

Page 271, paragraph 188*d*. (As changed by C 1, 22 Sep 61) Change "establishment of" on line 5 to read establishment or.

Page 272, paragraph 190. (As changed by C 1, 22 Sep 61) Change "diability" on line 8 to read disability.

Page 272, paragraph 191, (As changed by C 1, 22 Sep 61) Change "Conisderations" in title to read Considerations.

Page 274, paragraph 192*b*. (As changed by C 1, 22 Sep 61) Insert the between "in" and "paragraph" on line 4.

Pages 280–282, appendix I:

*Add AR 40–1 Composition, Mission and Functions of the AMEDS

*Change title of AR 40–2 to read Army Medical Service Treatment Facilities—General Administration

*Delete "AR 40–3 Dental Corps"

*Add AR 40–58 Medical Materiel Program for Nuclear Casualties

*Add AR 40–130 Emergency Medical Care Program

Add AR 40–655 Prevention and Control of Communicable Diseases of Animals

Add AR 40–657 Veterinary Food Inspection Service

Delete "AR 40–950 Veterinary Meat and Dairy Hygiene: General"

*Delete "AR 40–960 Veterinary Forage Inspection"

Delete "AR 310–2 Department of the Army Publications Media & Numbering"

Change title of AR 310–3 to read Military Publications: DA Publications—Preparation, Coordination and Approval.

Change title of AR 330–10 to read Data Processing Units

*Add AR 701-series, List of Supplies

*Transpose titles of AR 710–60 and AR 711–16

*Add AR 715–30 Local and Regional Purchase of Civilian Type Items

*Delete "AR 715–835 Local Procurement of Medical Supplies and Equipment"

Change title of AR 746–80 to read Marking of Supplies for Shipment

Delete "SR 40–930–1 Veterinary Food Inspection"

Delete "SR 40–940–5 Communicable Diseases of Animals"

Delete "SR 40–950–1 Veterinary Meat and Dairy Hygiene: General"

*Delete "SR 700–51-series, List of Supplies"

*Delete "SR 742–607–1 Serviceability Standards for Classification of Technical Medical Equipment"

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* As changed by C 1, 22 Sep 61.

Add (Parts I and II (Unclassified) and Part III (Classified)) to title of FM 101–10 Staff Officers Field Manual: Organization, Technical, and Logistical Data.

*Change number of "Staff Officers Field Manual: Nuclear Weapons Employment (U)" from "FM 101–10" to FM 101–31.

*Add SB 38–100 Preservation, Packaging, and Packing Materials, Supplies and Equipment Used by the Army

*Add SM 8-series, Federal Supply Catalog, DoD Section, Medical Materiel

*Delete "SM 8–1 and –5, Armed Services Medical Stock List"

*Change "SM 8–4 Series" to read SM 8–4–6545 Series

Page 300, appendix V. (As changed by C 1, 22 Sep 61) On line 3 of paragraph 1011.0, change "insitutions" to read institutions.

Page 319, appendix VIII. (As changed by C 1, 22 Sep 61) Paragraph 6. Change "it would not be a matter of a few hours until the attendants would have become contaminated" on lines 8–9 to read it would be a matter of only a few hours until the attendants became contaminated.

Page 334, appendix XIII. (As changed by C 1, 22 Sep 61) Paragraph 3*a*. Change "rod" on line 1 to read rcd.

61. Responsibility

The Surgeon General *** assemblage-building program. **Requisitions will be forwarded by the Surgeon General to the appropriate heads of technical services for the required authorized TOE items citing authority for shipment and specifying markings. This equipment will be consolidated into an assemblage and delivered to the unit at the Army terminal or near the site of actual employment in performance of its primary mission.** When assemblages are moving *** of unit assemblages.

71. Cross Servicing

(Superseded)

The Army will provide medical supply support to Navy and Air Force units as specified in Department of Defense and Department of the Army directives and interservice support agreements negotiated in accordance with such directives.

76. Storage Considerations

* * * * * * *

c. Allocation of Area and Facilities. Acquisition of real *** of new facilities.

* * * * * * *

(6) *Packing and crating material.* Because of certain *** conditions of storage. **Preservation, packaging, and packing procedures are outlined in Military Specification MIL–P–116, Methods of**

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* As changed by C 1, 22 Sep 61.

Preservation, and TM 38–230. Necessary packaging and packing materials and supplies may be obtained from the Quartermaster Corps, Corps of Engineers, etc. (See SB 38–100).

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84. General

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f. Inspections and Reports. Command and technical *** of its maintenance. **The Command Maintenance Inspection is one means by which this may be accomplished. The details of command inspections, including reporting procedures, may be found in AR 750–8. For particulars on the Medical Equipment Maintenance Record refer to AR 750–808.**

109.1 Effect of Nuclear Attack

(As added by C 2, 27 Mar 62)

Nuclear attack on CONUS with the attendant damage, contamination, and fallout introduces new elements which will affect the magnitude of disease and nonbattle injury rates among survivors. A preliminary gross estimate which may be used in planning for nuclear warfare, indicates that a multiplying factor of 2.8 should be applied to the average nonbattle admission rates as shown for CONUS in tables XXII, XXIII, and XXVI.

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130. General

(As superseded by C 2, 27 Mar 62)

This section will guide the medical staff officer in estimating casualties in a nuclear war. The estimations as described in this section are in addition to those resulting from conventional warfare. When developing battle casualty estimates for theaters of operation, the planner should use the material provided in section II, "Personnel Losses in Nuclear War," chapter 2, FM 101–10, part III (Classified Data).

143. Explanation of Factors Used in Computing Fixed Bed Requirements

a. Basis of Fixed Bed Allotment. (As changed by C 2, 27 Mar 62) The total authorization *** the projected operation. **Factors and methods for estimating hospitalization and evacuation requirements under nuclear warfare are given in section VII, chapter 5, FM 101–10, part III (Classified Data).**

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f. Experience Factors for Accumulation of Patients Dependent Upon the Evacuation Policy. For determining theater *** through (4) below—

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(3) *Accumulation-decumulation factors, second type (AD–11).* These factors indicate *** and/or admission rate. **For evacuation policies shorter than 30 days, and increase in length of evacuation policy to 30 days has no effect on patients remaining at the end of 60 days (X+30 days). Therefore, AD–II factors for an increase in evacuation policy from 15 days during any month of operations to 30 days at the beginning of a succeeding month of operations, would be identical to AD–I factors shown for the 15-day evacuation policy. Also any increase in the length of very short evacuation policies beyond the 30-day policy is not practical. In view of this, AD–II factors for increased evacuation policies are related to the 30-day evacuation policy as basic.**

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Table XLIX. Disease and Nonbattle Injury (Superseded)

Accumulation Factors [1] and Accumulation-Decumulation Factors (AD–I)[2]

Periods of estimate in intervals of 30 days

1	1	2	3	4	5	6	7	8	9	10	11	12
		Theater factors										
1	Periods of estimate	Evacuation policies										Periods of estimate
		120 day		90 day		60 day		30 day		15 day		
		ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	
2	30	13.43	13.43	13.34	13.34	13.11	13.11	11.40	11.40	7.32	7.32	30
3	60	16.46	3.03	15.95	2.61	14.67	1.56	11.40	0	7.32	0	60
4	90	17.67	1.21	16.51	0.56	14.67	0	11.40	0	7.32	0	90
5	120	17.94	0.27	16.51	0	14.67	0	11.40	0	7.32	0	120
6	150 & over	17.94	0	16.51	0	14.67	0	11.40	0	7.32	0	150 & over
		CONUS [4] factors										
7	30	0.13	0.13	0.22	0.22	0.45	0.45	2.16	2.16	6.24	6.24	30
8	60	0.76	0.63	1.27	1.05	2.55	2.10	5.82	3.66	9.90	3.66	60
9	90	1.80	1.04	2.96	1.69	4.80	2.25	8.07	2.25	2.15	2.25	90
10	120	3.06	1.26	4.49	1.53	6.33	1.53	9.60	1.53	13.68	1.53	120
11	150	4.05	0.99	5.48	0.99	7.32	0.99	10.59	0.99	14.67	0.99	150
12	180	4.67	0.62	6.10	0.62	7.94	0.62	11.21	0.62	15.29	0.62	180
13	210	5.05	0.38	6.48	0.38	8.32	0.38	11.59	0.38	15.67	0.38	210

See footnotes at end of table.

Table XLIX—Continued

1	1	2	3	4	5	6	7	8	9	10	11	12
		Theater factors										
1	Periods of estimate	Evacuation policies										Periods of estimate
		120 day		90 day		60 day		30 day		15 day		
		ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	
		CONUS [4] factors—Continued										
14	240	5.29	0.24	6.72	0.24	8.56	0.24	11.83	0.24	15.91	0.24	240
15	270	5.44	0.15	6.87	0.15	8.71	0.15	11.98	0.15	16.06	0.15	270
16	300	5.54	0.10	6.97	0.10	8.81	0.10	12.08	0.10	16.16	0.10	300
17	330	5.60	0.06	7.03	0.06	8.87	0.06	12.14	0.06	16.22	0.06	330
18	360	5.64	0.04	7.07	0.04	8.91	0.04	12.18	0.04	16.26	0.04	360
19	390	5.67	0.03	7.10	0.03	8.94	0.03	12.21	0.03	16.29	0.03	390
20	420	5.70	0.03	7.13	0.03	8.97	0.03	12.24	0.03	16.32	0.03	420
21	450	5.71	0.01	7.14	0.01	8.98	0.01	12.15	0.01	16.33	0.01	450
22	480	5.72	0.01	7.15	0.01	8.99	0.01	12.26	0.01	16.34	0.01	480
23	510	5.73	0.01	7.16	0.01	9.00	0.01	12.27	0.01	16.35	0.01	510
24	540 & over	5.73	0.00	7.16	0.00	9.00	0.00	12.27	0.00	16.35	0.00	540 & over

[1] Based on constant admission of one per day.
[2] Based on admission of one per day for 30 days only, and decumulation thereafter.
[3] Beginning with the 150-day interval AD–I factors and AD–II factors are identical since increases in length of evacuation policy are given to 120 days only.
[4] Forty-eight contiguous states and the District of Columbia.

Table LI. Battle Casualty (Superseded)

Accumulation Factors [1] and Accumulation-Decumulation Factors (AD–I)[2]

Periods of estimate in intervals of 30 days

	1	2	3	4	5	6	7	8	9	10	11	12
1	Periods of estimate	Theater factors										Periods of estimate
		Evacuation policies										
		120 day		90 day		60 day		30 day		15 day		
		ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	
2	30	22.96	22.96	22.39	22.39	21.04	21.04	16.44	16.44	10.80	10.80	30
3	60	33.38	10.42	31.00	8.61	25.57	4.53	16.44	0	10.80	0	60
4	90	37.36	3.98	32.87	1.87	25.57	0	16.44	0	10.80	0	90
5	120	38.27	0.91	32.87	0	25.57	0	16.44	0	10.80	0	120
6	150 & over	38.27	0	32.87	0	25.57	0	16.44	0	10.80	0	150 & over
	CONUS [4] factors											
7	30	1.55	1.55	2.12	2.12	3.47	3.47	8.07	8.07	13.71	13.71	30
8	60	6.88	5.33	9.26	7.14	14.69	11.22	23.82	15.75	29.46	15.75	60
9	90	13.43	6.55	17.92	8.66	25.22	10.53	34.35	10.53	39.99	10.53	90
10	120	20.35	6.92	25.75	7.83	33.05	7.83	42.18	7.83	47.82	7.83	120
11	150	26.59	6.24	31.99	6.24	39.29	6.24	48.42	6.24	54.06	6.24	150
12	180	31.66	5.07	37.06	5.07	44.36	5.07	53.49	5.07	59.13	5.07	180
13	210	35.86	4.20	41.26	4.20	48.56	4.20	57.69	4.20	63.33	4.20	210

See footnotes at end of table.

Table LI—Continued

1	1	2	3	4	5	6	7	8	9	10	11	12
		Theater factors										
1	Periods of estimate	Evacuation policies										Periods of estimate
		120 day		90 day		60 day		30 day		15 day		
		ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	ACC	AD–I [3]	
		CONUS [4] factors—Continued										
14	240	39.40	3.54	44.80	3.54	52.10	3.54	61.23	3.54	66.87	3.54	240
15	270	42.37	2.97	47.77	2.97	55.07	2.97	64.20	2.97	69.84	2.97	270
16	300	44.89	2.52	50.29	2.52	57.59	2.52	66.72	2.52	72.36	2.52	300
17	330	47.02	2.13	52.42	2.13	59.72	2.13	68.85	2.13	74.49	2.13	330
18	360	48.79	1.77	54.19	1.77	61.49	1.77	70.62	1.77	76.26	1.77	360
19	390	50.26	1.47	55.66	1.47	62.96	1.47	72.09	1.47	77.73	1.47	390
20	420	51.46	1.20	56.86	1.20	64.16	1.20	73.29	1.20	78.93	1.20	420
21	450	52.39	0.93	57.79	0.93	65.09	0.93	74.22	0.93	79.86	0.93	450
22	480	53.14	0.75	58.54	0.75	65.84	0.75	74.97	0.75	80.61	0.75	480
23	510	53.71	0.57	59.11	0.57	66.41	0.57	75.54	0.57	81.18	0.57	510
24	540	54.16	0.45	59.56	0.45	66.86	0.45	75.99	0.45	81.63	0.45	540
25	570	54.52	0.36	59.92	0.36	67.22	0.36	76.35	0.36	81.99	0.36	570
26	600	54.79	0.27	60.19	0.27	67.49	0.27	76.62	0.27	82.26	0.27	600
27	630 & over	55.00	0.21	60.40	0.21	67.70	0.21	76.83	0.21	82.47	0.21	630 & over

[1] Based on constant admission of one per day.
[2] Based on admission of one per day for 30 days only, and decumulation thereafter.
[3] Beginning with the 150-day interval AD–I factors and AD–II factors are identical since increases in length of evacuation policy are given to 120 days only.
[4] Forty-eight contiguous states and the District of Columbia.

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146. Computation of Fixed Beds for a Theater of Operations

Given the items *** which it is used:

f. Remaining Factor Formula.

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(2) (Superseded) For evacuation policies of 30 days or longer the number of days in the stated evacuation policy is always the time period as shown in the formula. (This is also true for the 15-day evacuation policy when the accumulation is made through 30 days.) Since the accumulation and accumulation-decumulation factors take into account the place of hospitalization (theater or CONUS) in addition to the hospital days in theater prior to evacuation, the accumulation of the remaining factors from day one through the number of days of the evacuation policy will always equal the sum of the theater and CONUS accumulation factors at that point in time. The proportion who are theater patients is, therefore, readily available from the accumulation and accumulation-decumulation tables. The difference between these longer policies and the 10-day evacuation policy is that CONUS patients, who are represented by the remaining factor beginning at 10 complete hospital days, are not included in the computation for the shorter policy. In order to include CONUS patients under the shorter evacuation policies, the remaining factors would then be accumulated through the number of days in the overall period of estimate. The sum of the remaining factors from 10 days through the number of days in the period of estimate represents the proportion who are CONUS patients.

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Table LV. Percentage Distribution of Disease and Nonbattle Injury Admissions by Type of Disposition in Theater (Superseded)

Based on admission of one per day for 30 days

Disposition or current status	Percentage during or at end of interval					Final disposition in theater %
	1–30 days [1] %	31–60 days %	61–90 days %	91–120 days %	121–150 days %	
Evac Policy 120-day						
Evacuated	0.44	1.73	1.49	0.88	0.19	4.73
Returned to duty	54.66	32.89	4.58	2.23	0.72	95.08
Died	0.12	0.05	0.01	0.01	0	0.19
Remaining in hospital	44.78	10.11	4.03	0.91	0	0
	100.00	44.78	10.11	4.03	0.91	100.00

See footnotes at end of table.

Table LV—Continued

Disposition or current status	Percentage during or at end of interval					Final disposition in theater %
	1–30 days [1] %	31–60 days %	61–90 days %	91–120 days %	121–150 days %	
Evac Policy 90-day						
Evacuated	0.74	2.83	2.26	0.60		6.43
Returned to duty	54.66	32.89	4.58	1.26		93.39
Died	0.12	0.05	0.01	0		0.18
Remaining in hospital	44.48	8.71	1.86	0		0
	100.00	44.48	8.71	1.86		100.00
Evac Policy 60-day						
Evacuated	1.51	5.57	2.16			9.24
Returned to duty	54.66	32.89	3.04			90.59
Died	0.12	0.05	0			0.17
Remaining in hospital	43.71	5.20	0			0
	100.00	43.71	5.20			100.00
Evac Policy 30-day						
Evacuated	7.22	10.08				17.30
Returned to duty	54.66	27.89				82.55
Died	0.12	0.03				0.15
Remaining in hospital	38.00	0				0
	100.00	38.00				100.00
Evac Policy 15-day						
Evacuated	26.89	10.61				37.50
Returned to duty	48.58	13.78				62.36
Died	0.12	0.02				0.14
Remaining in hospital	24.41	0				0
	100.00	24.41				100.00
Evac Policy 15- to 30-day [2]						
Evacuated	26.89	5.40				32.29
Returned to duty	48.58	18.99				67.57
Died	0.12	0.02				0.14
Remaining in hospital	24.41	0				0
	100.00	24.41				100.00
Evac Policy 30- to 60-day [2]						
Evacuated	7.22	4.20	1.63			13.05
Returned to duty	54.66	30.53	1.60			86.79
Died	0.12	0.04	0			0.16
Remaining in hospital	38.00	3.23	0			0
	100.00	38.00	3.23			100.00

[1] Month of admission.
[2] Evacuation policy increased at second month of operation.

Table LVI. Percentage Distribution of Battle Injury and Wound Admissions by Type of Disposition in Theater (Superseded)

Based on admission of one per day for 30 days

Disposition or current status	Percentage during or at end of interval					Final disposition in theater %
	1–30 days [1] %	31–60 days %	61–90 days %	91–120 days %	121–150 days %	
Evac Policy 120-day						
Evacuated	5.15	12.62	4.06	1.34	0.23	23.40
Returned to duty	16.74	28.83	17.34	8.85	2.79	74.55
Died	1.57	0.35	0.07	0.06	0	2.05
Remaining in hospital	76.54	34.74	13.27	3.02	0	0
	100.00	76.54	34.74	13.27	3.02	100.00
Evac Policy 90-day						
Evacuated	7.07	16.74	5.07	0.98		29.86
Returned to duty	16.74	28.83	17.34	5.20		68.11
Died	1.57	0.35	0.07	0.04		2.03
Remaining in hospital	74.62	28.70	6.22	0		0
	100.00	74.62	28.70	6.22		100.00
Evac Policy 60-day						
Evacuated	11.56	25.84	4.60			42.00
Returned to duty	16.74	28.83	10.48			56.05
Died	1.57	0.35	0.03			1.95
Remaining in hospital	70.13	15.11	0			0
	100.00	70.13	15.11			100.00
Evac Policy 30-day						
Evacuated	26.90	39.10				66.00
Returned to duty	16.74	15.38				~~82.13~~
Died	1.57	0.31				1.88
Remaining in hospital	54.79	0				0
	100.00	54.79				100.00
Evac Policy 15-day						
Evacuated	49.99	31.75				81.74
Returned to duty	12.47	4.05				16.52
Died	1.53	0.21				1.74
Remaining in hospital	36.01	0				0
	100.00	36.01				100.00
Evac Policy 15- to 30-day [2]						
Evacuated	49.99	25.25				75.24
Returned to duty	12.47	10.49				22.96
Died	1.53	0.27				1.80
Remaining in hospital	36.01	0				0
	100.00	36.01				100.00

See footnotes at end of table.

Table LVI—Continued

Disposition or current status	Percentage during or at end of interval					Final disposition in theater %
	1–30 days [1] %	31–60 days %	61–90 days %	91–120 days %	121–150 days %	
Evac Policy 30- to 60-day [2]						
Evacuated	26.90	21.42	3.82			52.14
Returned to duty	16.74	23.15	6.05			45.94
Died	1.57	0.33	0.02			1.92
Remaining in hospital	54.79	9.89	0			0
	100.00	54.79	9.89			100.00

[1] Month of admission.
[2] Evacuation policy increased at second month of operation.

149. Computation of Fixed Beds for Zone of Interior

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d. (As added by C 1, 22 Sep 61) *Medical Planning Factors for Quick Estimates of Evacuee Patient Dispositions in Zone of Interior Under Various Theater Evacuation Policies.* The logical extension of tables LV and LVI—the eventual disposition of patients evacuated from theaters of operations to zone of interior hospitals—appears in tables LVII.1 through LVII.4. Tables LVII.1 and LVII.3 show, under various evacuation policies, the percentage distribution by type of disposition for separate 30-day intervals through 150 days for disease and nonbattle injury and for battle injury and wound patients, respectively. Since the 120 day policy is the longest evacuation policy considered, the percentage distribution by type of disposition after 150 days of operations is independent of the length of the evacuation policy. For this reason, tables LVII.2 and LVII.4, which present these data separately for each 30-day interval over 150 days, show the data only for all evacuation policies combined.

Table LVII.1. Percentage Distribution of Theater Disease and Nonbattle Injury Admissions by Type of Disposition in CONUS [1] (Superseded)

Based on theater admission of one per day for 30 days

Disposition or current status	Percentage during or at end of interval						Final disposition in CONUS %
	1–30 days [2] %	31–60 days %	61–90 days %	91–120 days %	121–150 days %	151–570 days %	
Evac Policy 120-day							
Returned to duty	0	0	0	0	0.97	1.03	2.00
Died	0	0	0	0	0	0.02	0.20
Disability sep	0	0.07	0.13	0.14	0.13	2.24	2.71
Remaining hosp	0.44	2.10	3.46	4.20	3.29	0	0
	0.44	2.17	3.59	4.34	4.39	3.29	4.73

See footnotes at end of table.

Table LVII.1—Continued

Disposition or current status	Percentage during or at end of interval						Final disposition in CONUS %
	1–30 days [2] %	31–60 days %	61–90 days %	91–120 days %	121–150 days %	151–570 days %	
Evac Policy 90-day							
Returned to duty	0	0	0	0.07	1.69	1.03	3.69
Died	0	0	0	0.01	0	0.02	0.03
Disability sep	0	0.07	0.13	0.14	0.13	2.24	2.71
Remaining hosp	0.74	3.50	5.63	5.11	3.29	0	0
	0.74	3.57	5.76	6.23	5.11	3.29	6.43
Evac Policy 60-day							
Returned to duty	0	0	1.54	2.23	1.69	1.03	6.49
Died	0	0	0.01	0.01	0	0.02	0.04
Disability sep	0	0.07	0.13	0.14	0.13	2.24	2.71
Remaining hosp	1.51	7.01	7.49	5.11	3.29	0	0
	1.51	7.08	9.17	7.49	5.11	3.29	9.24
Evac Policy 30-day							
Returned to duty	0	5.00	4.58	2.23	1.69	1.03	14.53
Died	0	0.02	0.01	0.01	0	0.02	0.06
Disability sep	0	0.07	0.13	0.14	0.13	2.24	2.71
Remaining hosp	7.22	12.21	7.49	5.11	3.29	0	0
	7.22	17.30	12.21	7.49	5.11	3.29	17.30
Evac Policy 15-day							
Returned to duty	6.08	19.11	4.58	2.23	1.69	1.03	14.53
Died	0	0.03	0.01	0.01	0	0.02	0.06
Disability sep	0	0.07	0.13	0.14	0.13	2.24	2.71
Remaining hosp	20.81	12.21	7.49	5.11	3.29	0	0
	26.89	31.42	12.21	7.49	5.11	3.29	17.30
Evac Policy 15- to 30-day [3]							
Returned to duty	6.08	13.90	4.58	2.23	1.69	1.03	14.53
Died	0	0.03	0.01	0.01	0	0.02	0.06
Disability sep	0	0.07	0.13	0.14	0.13	2.24	2.71
Remaining hosp	20.81	12.21	7.49	5.11	3.29	0	0
	26.89	26.21	12.21	7.49	5.11	3.29	17.30
Evac Policy 30- to 60-day [3]							
Returned to duty	0	2.36	2.98	2.23	1.69	1.03	14.53
Died	0	0.01	0.01	0.01	0	0.02	0.06
Disability sep	0	0.07	0.13	0.14	0.13	2.24	2.71
Remaining hosp	7.22	8.98	7.49	5.11	3.29	0	0
	7.22	11.42	10.61	7.49	5.11	3.29	17.30

[1] Forty-eight contiguous states and the District of Columbia.
[2] Month of admission.
[3] Evacuation policy increased at second month of operation.

Table LVII.2. Percentage Distribution of Theater Disease and Nonbattle Injury Admissions by Type of Disposition in CONUS [1] During or at End of 30-day Intervals from 151 to 570 Days—All Evacuation Policies (Superseded)

Based on theater admission of one per day for 30 days during 1–30 day interval

Disposition or current status	Percentage during or at end of interval				
	151–180 days %	181–210 days %	211–240 days %	241–270 days %	271–300 days %
All Evac Policies:					
Returned to duty	0.68	0.11	0.08	0.05	0.03
Died	0.01	0.01	0	0	0
Disability sep	0.54	0.65	0.42	0.24	0.15
Remaining hosp	2.06	1.29	0.79	0.50	0.32
	3.29	2.06	1.29	0.79	0.50

	Percentage during or at end of interval				
	301–330 days %	331–360 days %	361–390 days %	391–420 days %	421–450 days %
All Evac Policies:					
Returned to duty	0.03	0.01	0.01	0.01	0
Died	0	0	0	0	0
Disability sep	0.08	0.06	0.03	0.02	0.02
Remaining hosp	0.21	0.14	0.10	0.07	0.05
	0.32	0.21	0.14	0.10	0.07

	Percentage during or at end of interval				Total Disposition 151–570 days %
	451–480 days %	481–510 days %	511–540 days %	541–570 days %	
All Evac Policies:					
Returned to duty	0.01	0	0	0.01	1.03
Died	0	0	0	0	0.02
Disability sep	0.01	0.01	0.01	0	2.24
Remaining hosp	0.03	0.02	0.01	0	0
	0.05	0.03	0.02	0.01	3.29

[1] Forty-eight contiguous states and the District of Columbia.

Sec C h # 4

Table LVII.3. Percentage Distribution of Theater Battle Injury and Wound Admissions by Type of Disposition in CONUS [1] (Superseded)

Based on theater admission of one per day for 30 days

Disposition or current status	Percentage during or at end of interval						Final disposition in CONUS %
	1–30 days [2] %	31–60 days %	61–90 days %	91–120 days %	121–150 days %	151–631 days and over %	
Evac Policy 120-day							
Returned to duty	0	0	0	0	2.29	12.16	14.45
Died	0	0	0	0	0.01	0.03	0.04
Disability sep	0	0	0.01	0.09	0.21	8.60	8.91
Remaining hosp	5.15	17.77	21.82	23.07	20.79	0	0
	5.15	17.77	21.83	23.16	23.30	20.79	23.40
Evac Policy 90-day							
Returned to duty	0	0	0	3.65	5.08	12.16	20.89
Died	0	0	0	0.02	0.01	0.03	0.06
Disability sep	0	0	0.01	0.09	0.21	8.60	8.91
Remaining hosp	7.07	23.81	28.87	26.09	20.79	0	0
	7.07	23.81	28.88	29.85	26.09	20.79	29.86
Evac Policy 60-day							
Returned to duty	0	0	6.86	8.85	5.08	12.16	32.95
Died	0	0	0.04	0.06	0.01	0.03	0.14
Disability sep	0	0	0.01	0.09	0.21	8.60	8.91
Remaining hosp	11.56	37.40	35.09	26.09	20.79	0	0
	11.56	37.40	42.00	35.09	26.09	20.79	42.00
Evac Policy 30-day							
Returned to duty	0	13.45	17.34	8.85	5.08	12.16	56.88
Died	0	0.04	0.07	0.06	0.01	0.03	0.21
Disability sep	0	0	0.01	0.09	0.21	8.60	8.91
Remaining hosp	26.90	52.51	35.09	26.09	20.79	0	0
	26.90	66.00	52.51	35.09	26.09	20.79	66.00
Evac Policy 15-day							
Returned to duty	4.27	24.78	17.34	8.85	5.08	12.16	56.88
Died	0.04	0.14	0.07	0.06	0.01	0.03	0.21
Disability sep	0	0	0.01	0.09	0.21	8.60	8.91
Remaining hosp	45.68	52.51	35.09	26.09	20.79	0	0
	49.99	77.43	52.51	35.09	26.09	20.79	66.00
Evac Policy 15- to 30-day [3]							
Returned to duty	4.27	18.34	17.34	8.85	5.08	12.16	56.88
Died	0.04	0.08	0.07	0.06	0.01	0.03	0.21
Disability sep	0	0	0.01	0.09	0.21	8.60	8.91
Remaining hosp	45.68	52.51	35.09	26.09	20.79	0	0
	49.99	70.93	52.51	35.09	26.09	20.79	66.00

See footnotes at end of table.

Table LVII.3—Continued

Disposition or current status	Percentage during or at end of interval						Final disposition in CONUS %
	1–30 days [2] %	31–60 days %	61–90 days %	91–120 days %	121–150 days %	151–631 days and over %	
Evac Policy 30- to 60-day [3]							
Returned to duty	0	5.68	11.29	8.85	5.08	12.16	56.88
Died	0	0.02	0.05	0.06	0.01	0.03	0.21
Disability sep	0	0	0.01	0.09	0.21	8.60	8.91
Remaining hosp	26.90	42.62	35.09	26.09	20.79	0	0
	26.90	48.32	46.44	35.09	26.09	20.79	66.00

[1] Forty-eight contiguous states and the District of Columbia.
[2] Month of admission.
[3] Evacuation policy increased at second month of operation.

Table LVII.4. Percentage Distribution of Theater Battle Injury and Wound Admissions by Type of Disposition in CONUS [1] During or at End of 30-day Intervals From 151–631 Days and Over—All Evacuation Policies (Superseded)

Based on theater admission of one per day for 30 days during 1–30 day interval

Disposition or current status	Percentage during or at end of interval					
	151–180 days %	181–210 days %	211–240 days %	241–270 days %	271–300 days %	301–330 days %
All Evac Policies:						
Returned to duty	3.64	2.43	1.76	1.26	0.90	0.65
Died	0.01	0	0	0.01	0.01	0
Disability sep	0.29	0.40	0.47	0.58	0.62	0.71
Remaining hosp	16.85	14.02	11.79	9.94	8.41	7.05
	20.79	16.85	14.02	11.79	9.94	8.41

	Percentage during or at end of interval					
	331–360 days %	361–390 days %	391–420 days %	421–450 days %	451–480 days %	481–510 days %
All Evac Policies:						
Returned to duty	0.49	0.33	0.25	0.16	0.11	0.07
Died	0	0	0	0	0	0
Disability sep	0.68	0.68	0.67	0.65	0.53	0.49
Remaining hosp	5.88	4.87	3.95	3.14	2.50	1.94
	7.05	5.88	4.87	3.95	3.14	2.50

	Percentage during or at end of interval					Total Disposition 151–631 days & over %
	511–540 days %	541–570 days %	571–600 days %	601–630 days %	631 days and over %	
All Evac Policies:						
Returned to duty	0.03	0.05	0.03	0	0	12.16
Died	0	0	0	0	0	0.03
Disability sep	0.41	0.30	0.22	0.20	0.70	8.60
Remaining hosp	1.50	1.15	0.90	0.70	0	0
	1.94	1.50	1.15	0.90	0.70	20.79

[1] Forty-eight contiguous states and the District of Columbia.

APPENDIX VI

SUGGESTED PLAN FOR ESTABLISHING A FIELD HOSPITAL OR HOSPITALIZATION UNIT

(Superseded)

1. Location

a. The location for establishing the hospital or hospitalization unit will be determined by the hospital commander.

b. Hospitalization unit commanders are responsible for functional arrangement of unit areas.

2. Advance Party

a. The advance party, consisting of representatives from the hospital headquarters and each hospitalization unit, will precede the main convoy to the bivouac or hospital site in sufficient time to accomplish its mission.

b. The advanced party will post road guards or directional signs, as indicated or instructed.

c. The advance party will insure that the area is free of enemy forces and other dangers prior to the arrival of the main body. A perimeter defense or interior guard will be established as directed by the commander or when the situation warrants such action. Elimination of the enemy is the responsibility of rear area security forces and will not be attempted by medical personnel.

d. The advance party will dig and erect latrines.

e. The advance party will select and mark all tent sites, in accordance with commander's instructions. Where necessary, the advance party will clear the area of those obstructions which would interfere with the arrival of the main body.

f. The advance party will establish liaison with supporting units, i.e., rear area security forces, engineer, ordnance, quartermaster and signal elements.

g. A portion of the mess section as determined by the commander, will accompany the advance party and will establish messing facilities prior to the arrival of the main body.

h. The advance party will lead or direct incoming vehicles to designated sites for the unloading of tentage and equipment.

i. When hospital is to be established in existing buildings, the advance party will—

(1) Clear the assigned buildings and area of all unauthorized occupants. Security forces will be requested for clearing any hostile troops.

(2) Clear buildings of undesired furniture or equipment, in accordance with existing theater directives relating to looting, respect of private property, etc.

(3) Remove debris, litter, trash and other obstructions in the buildings and surroundings, which would interfere with motor or foot traffic.

(4) Provide suitable space for the supply section to store tentage, etc., which will not be utilized at this site.

(5) Perform or direct maintenance on basic utilities such as power, heat and lighting.

(6) Perform or direct construction necessary to prepare or make safe buildings and area for the arrival of the main body.

3. Hospital Plan

a. The field hospital may be established in accordance with one of the three plans shown (figs. 42, 43, and 44). These may be varied to suit terrain and/or strategic situation.

b. In the event that one hospitalization unit is to be set up independently, it may be established according to one of the two plans shown (figs. 42 and 43).

4. Erection and Striking of Tentage

Tentage will be erected and struck in accordance with procedures outlined in FM 20–15.

5. Phases of Establishment

a. Phase I:

(1) Phase I encompasses the erection of tentage for and establishment of the following:

(*a*) A&D and Receiving Section.

(*b*) X-ray and Pharmacy Laboratory.

(*c*) Surgery Section.

(*d*) Central Materiel Section.

(*e*) Mess.

(*f*) One Surgical Ward.

(2) When Phase I has been completed, the hospital unit is considered operational. Remainder of tentage will be erected as the situation and instructions dictate.

b. Phase II: Phase II consists of erecting and establishing two Medical Wards and the Headquarters Section, and will begin when the tentage has been erected and equipment unloaded for the Phase I installations.

Personnel who operate the Phase I installations will continue to set up their equipment. Remaining personnel will proceed with the erection of the Phase II installations. When Phase II tents have been erected and equipment unloaded, operating personnel will continue to set up their equipment.

c. Phase III: Phase III consists of pitching the remaining tents and setting up necessary equipment.

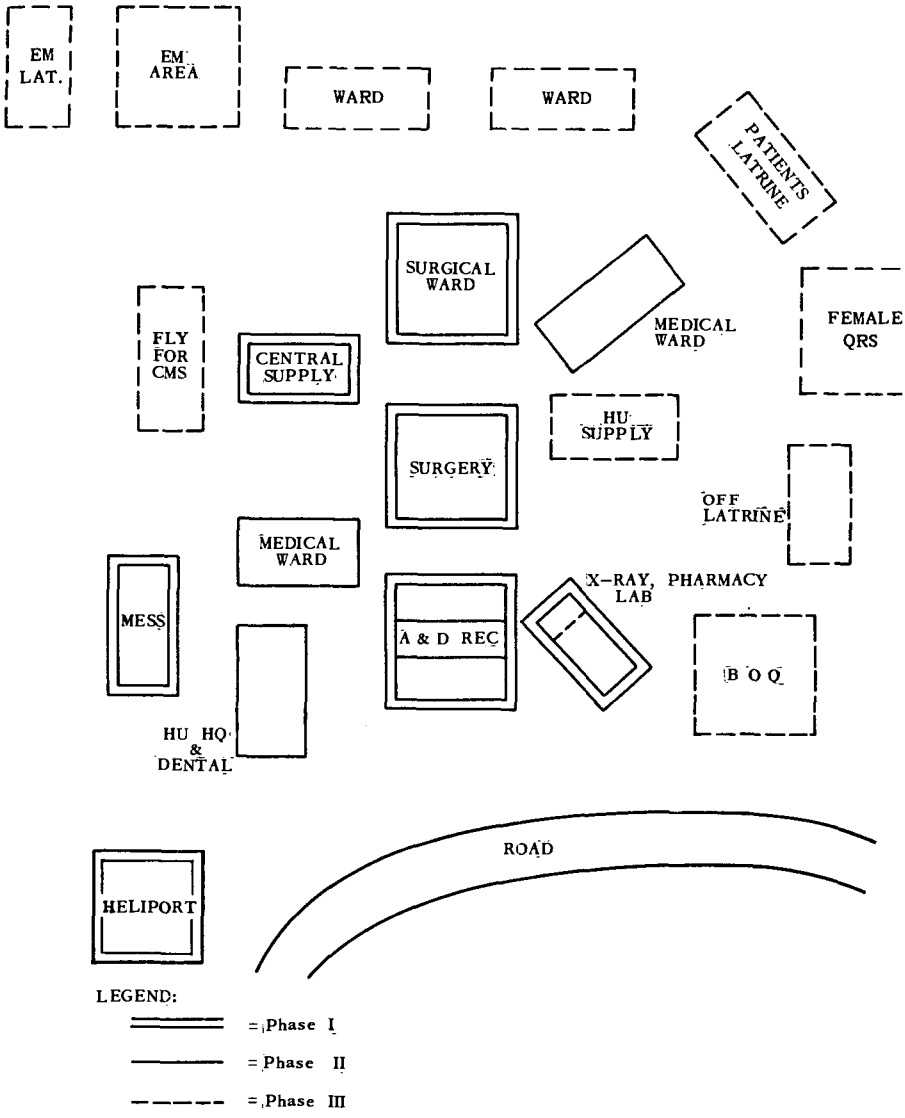

Figure 42. (Superseded) *Plan "A" for 100-bed hospital.*

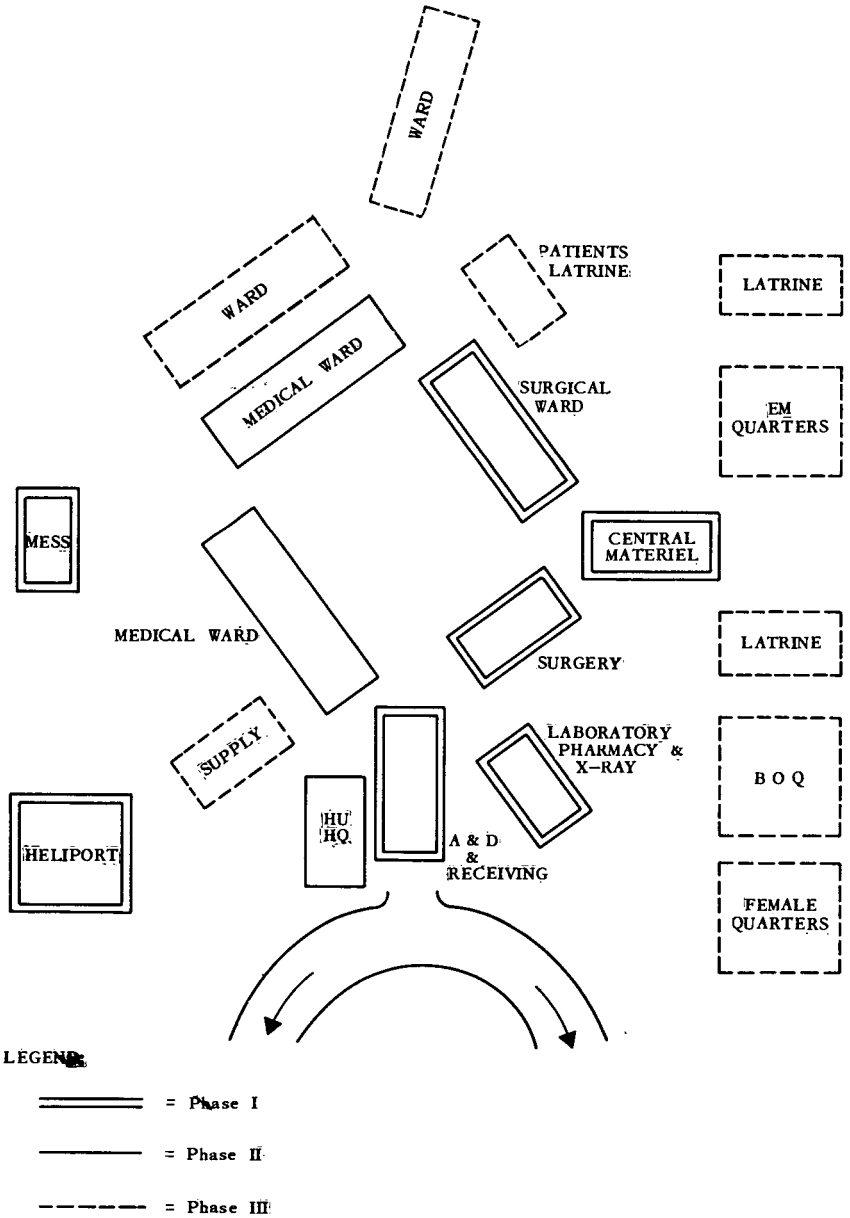

Figure 43. (Superseded) *Plan "B" for 100-bed hospital.*

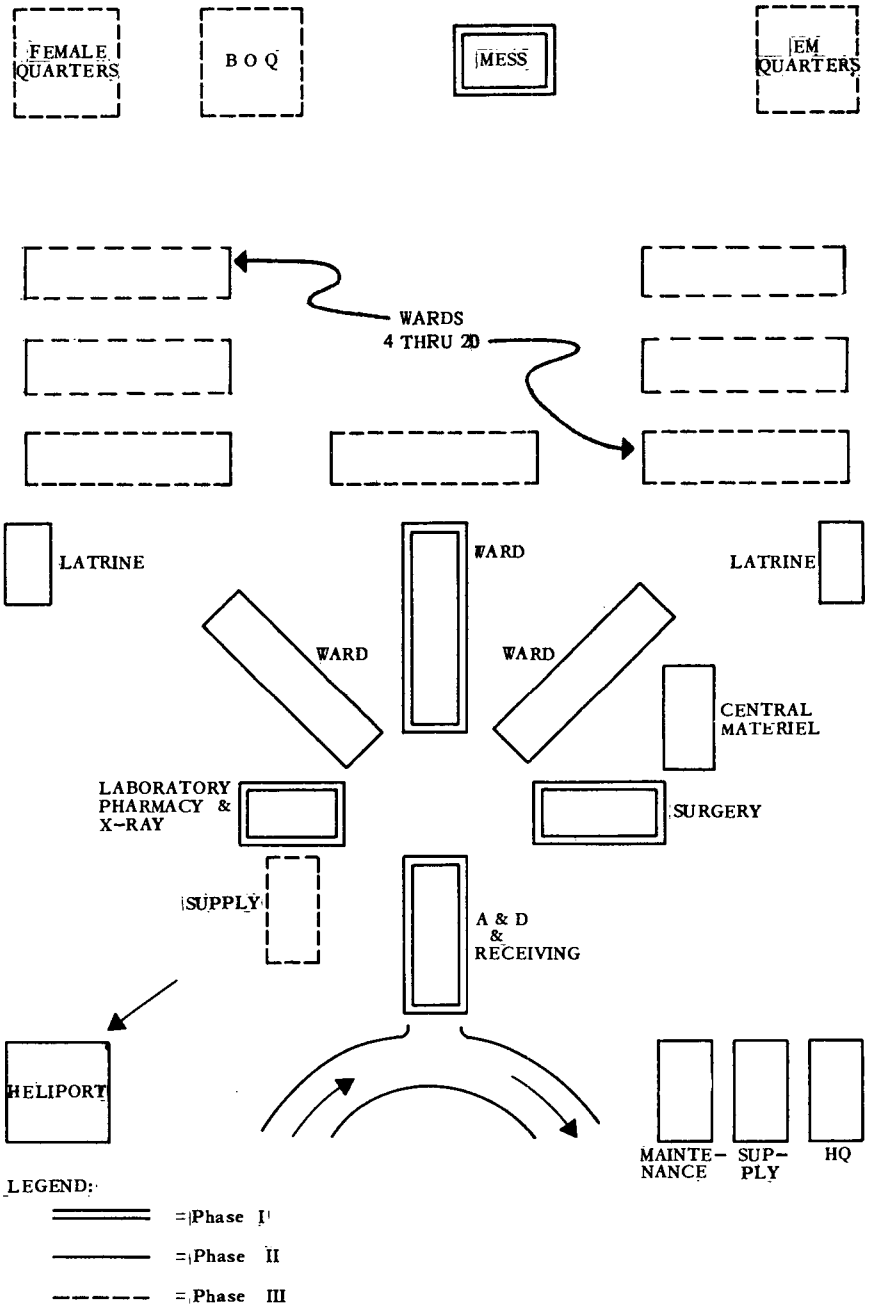

Figure 44. (Superseded) *Plan for 400-bed hospital.*

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MAAG (1)
Units org under fol TOE's:
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8-520 (2)

NG: None.
USAR: Same as active Army.
For explanation of abbreviations used, see AR 320-50.

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FIELD MANUAL

ARMY MEDICAL SERVICE PLANNING GUIDE

FM 8–55
CHANGES No. 4

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *20 March 1963*

FM 8–55 23 October 1960, is changed as follows:

The following pen-an-ink changes are made in C 3, FM 8–55, 9 August 1962:

Page 10, Table XLIX. Under column 8, line 21, change "12.15" to *12.25.*

Page 15, Table LVI. Under "Final disposition in theater %" column for 30-day evacuation policy, change "32.13" to *32.12.*

Page 17, Table LVII.1. Under "Final disposition in CONUS %" column for evacuation policies, as indicated:

15-day: change "14.53" to *34.72,* "0.06" to *0.07,* "17.30" to *37.50.*

15- to 30-day: change "14.53" to *29.51,* "0.06" to *0.07,* "17.30" to *13.05.*

30- to 60-day: change "14.53" to *10.29,* "0.06" to *0.05,* "17.30" to *32.29.*

Pages 19–20, Table LVII.3. Under "Final disposition in CON US %" column for evacuation policies, as indicated:

15-day: change "56.88" to *72.48,* "0.21" to *0.35,* "66.00" to *81.74.*

15- to 30-day: change "56.88" to *66.04,* "0.21" to *0.29,* "66.00" to *75.24.*

30- to 60-day: change "56.88" to *43.06,* "0.21" to *0.17,* "66.00" to *52.14.*

By Order of the Secretary of the Army:

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General, United States Army,
Chief of Staff.

Official:
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Major General, United States Army,
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For explanation of abbreviations used, see AR 320-50.

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