

## CHAPTER 3

## PLANNING AND EXPERIENCE CONSIDERATIONS

## Section I. BASIC PRINCIPLES AND TERMS

**3-1. Basic Requirements**

The HSS planner must know the basic principles and terms used in patient classification and reporting to be able to use the formulas in Section II.

**3-2. Casualty**

A casualty is any person who is lost to the organization by reason of having been declared dead, wounded, injured, diseased, interned, captured, retained, missing, missing in action (MIA), beleaguered, besieged, or detained.

**3-3. Battle Casualty**

A battle casualty is any casualty incurred in action. *In action* characterizes the casualty status as having been—

- The direct result of hostile action,
- Sustained in combat or relating thereto, or
- Sustained while going to or returning from a combat mission provided that the occurrence was directly related to hostile action. Included are persons killed or wounded mistakenly or accidentally by friendly fire directed at a hostile force or what is thought to be a hostile force. However, not to be considered as sustained in action and thereby not to be interpreted as battle casualties are injuries due to the elements, self-inflicted wounds and, except in unusual cases, wounds or death inflicted by a friendly force while the individual is in absent-without-leave (AWOL) or dropped-from-rolls status, or is voluntarily absent from a place of duty. Battle casualties include the following:

*a. Wounded in Action.*

(1) This term describes a battle casualty other than “killed in action (KIA)” who has incurred an injury due to an external agent or cause. The term WIA covers all wounds and other injuries incurred in action whether there is piercing of the body, as in a penetrating or perforating wound, or none, as in the contused wound; all fractures, burns, blast concussions; all effects of biological and chemical warfare agents; and the effects of exposure to ionizing radiation, or any other destructive weapon or agent.

(2) A battle casualty who requires admission to an MTF or who dies of wounds after reaching an MTF is reported as WIA. Subsequent reporting as died of wounds (DOW) may be required. The WIA category includes the DOW received in action, but excludes the KIA.

(3) Individual medical records and morbidity reports received by The Surgeon General (TSG) include, in addition to WIA, all other individuals wounded or injured in action and treated at MTFs without requiring hospital admission. (This includes persons held and then RTD at MTFs forward of corps-level hospitals, as well as persons treated on an outpatient status—carded for record only [CRO].)

*b. Died of Wounds Received in Action.*  
This term describes battle casualties who die of wounds or other injuries received in action after having reached an MTF. These cases differ from battle casualties who are found dead, or who die before reaching an MTF (the KIA group). The criterion is to reach an MTF while still alive. All cases counted as DOW received in action are also counted as WIA.

*c. Killed in Action.* This term describes a battle casualty who is killed outright, or who dies as a result of wounds or other injuries before reaching an MTF. It provides a basis for distinction between KIA cases and the DOW received in action cases. (It is often impracticable to determine if deaths in combat are instantaneous. ) Killed-in-action cases are never included in the WIA category or in the DOW category.

*d. Missing in Action.* This term describes battle casualties whose whereabouts or fate cannot be determined and who are not known to be in an unauthorized absence status (desertion or AWOL). Missing-in-action casualties are not usually included in medical statistical records or reports received by TSG but are reportable to the Adjutant General (AG).

*e. Captured.* This term describes all battle casualties 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 US Armed Forces are engaged. Captured casualties are not usually included in medical statistical records or reports received by TSG, but they are reportable to the AG.

*f. Interned.* This term describes 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 US Armed Forces are engaged. Interned casualties are not usually included in medical statistical records or reports received by TSG, but they are reportable to the AG.

### **3-4. Nonbattle Casualty**

Nonbattle casualty describes a person who is not a battle casualty, but who is lost to his organization by reason of disease or injury, including persons dying from disease or injury, or by reason of being

missing where the absence does not appear to be voluntary, due to enemy action, or to being interned.

### **3-5. Patient**

Patient is the generic term applying to a sick, injured, or wounded person who receives medical care or treatment from medically trained personnel who make medically substantiated decisions based on medical military occupational specialty (MOS)-specific training. A patient may be further classified as an outpatient or an inpatient.

*a. Outpatient.* Outpatient is the term applied to a person receiving medical/dental examination and/or treatment from medical personnel and in a status other than being admitted to a hospital. Included in this category is the person who is treated and retained (held) in an MTF other than a hospital.

*b. Inpatient.* Inpatient is the term applied to a person admitted to and treated within a hospital and who cannot be returned to duty within the same calendar day.

### **3-6. Medical Treatment Facility**

The term medical treatment facility denotes a facility established for the purpose of providing health services to authorized personnel. It maybe but is not limited to an aid station, area support section (clearing station), a clinic, a dispensary, or a hospital.

### **3-7. Dental Treatment Facility**

The term dental treatment facility (DTF) denotes a facility established for the purpose of providing dental services to authorized personnel. It maybe as large as a multichair facility established by an area support dental unit and staffed by a number

of dental officers and dental ancillary personnel, or as small as a single chair manned by a dental officer and a single assistant. Dental resources organic to hospitals and clearing stations constitute a DTF when operational, even though a part of an MTF.

### 3-8. Classification of Patients

For this discussion, patients mean only those cases who have been admitted to hospitals and who cannot be returned to duty within the same calendar day. Patients are classified according to the primary cause of initial admission to an MTF. They are reported to TSG in one of three major classifications: disease (DIS), nonbattle injury (NBI), or battle casualty (BI or WIA).

*a.* When a patient is admitted for unrelated conditions that require admission such as DNBI, the most serious condition present is used as the main cause of initial admission. This primary cause is used in determining the classification.

*b.* When a patient is admitted for several related conditions that require admission, the first condition in the chain of origin is used as the primary cause of admission. This condition governs the classification of the patient.

*c.* A patient who is admitted to an MTF for battle wounds or BIs but who also requires treatment for disease or NBI is, nevertheless, classified as a battle casualty.

*d.* The disease classification includes many disorders not commonly thought of as disease. All patients other than BI or WIA and NBI cases are classified as disease cases.

(1) Patients suffering from mental disorders developed under battle conditions are classified as disease casualties, not battle casualties. This includes those few cases of battle

fatigue and neuropsychiatric disorders which require hospitalization.

(2) Patients readmitted as 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 battle or NBI incurred in the military service. The term *traumatism* refers to a condition of ill health caused by an external agent. It includes conditions resulting from acute poisonings (even though taken internally) and from exposure to heat, cold, or light.

(3) Patients suffering from reactions to medication (other than acute poisoning) and patients admitted for complications from an injury incurred prior to entering the military service are classified as disease cases.

(4) Food poisoning cases or food infection cases, except when due to food containing nonbacterial poisons, are classified as disease cases.

(5) A battle casualty patient who is dropped from medical reports as a disposition to AWOL is, if readmitted, classified as a disease patient.

*e.* All traumatisms are classified as NBI *except* old traumatisms (as defined in above subparagraph), or BI or wounds (below subparagraph). Food poisonings or food infections due to food containing nonbacterial poisons are classified as NBI. Injuries due to the elements such as frostbite and immersion injury are considered to be NBIs even when incurred in combat areas. While these injuries, like battle fatigue, may be the direct consequence of enemy action, they can usually be prevented by self-aid/buddy aid or leadership measures.

*f.* For purposes of medical statistical reporting, a battle casualty patient (BI and WIA) is

any patient admitted to an MTF for treatment of injuries and/or wounds sustained either directly due to enemy action, or 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 MTF, discharge of a battle casualty patient from an MTF terminates his battle casualty status for medical reporting purposes.

*g.* Killed in action cases are reported separately from injured or WIA cases.

### 3-9. Patient Admission Rates

*a.* Admission rates are numerical expressions of the relative frequency with which patients are admitted to hospitals from a specified population over a designated period of time. The particular admission rates used in HSS planning represent average rates derived from similar experiences in similar operations or those developed by planners. The primary types of patients for which admission rates are used in an AO are WIA and DNBI. The admission rates usually are expressed as the number of admissions to a hospital per thousand average personnel strength per day. Thus, a hospital admission rate of 2.0 per thousand per day for WIA patients would mean that for every thousand personnel involved, two would become hospital patients each day from battle causes.

*b.* Admission rates contained in Chapter 5 reflect experience factors derived from past wars. Historical data on AMEDD losses are also contained in Appendix D.

*c.* The admission rate for disease is affected by seasonal variations, climate, and environmental factors. (See Chapter 11 for a detailed discussion on countering and monitoring health threats.)

### 3-10. Estimation of Probable Patient Work Load

*a.* Casualty rates vary from echelon to echelon. 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, and other support troops; the casualty rates for all of these are low compared with those of combat maneuver elements. These factors operate to reduce the casualty rates of a corps as a whole far below those of its divisions actively engaged with the enemy.

(1) As a rough estimate, it maybe stated that the WIA rate for a corps as a whole is about 25 percent less than the WIA rate for its component divisions.

(2) Likewise, the overall TO casualty rates are even lower than those of a corps. The WIA rate for the theater is roughly 20 percent lower than the WIA rate for a corps, and about 40 percent lower than that for a division. *These assumptions do not take into account NBC warfare or major enemy deep strikes.*

*b.* Estimation of probable casualty rates in advance is not a simple matter that can be reduced to a general formula.

(1) The first step in estimating probable casualty rates is to select a point of departure. This may be termed an average casualty day for the unit concerned.

(2) 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 following are the more important of these factors:

(a) *Enemy capabilities.* These include all the resources and characteristics of the enemy that can be translated into casualties, such as—

- His numerical or relative strength.
  - The strength of his position (both existing terrain features and man-made improvements).
  - His weapons.
  - His air power.
  - His attitude.
- His morale and general combat efficiency.

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

(c) *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 the relative combat strength, including the element of firepower. *Frontal attacks*, in general, *produce more casualties* in the attacking force than do *envelopments*. *Daylight retrograde movements are extremely costly*; when the retrograde movement becomes disorderly, losses may be staggering.

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

c. In preparing estimates of patients, the planner must remember that disease incidence continues during combat and that soldiers may become careless at such times. The *admission rate during combat for DNBI may even rise* above the average for the following reasons:

(1) Necessity for haste causes a disregard of ordinary precautions.

(2) Fatigue not only causes actual disability but produces a state of mind that tends to exaggerate minor ailments and injuries. 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. The proportion of a command actively engaged in combat determines, to a considerable degree, the casualty rate of the unit as a whole.

(1) This proportion varies widely among units of different sizes and operations of different types. Local reserves of smaller units are ordinarily located so near the front line that their exposure to risk is at least comparable with that of other elements of the unit. On the other hand, 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. All this points to the *dangers in generalizations* in the estimation of casualties.

(2) 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. This is to say that the HSS planner should base his estimate of probable casualties and nonbattle losses 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 FMs 101-10-1/1 and -1/2 should be used with extreme caution for planning purposes,

## Section II. PATIENT RATE COMPUTATIONS

### 3-11. Rates

As used in military medicine, the term rate 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. 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.

### 3-12. Calculating a Rate

a. The following formula is used to calculate a rate:

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

where:

f = The observed frequency (such as the number of admissions and deaths).

t = The observed time period.

s = The observed strength or population.

T = The standard time period (per day, per month, per year).

k = A standard unit of population (per 100, per 1,000, per 10,000, per 100,000).

b. The value for *T* must always be expressed in the same unit that is used for the value of *t*. 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). 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. 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. The *average* (or mean) strength *s* of the time period *t* in which the frequency of the event occurred should be used where practicable. Most frequently, in the rates used in military medicine, the standard unit of strength or population *k* is taken as 1,000.

### 3-13. Rates Defined

a. *Admission.*

(1) Admissions represent a general class of which there are many subclasses. Thus, in terms of the reason for admission to medical treatment, the rates may be based only on admissions due to—

(a) Disease (disease admission rate).

(b) Nonbattle injury.

(c) The combination of DNBI (all nonbattle causes admission rate).

- or
- (d) Battle injury and wound,
  - (e) A combination of all the foregoing causes (all causes admission rate).

(2) Similarly, an admission rate may be computed for the admissions due to a particular cause, such as some specific disease.

*b. Mortality.* The mortality (death) rate differs from the admission rate only in that the event which it measures is the number of deaths, rather than the number of patient admissions. 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.* In an incidence rate, the event which is counted is the occurrence of a disease in a population free of the disease during a specific time span. 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 an MTF is due to some other condition.

*d. Prevalence.* Prevalence rates measure the number of cases of a specified disease 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*. 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. The following formula is used in calculating the prevalence rate per 1,000:

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

where:

*f* = The number of cases of the specified kind found in the observed strength or population *s*.

*k* = The standard population (1,000).

*e. Medical Noneffective.* The non-effective rate, a measure very frequently used in military medicine, may be regarded as a special case of the prevalence rate discussed in above subparagraph. This rate measures the prevalence of noneffectiveness with noneffectiveness being defined as "excused from duty for medical reasons." This rate does not generally include time off for clinic visits and days off, other than hospitalization, for illness.

(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).

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

(3) An alternate method of computation is frequently used. It 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.

(a) 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 following formula will be used:

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

(b) The following relationship is another method to determine the noneffective rate:

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

*f.* *Case Fatality.* The case fatality rate is also called the case fatality ratio. It 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; that is, the number of deaths per 100 such cases.

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

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

where:

c = The number of cases of the kind studied.

f = The number of these cases that resulted in death.

k = The standard population (100).

(2) 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.