

# Durations of Illness Among Personnel of the Air Force

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MILITARY medical records maintained for the care of the patient are a unique source of data relative to durations of illness. In the Armed Forces, excusal from duty because of illness and subsequent return to duty require the approval of a physician and the preparation of a medical record. Each record shows the diagnosis made by the physician and the total time lost from duty, whether the person was treated in a hospital or in an infirmary, and whether he was in quarters or on sick leave. These data, therefore, are more extensive than those in which only the hospital phase of an illness is recorded, and at the same time they are more reliable than those in which an individual reports his own illness.

A medical record is prepared for each admission, which constitutes enrolling as a patient, a military person whose treatment requires that he be excused from duty beyond midnight of the day on which he reported for treatment. The day of admission is a day of illness; the day of discharge is a day of duty. By definition, therefore, a minimum of 1 day is counted for each admission. Convalescent leave is included in time lost for those patients who must return from such leave for further care and treatment. Convalescent leave granted patients who will return to duty upon expiration of such leave is not included.

The duration of illness, for purposes of this

discussion, refers to total time in an excused-from-duty status during one continuous episode of illness. Included in this study are only those cases returned to duty in 1954, regardless of when admitted. Excluded are fatal cases and those terminated by separation from the service for physical disability. (Return to duty is effected for 98 percent of the patients admitted.)

Table 1 shows selected measures related to the distribution of days lost by 24,508 cases of illness. The mean duration per illness was 12 days. This measure is, of course, influenced by the prolonged duration of relatively few cases. The fact that 75 percent of the cases returned to duty within 10 days (conversely, 25 percent remained 10 days or longer) shows that most Air Force illnesses are of a very short duration. This is to be expected since illnesses of a chronic or prolonged nature are likely to result in disability separation, infrequent in the Air Force population, and not included in this study.

Illnesses of a minor nature may be recorded as excused-from-duty cases for some military persons because domiciliary care (provision of meals in barracks) is normally not available. Also, the same individual may be included more than once either for separate initial occurrences of a given condition or for a recurrent attack of the same condition. A balancing factor, however, is that short-term illnesses treated on an outpatient basis are not included in this study.

Time lost because of a given condition can be discussed adequately only when that condi-

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tion is reported as the sole cause of admission. A single diagnosis is rendered for most illnesses (90 percent) reported among Air Force personnel. Durations of illnesses for multiple diagnosis cases are difficult to interpret because of the different accompanying diagnosis which may or may not prolong the time assigned to the primary cause of illness. Consequently, consideration is focused here on those cases in

which only one diagnosis was reported and which occurred in large enough numbers for meaningful analysis.

Table 2 and figures 1 through 14 pertain to single diagnosis illnesses which resulted in return to duty in 1954. In comparing the shapes of these distributions, it should be observed that two different scales have been used along the abscissa—a 1-day interval or a 10-day interval,

**Table 1. Duration of illness among patients returned to duty, U. S. Air Force, 1954**

Cases	Number of illnesses <sup>1</sup>	Mean days lost	Range of reliability of mean days lost <sup>2</sup>	Day after admission on which specified percentage of cases remained		
				50 per cent <sup>3</sup>	25 per cent	10 per cent
Total.....	24, 508	12. 0	11. 7-12. 3	5th	10th	25th
Single diagnosis.....	22, 018	10. 2	9. 9-10. 4	5th	9th	21st
Multiple diagnosis.....	2, 490	28. 2	26. 0-30. 5	11th	28th	65th

<sup>1</sup> In a random 10 percent sample of Air Force personnel.

<sup>2</sup>  $\pm 2$  standard errors.

<sup>3</sup> Median day.

**Table 2. Duration of illness for specified diagnostic conditions, patients returned to duty, U. S. Air Force, 1954 <sup>1</sup>**

Diagnosis	Number of cases in 10 percent sample	Mean number of days lost	Range of reliability of mean days lost <sup>2</sup>	Day after admission on which the specified percentage of cases remained		
				50 percent <sup>3</sup>	25 percent	10 percent
Common cold (47000).....	1, 553	3. 5	3. 4-3. 7	3d	5th	6th
Streptococcal sore throat (051).....	543	5. 3	5. 1-5. 5	5th	6th	7th
Anxiety reaction (310).....	149	11. 5	8. 1-14. 9	5th	9th	25th
Tonsillitis, chronic, with tonsillectomy or adenoidectomy (51013).....	224	7. 6	7. 1-8. 2	7th	9th	12th
Fracture of radius or ulna or both (813).....	47	21. 7	7. 6-35. 8	8th	21st	53d
Appendicitis, acute, uncomplicated (55000).....	323	11. 6	10. 9-12. 3	9th	14th	20th
Mumps (089).....	142	11. 2	10. 4-12. 1	10th	14th	17th
Pneumonia, primary atypical (49200).....	235	13. 4	12. 0-14. 9	10th	17th	24th
Hernia, inguinal, indirect (56001).....	199	14. 9	13. 7-16. 2	13th	19th	26th
Arthritis, all forms (720-725).....	103	28. 5	20. 9-36. 0	13th	35th	84th
Fracture of tibia or fibula or both (823).....	78	43. 3	29. 1-57. 6	13th	59th	152d
Pilonidal cyst (221).....	320	18. 9	16. 8-21. 0	14th	24th	36th
Ulcer of duodenum (not perforated) (54100).....	210	26. 2	22. 7-29. 7	20th	30th	55th
Infectious hepatitis (092).....	160	52. 0	47. 2-56. 9	49th	68th	87th

<sup>1</sup> Data are based on a random 10 percent sample of Air Force military personnel.

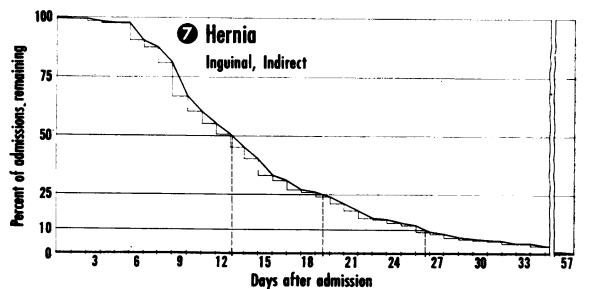
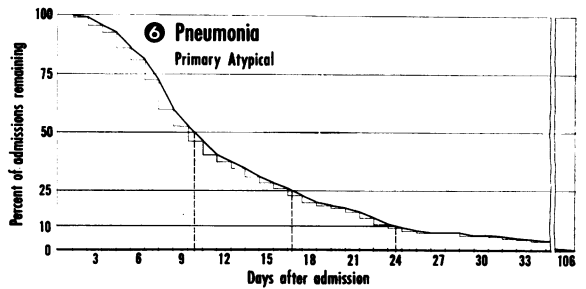
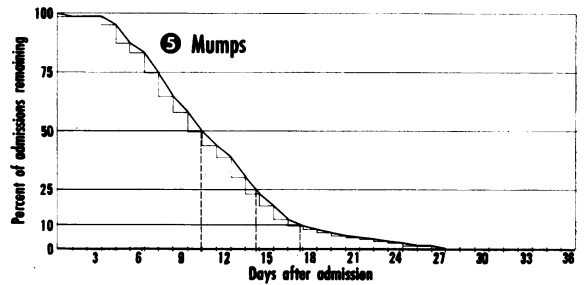
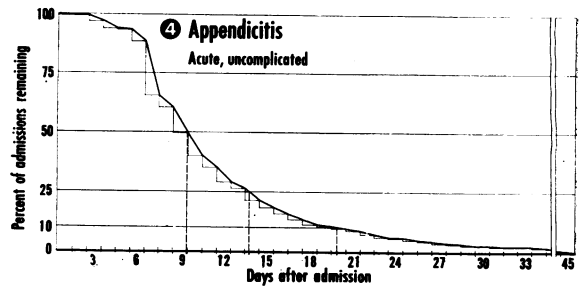
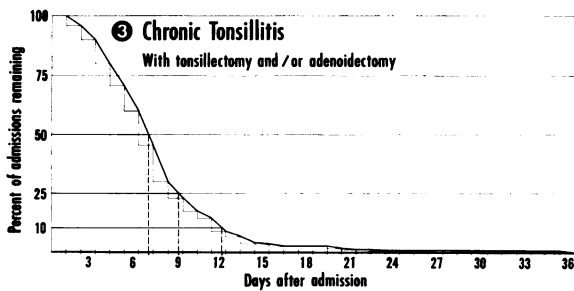
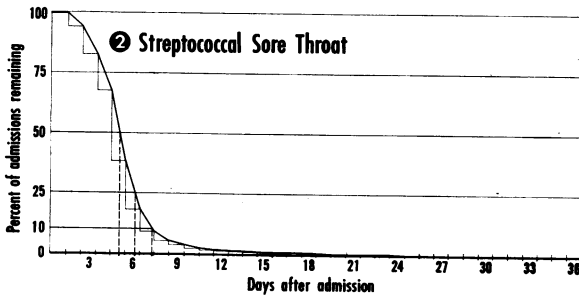
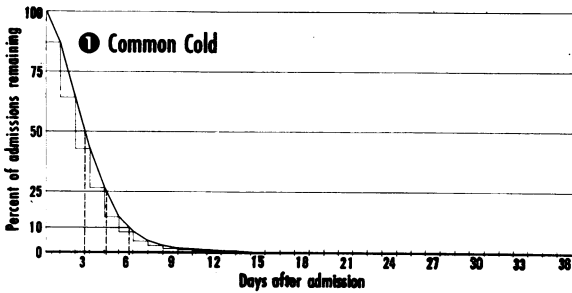
<sup>2</sup> There is about 1 chance in 20 that the true average lies outside this range ( $\pm 2$  standard errors).

<sup>3</sup> Median day.

SOURCE: DD Form 481; DA Form 8-24; NAVMED-F Card.

NOTE: Numbers in parentheses after diagnoses are from the International Lists (sixth revision) with U. S. Air Force expansion.

Durations of illness among Air Force personnel in 1954 showing, of those who subsequently returned to duty, the percent of patients remaining on specified day after admission.

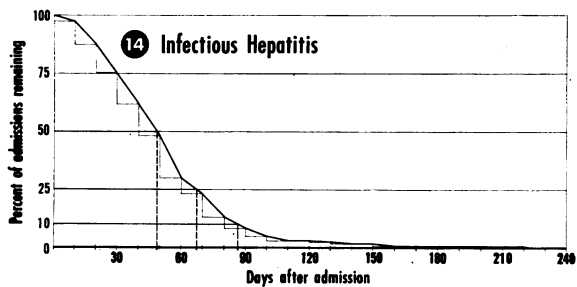
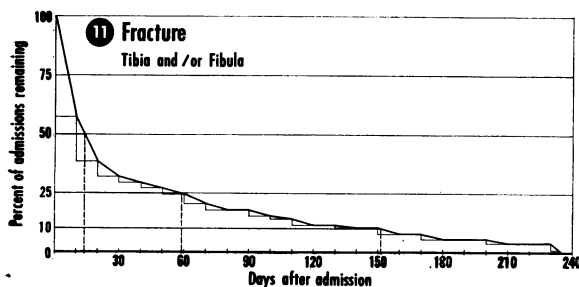
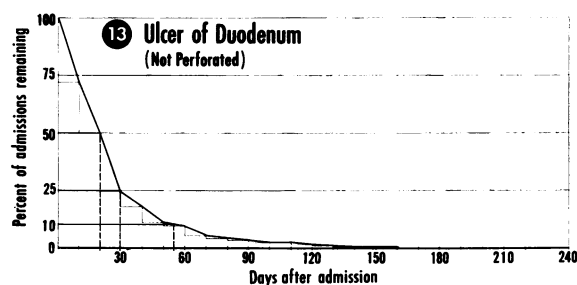
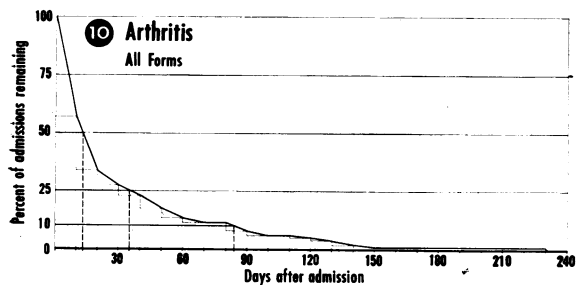
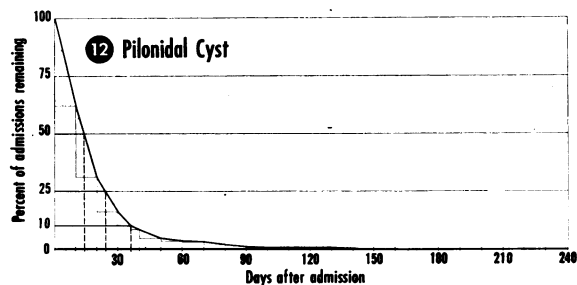
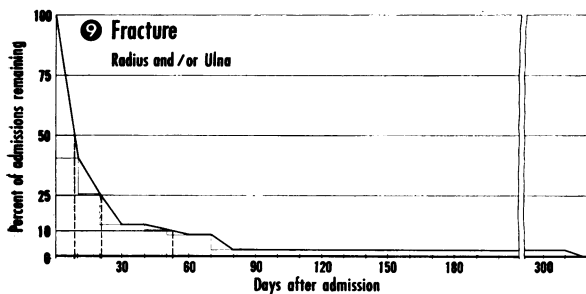
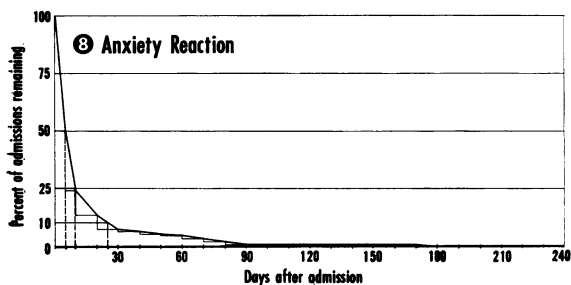


for convenience in presentation. The selected diagnostic conditions have been arrayed in table 2 in order of magnitude of median duration; the graphs, however, have been grouped according to the scale of the abscissa, for easier comparison.

The mean duration, even though influenced by extreme values, has its use as a descriptive parameter. For example, to compute total days lost or accumulated patient loads, for a given diagnosis or for a group of conditions, their mean durations must be known. On the other

hand, percentiles often provide more meaningful measures of a distribution of durations. The most commonly used percentile in vital statistics is the median (50 percent mark). This measure indicates the "middle" duration value. Furthermore, position of this measure in relation to the mean indicates the direction of skewness in an asymmetrical frequency distribution. Frequency distributions according to days lost are not plotted here. The graphs shown are inverse cumulative distributions, thus constituting "cases remaining" curves.

Durations of illness among Air Force personnel in 1954 showing, of those who subsequently returned to duty, the percent of patients remaining on specified day after admission.



Most of the distributions of the illnesses in this study are highly skewed to the right (or even J-shaped). In all instances the mean duration is greater than the median duration. Although any point or points on the percentile scale may be selected for the purpose at hand, the 25 percent and 10 percent marks have been chosen as additional informative measures because of common usage. They represent the number of days of illness elapsed before 75 percent and 90 percent of the cases, respectively, were returned to duty.

Table 2 and the 14 charts show, for each diagnosis, the number of illnesses observed, the mean duration, and the proportion of admissions remaining, by days after admission, with notation of the three percentile points mentioned. Any point on a particular curve indicates the elapsed days of illness (bottom scale) before a given proportion of the cases was returned to duty (complement of the scale at the left). Also, the range of days lost may generally be read directly from the horizontal scale, and, in addition, the modal day of discharge

(the duration most frequently encountered) is at the point showing the steepest drop of the curve.

Noting, for specific illnesses, the difference between the mean and the median gives a measure of the skewness of the distribution. Since skewness is almost invariably to the right, the greatest asymmetry occurs for those illnesses having some unusually prolonged cases. The reason for such skewness is the same as that for a greater range in the distribution, namely that certain diagnostic entities include a large variety of cases with heterogeneous characteristics, as opposed to other diagnoses which include a more homogeneous group of cases. The latter show a smaller range of durations and at the same time greater symmetry in the distribution.

For example, cases of acute uncomplicated appendicitis (fig. 4) of longer than 20 days'

duration were largely accounted for by persons discharged from the hospital who were required to return there at the end of convalescent leave. The type of operation or surgical procedure (not tabulated from these records) in treatment of pilonidal cysts (fig. 12) and duodenal ulcers (fig. 13) has a direct bearing on the duration of illness. The nature of a fracture (figs. 9 and 11) strongly affects the duration; in one case, a compound, comminuted fracture of the radius and ulna with nerve involvement lost 318 days. Other diseases such as the common cold (fig. 1) and streptococcal sore throat (fig. 2), showing a smaller spread of the distribution of durations and concurrent symmetry, suggest a greater homogeneity of characteristics. The means and medians here have approximately the same value.

## CDC Laboratory Refresher Training Courses

Refresher training in laboratory methods of diagnoses will be offered at the Communicable Disease Center, Chamblee, Ga., during the period September 1958 through April 1959. Two courses in the following schedule will be presented in two parts, and three will be repeated.

### Parasitic diseases :

Part 1. Intestinal parasites. Sept. 15–Oct. 10.

Part 2. Blood parasites. Oct. 13–31.

Rabies. Oct. 6–10; Jan. 12–16.

Viral and rickettsial diseases. Oct. 13–24; Mar. 9–20.

Tuberculosis. Oct. 20–31; Jan. 26–Feb. 6.

Medical mycology : Cutaneous, subcutaneous, and systemic fungi. Jan. 5–30.

Study of pulmonary mycoses. Feb. 9–20.

Veterinary mycology. Mar. 2–6.

### Bacterial diseases :

Part 1. General bacteriology. Mar. 2–13.

Part 2. General bacteriology. Mar. 16–27.

Serologic methods in microbiology. Mar. 16–Apr. 3.

Bacterial diseases : Enteric bacteriology. Mar. 30–Apr. 10.

Courses in the following will be offered by special appointment only :

Laboratory methods in the diagnosis of malaria.

Special training in virus techniques.

Typing of *Corynebacterium diphtheriae*.

Special problems in enteric bacteriology.

Phage typing of *Salmonella typhosa*.

Laboratory methods in the diagnosis of leptospirosis.

Serologic differentiation of streptococci.

Bacteriophage typing of staphylococci.

Information and application forms should be requested from the Laboratory Branch, Communicable Disease Center, Public Health Service, P. O. Box 185, Chamblee, Ga.