

Hospital records show that accidental injury is the chief cause of hospitalization, followed by hernia, heart disease, and tuberculosis. Leading causes of deaths are malignant neoplasms and heart disease.

Health Problems of American Seamen as Measured by Hospital Statistics

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THE HEALTH of seamen has long been a matter of concern to major maritime powers. In the United States, Congress authorized the President "to provide for the temporary relief and maintenance of sick or disabled seamen" in 1798, making merchant seamen the first group in this country eligible for medical care through Federal legislation. This action by Congress gave support to an industry that was an integral part of our national defense forces and vital to our foreign trade. At the same time, it provided the means for coping with a public health problem.

To a considerable degree, the public health problem of itinerant seamen without community ties has diminished. Living conditions on ships at sea and in boarding houses ashore have improved dramatically over those chronicled at the turn of the century. But seamen today continue to constitute a unique group whose occupation warrants special consideration of their health problems.

The merchant marine, long recognized as the "fourth arm of defense" and essential to foreign trade, is also an industry that requires a

high degree of risk to the health and physical well-being of its labor force. Seamen must undergo exposure to diseases through foreign travel as well as the health hazards of ship-board life. Close confinement and lack of professional medical attention for long periods when vessels are at sea are factors which can have far-reaching influence on health. In port, the seaman is frequently in need of medical care in a location many hundreds of miles from his home. For these reasons the United States and other maritime nations have seen fit to make special provision for the health needs of seamen.

Since seamen crews of merchant vessels are world travelers, national interest in the health of seamen has led to international recognition of the problem. In the early 1800's the United States Congress authorized the care of seamen from foreign-flag vessels in our marine hospitals, as they were then known, at the expense of the shipping operator. With the development of wireless communication, a program of medical advice to ships at sea was adopted that is today virtually worldwide. Lists of international venereal disease treatment facilities have been published for many years. More recently, a Joint International Labor Organization-World Health Organization Committee on the Hygiene of Seafarers has been formed.

In the United States, medical care is pro-

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vided for all seamen actively engaged in their occupation on American-flag vessels. Seamen with 60 days of continuous sea service are eligible for medical care while actively engaged in this work and for a 90-day period following their last sea service. We estimate that the number eligible for health services who were employed on vessels navigating the deep seas, the Great Lakes, and coastal and inland waterways averaged 162,500 in 1956 and 166,000 in 1957. (The year here and elsewhere in this paper refers to the Federal fiscal year, July 1–June 30. The estimate of employees is based on data in the Maritime Manpower Report and other information from the Maritime Administration in the Department of Commerce, the Fish and Wildlife Service in the Department of the Interior, and the American Waterways Operators, Inc.)

Seamen on American-flag vessels receive inpatient and outpatient medical and dental care through a network of Public Health Service facilities that also minister to the health needs of Coast Guard personnel, Federal employees with a job-related, compensable injury or illness, and several other categories of beneficiaries. The facilities used by seamen include 12 general medical and surgical hospitals, a tuberculosis hospital, and 2 neuropsychiatric hospitals. In addition, 26 outpatient clinics staffed with full-time personnel are operated in ports along the seacoasts and waterways in this country and its possessions. In another 98 locations, where the caseload does not warrant a full-time activity, care is supplied through contracts with private physicians for part-time service. Outpatient facilities are authorized to use local hospitals in emergency situations until patients can be transferred to the nearest Public Health Service hospital. Seamen receive about 40 percent of the total volume of care provided by these facilities. The following data indicate the level of utilization for seamen:

	1956	1957
Inpatient admissions.....	24, 184	25, 104
Average daily census.....	2, 359	2, 369
Inpatient discharges.....	23, 967	24, 658
Outpatient visits.....	438, 000	454, 973

It would be difficult to compare these gross measures of health services with standard or

average hospital utilization rates for the general population. The precise age-sex composition of the seaman labor force cannot be ascertained, and little is known about the extent to which seamen use health services outside Public Health Service auspices. These factors, however, do not preclude the development of a considerable quantity of informative material through analysis of hospital morbidity and mortality statistics. The causes of hospital admission and of hospital deaths are valid indicators of the major health problems of seamen. These data are reported to Washington for each patient discharged by Public Health Service hospitals and contract facilities. Information for seamen discharged in 1956 and 1957 forms the primary source of the data which follow. Ninety-nine percent of the patients were men. More than four-fifths were white; Negroes accounted for 10 percent, and another 3 percent were of other ethnic groups.

Causes of Hospitalization

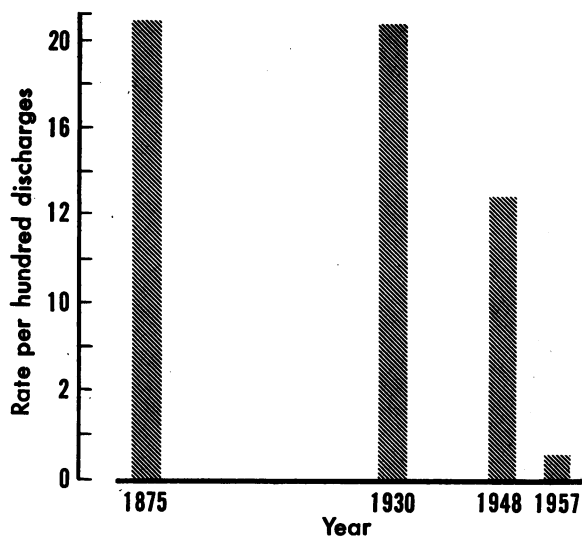
Injuries due to accidents head the list of causes for admission of seamen to hospitals. Other most frequently named causes are hernia, heart disease, tuberculosis, ulcers, and malignant neoplasms (table 1). These conditions

Table 1. Leading causes for hospital admission among seamen discharged from Public Health Service and contract hospitals, 1956 and 1957

Cause for hospitalization	1956		1957	
	Number	Rate per 100 discharges	Number	Rate per 100 discharges
All causes.....	23, 967	100. 0	24, 658	100. 0
Accidents (800-999)---	3, 173	13. 2	3, 385	13. 7
Hernia (560-561)-----	1, 465	6. 1	1, 614	6. 5
Heart disease (410-443)-----	1, 424	5. 9	1, 376	5. 6
Tuberculosis (001-019)-----	1, 173	4. 9	1, 204	4. 9
Ulcers of stomach (540-542)-----	768	3. 2	752	3. 0
Malignant neoplasms (140-205)-----	756	3. 2	739	3. 0

NOTE: Figures in parentheses are category numbers of the International Statistical Classification, 1948.

Figure 1. Hospitalization of seamen for venereal disease, Public Health Service and contract hospitals, selected years.



represent the cause for about one-third of the hospitalizations of seamen, and they account for slightly less than one-half of their total days of hospitalization each year.

Injuries due to accidents were the cause of hospitalization for more than 13 percent of the discharged patients in 1956 and 1957. The high standing of this category among the conditions leading to hospital admission is a reflection of the hazardous nature of the seaman occupation. In its Accident Facts for 1957 the National Safety Council reports that the marine transportation industry had the highest rate of disabling injuries (number of injuries per million man-hours) among 40 major industry groups. The 3,173 seamen discharged in 1956 following hospitalization for treatment of injuries included 989 patients with fractures (excluding those of skull and face bones and fracture residuals); 812 with open wounds, contusions, and the like; 614 with dislocations, sprains, and strains; 371 with intracranial injuries; and 387 with other injuries.

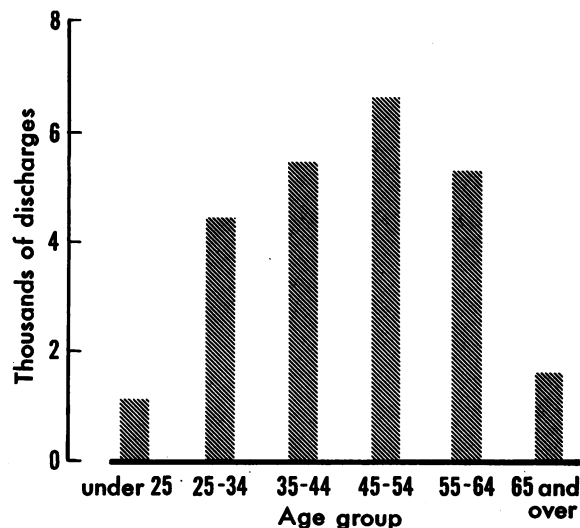
There has been little change in the relative frequency of injuries due to accidents as a cause of hospital admission among seamen during the past 10 years. This condition has ranked first since the late 1940's. Before then, however, venereal disease was the most frequently named cause of hospital admission. There were entire

wards set aside in Public Health Service hospitals for long-term treatment of syphilis. With the introduction of penicillin, hospitalization of seamen with venereal diseases was sharply curtailed. Although approximately the same number of seamen were discharged from hospitals in 1930 and in 1957, admissions for venereal disease amounted to more than 5,000 in 1930 as compared with 265 in 1957. As recently as 1948, venereal diseases have accounted for a substantial share of the hospitalizations of seamen (fig. 1).

The list of leading causes for hospitalization of seamen reflects some conditions traditionally associated with the maritime industry, such as accidents and tuberculosis. It also includes two relative newcomers, heart disease and malignant neoplasms. The number of seamen with these latter conditions indicates that the average age of the seamen labor force is increasing. This indication is borne out by analysis of the age distribution of the seaman discharged from hospitals. Between 1948 and 1957 the median age increased from 37.9 to 47.0 years; in 1957, seamen 65 years of age and older outnumbered those under 25 years of age (fig. 2).

The frequency rates for the leading causes of hospital admission vary considerably according to the age of the patients. Accidents represent a relatively small share of the conditions treated among older patients, who tend to have

Figure 2. Age at time of hospital admission of seamen discharged from Public Health Service and contract hospitals, 1957.



substantially more heart disease and malignant neoplasms (table 2).

Seamen treated only for accidental injuries during a period of hospitalization had an average length of stay of 17 days in 1956. This compares with 15 days for seamen with a diagnosis of hernia, 23 days for those with heart disease, 111 days for those with tuberculosis, 20 days for those with ulcers, and 35 days for those with malignant neoplasms. These figures are based on single-diagnosis cases not requiring further immediate hospitalization. Transfer cases are excluded.

These differences in length of stay for the leading causes of hospital admission and the variation with age in types of conditions treated help to explain why older seamen tend to be hospitalized for longer periods than younger ones. Other factors are contributory, however. Older patients tend to be treated for more conditions per hospital admission than younger seamen and to remain hospitalized longer even for the same conditions. The variation in length of stay by age group is shown below:

<i>Age (years)</i>	<i>Median stay (days)</i>
All ages-----	17
Under 25-----	10
25-34-----	13
35-44-----	15
45-54-----	18
55-64-----	22
65 and older-----	23

Causes of Hospital Deaths

A total of 518 hospital deaths were reported for seamen in 1956 by Public Health Service hospitals and contract facilities. Of this number, 208, or 40 percent, were attributed to malignant neoplasms. The next most frequently named cause was heart disease, which accounted for 109, or 21 percent, of the hospital deaths (table 3).

For all males in the general population, heart disease is the leading cause of death, both in and out of hospitals. Heart disease deaths far outnumber the deaths attributed to malignant neoplasms. This same relationship is observed among male patients dying while hospitalized under the Saskatchewan Hospital Service Plan.

Table 2. Leading causes of hospitalization for seamen, by age: rate per 100 discharged patients, Public Health Service and contract hospitals, 1956

Cause for hospitalization	Age at time of admission (years)		
	Under 45	45-64	65 and older
Accidents-----	17.6	10.1	5.8
Hernia-----	4.6	7.7	5.2
Heart disease-----	1.6	8.5	17.6
Tuberculosis-----	4.2	5.5	4.0
Ulcers of stomach-----	3.2	3.5	1.3
Malignant neoplasms-----	1.0	4.3	10.0

NOTE: For International Statistical Classification numbers for cause categories, see table 1.

Of 1,853 male deaths reported by general hospitals of Saskatchewan in 1951, 447 were the result of malignant neoplasms as compared with 532 caused by heart disease. Among the seamen included in our study, however, the number of deaths from malignant neoplasms is almost twice the number of deaths attributed to heart disease. (The Saskatchewan data were supplied by the Division of Public Health Methods, Public Health Service, which obtained them from the Saskatchewan Hospital Service Plan.)

This difference is probably explained by the effects these diseases have on the employment pattern of seamen. Seamen with heart disease

Table 3. Hospital deaths among seamen, by age, Public Health Service and contract hospitals, 1956

Cause of death	Age at time of admission			
	All ages	Under 45	45-64	65 and older
All causes-----	518	73	332	113
Malignant neoplasms (140-205)-----	208	23	139	46
Heart disease (410-443)-----	109	7	72	30
General arteriosclerosis (450)-----	27	0	15	12
Cirrhosis of liver (581)-----	26	2	19	5
Tuberculosis (001-019)-----	18	3	11	4
All other-----	130	38	76	16

NOTE: Figures in parentheses are category numbers of the International Statistical Classification, 1948.

which is not rapidly progressive to death become unfit for duty at sea and consequently lose their eligibility for medical care. The end result of the disease in these patients is not reflected in these figures. Malignant neoplasms, however, frequently cause relatively quick death. Hence, many more seamen with malignant neoplasms than with heart disease are likely to be eligible for care throughout the course of their disease.

That the older seamen tend to leave the labor force is indicated by a comparison of the ages of hospitalized seamen and of Saskatchewan males. In Saskatchewan in 1951, the proportion of discharged patients 65 years of age and older was 20 percent. The corresponding figure for the seamen in our study was less than 7 percent.

Adjusting for the difference in ages between the seamen and the Saskatchewan males would not change the picture substantially. Of the deaths of seamen aged 45-64 years, 139 were attributed to malignant neoplasms and 72 to heart disease, still a ratio of 2 to 1. The number of deaths due to malignant neoplasms among Saskatchewan males in this age group was 130 as compared with 139 for heart disease.

Another comparison for discharged patients aged 45-64 years, however, shows that the proportions of hospital admissions for malignant neoplasms were approximately the same among seamen and Saskatchewan males. Heart disease, on the other hand, was the cause of hospitalization for a greater proportion of the seamen (table 4).

These data support the hypothesis that seamen with heart disease leave the maritime labor force and thereby lose their eligibility for medical care. The fact that deaths due to malignant neoplasms far outnumber those caused by heart disease among seamen receiving medical care in Public Health Service and contract facilities cannot, therefore, be interpreted as evidence of an association between the seaman occupation and malignancies.

Tuberculosis, like malignant neoplasms and heart disease, ranks high as a cause of death

Table 4. Malignant neoplasms and heart disease among hospitalized seamen and Saskatchewan males aged 45-64 years

Cause for hospitalization	Seamen		Saskatchewan males	
	Number	Rate per 100 discharges ¹	Number	Rate per 100 discharges ²
Malignant neoplasms	491	4.5	561	4.4
Heart disease	973	9.0	1,029	8.1

¹ Based on total of 10,842 discharged patients, excluding tuberculosis patients.

² Based on total of 12,780 patients discharged from general hospitals.

as well as a cause of hospitalization. In 1956, 18 deaths among hospitalized seamen were attributed to tuberculosis, about 3.5 percent of the total hospital deaths. This figure is considerably smaller than the proportion in past years. Tuberculosis accounted for 15 percent of the hospital deaths among seamen in 1948 and 5 percent in 1954.

Summary

Examination of morbidity and mortality statistics from Public Health Service hospitals and contract facilities indicates that accidents, hernia, heart disease, tuberculosis, ulcers, and malignant neoplasms are today the major health problems of American seamen. These conditions represent the cause for about one-third of all hospitalizations of seamen and account for slightly less than one-half of the days of inpatient care they receive.

Venereal disease, once the leading cause of admission to hospitals among seamen, has virtually disappeared as an illness requiring inpatient care.

Malignant neoplasms and heart disease are named as the underlying cause for 60 percent of the hospital deaths. Deaths due to tuberculosis have decreased sharply from levels of a few years ago.