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HISTORY OF RESPIRATORY ILLNESS AT THE U.S. NAVAL ACADEMY

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History of Respiratory Illness at the U.S. Naval Academy

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Throughout history, respiratory diseases have been a frequent cause of morbidity in U.S. populations. Because of stress, crowding, and naïve immune systems, military training populations are particularly prone to acute respiratory disease epidemics. An examination of the history of respiratory illness at the U.S. Naval Academy revealed that, in the earliest decades at the school, respiratory illness was a primary cause of both disease and mortality. With the advent of antibiotics and vaccines, most respiratory disease mortality has been reduced. However, even today, morbidity remains significant. Health concerns regarding respiratory diseases are heightened by emerging and reemerging respiratory disease agents that have increased antibiotic resistance and/or increased virulence. Enhanced surveillance and rapid diagnostic capabilities, placed in military settings, will increase knowledge of the epidemiology of many respiratory diseases. These strategies can lead to earlier treatment and prevention measures, thus halting the further transmission of disease and decreasing both morbidity and mortality. During the most recent history of the Naval Academy, acute respiratory infections have remained a primary cause of medical morbidity.

Introduction

In the United States, respiratory infections are a common cause of morbidity and account for a large proportion of lost time from work and school.¹ Acute respiratory diseases (ARD) have long been a problem in military training populations, in part because of crowded environments and thus greater exposure to respiratory pathogens.¹⁻⁵ The use of vaccines and antibiotics has resulted in relatively low ARD rates during the last several decades. However, increased antibiotic resistance (e.g., penicillin-resistant *Streptococcus pneumoniae*) and the emergence of more virulent strains of respiratory pathogens (e.g., influenza virus) have raised concerns that respiratory epidemics may become even more frequent among high-risk military populations.³

Respiratory illnesses have a great many negative effects on military populations. The loss of time from duty significantly affects the medical readiness of a command, thus affecting its ability to carry out and complete its mission. Additionally, ARD

epidemics further burden an already strained military health care system. Also, military populations are extremely mobile, providing an increased risk of spreading illness to a wide range of individuals.

The midshipmen of the U.S. Naval Academy (Annapolis, Maryland) are similar to many university student populations. Students gather from various parts of the United States to live, eat, and study in close quarters. However, they differ in that midshipmen, particularly in their first year, undergo numerous physical and psychological stressors that, although important for the training experience, may make them more susceptible to respiratory infections.³

In August 1997, an epidemic of respiratory illness occurred at the U.S. Naval Academy (USNA), causing several hundred midshipmen to become ill, several of whom were hospitalized. Symptoms included fever, sore throat, chills, and/or cough. The Naval Health Research Center (San Diego, California) initiated a 1-year cohort study beginning in July 1998. The study followed the cohort of entering freshmen to determine the incidence and causes of respiratory disease at the USNA. The goal of the study was to use the data to make public health decisions regarding vaccine interventions and possible chemoprophylaxis. In parallel with that study, this paper sought to descriptively examine the impact of respiratory disease at the USNA since its establishment in 1845. This historical review involved research of all available literature from the USNA medical clinic, several Navy libraries, the National Archives in Annapolis, the USNA Museum, and the National Library of Medicine.

Respiratory Illness at the U.S. Naval Academy: The 19th Century

Established in 1845, the U.S. Naval Academy was located adjacent to the Severn River's outlet into the Chesapeake Bay.⁶ The school has remained in operation at the Annapolis, Maryland, site since then, except for the Civil War period of 1861 to 1865, when most students were moved north of the Mason-Dixon Line to Newport, Rhode Island.

Because of its location along shallow estuaries, malaria (miasmatic disease) was a chief medical concern during the school's early years, along with gastrointestinal and respiratory illness. It was during the 1870s that the Naval Academy Senior Medical Officer, Dr. A.L. Gihon, first reported on the various causes of disease at the Academy. Dr. Gihon, a pioneer in preventive medicine, kept meticulous records and wrote a detailed account of the medical history of the USNA during its first 33 years.⁶ Figures 1 and 2 show the disease category and mortality rates during this period. Although respiratory illness was the second leading cause of reported disease, it was the leading cause of mortality.

As Dr. Gihon wrote: "a very large proportion of actual departures from health must be classed as preventable."⁶ With regard

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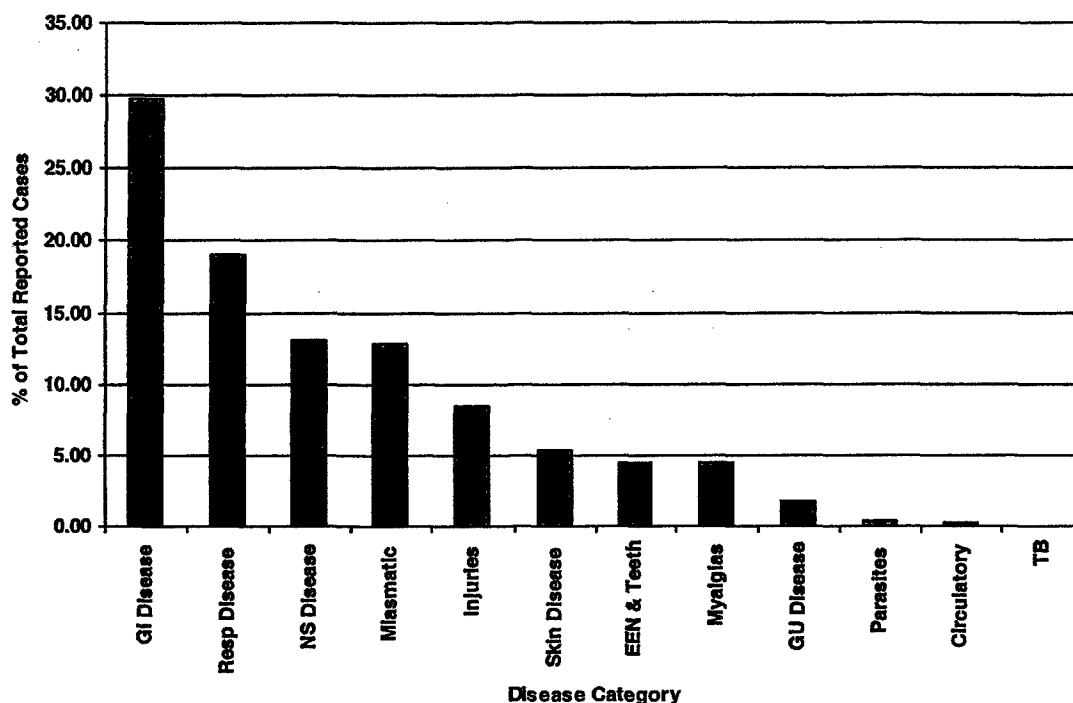


Fig. 1. Percentage of total reported disease by disease categories among midshipmen of the U.S. Naval Academy, 1845 to 1978. GI Disease, gastrointestinal diseases; Resp Disease, respiratory illnesses; NS Disease, nervous system diseases; Miasmatic, malaria; Skin Disease, dermatologic disorders; EEN & Teeth, eyes, ears, nose, throat, and dental disorders; GU Disease, genitourinary diseases; Parasites, parasitic diseases; Circulatory, cardiovascular diseases; TB, tuberculosis.

to preventing respiratory disease, Dr. Gihon, ahead of his time, recommended that dormitory windows be reconstructed to allow better ventilation. He also insisted the steam heat be set at a reasonable temperature and not be altered by the cadets. Dr.

Gihon urged the construction of new wings in the barracks to decrease crowding and to allow more breathing space for the students.⁶

Through the 1880s, the incidence of malaria decreased as

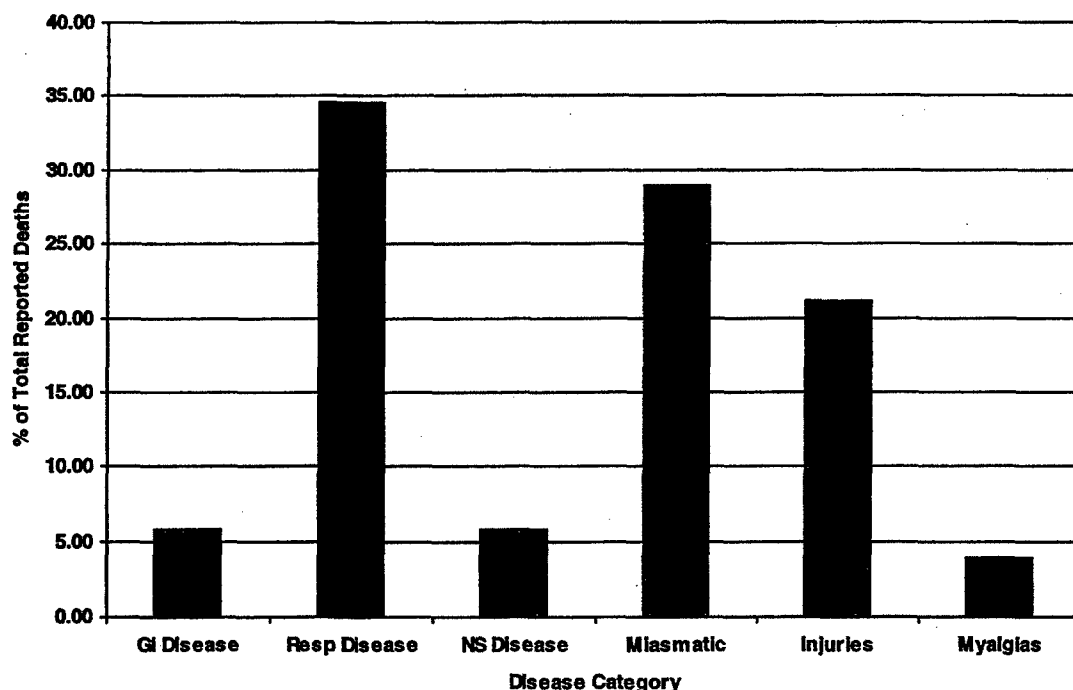


Fig. 2. Percentage of total reported deaths by various disease categories among midshipmen of the U.S. Naval Academy, 1845 to 1878. GI Disease, gastrointestinal diseases; Resp Disease, respiratory illnesses; NS Disease, nervous system disease; Miasmatic, malaria.

drainage on and around the school grounds improved. Gastrointestinal disease became the most common cause of morbidity, followed closely by respiratory illnesses, which accounted for 8 to 20% of the medical illnesses.⁷⁻¹² Records from the winter of 1880-1881 show that epidemics of throat infections, principally tonsillitis and pharyngitis, occurred among the midshipmen.⁹ At this time, the Senior Medical Officer again recommended expansion of the midshipmen's quarters to decrease crowding and thus contagion.⁸

Respiratory illness at the USNA demonstrated regular periodicity from 1884 to 1888 (Fig. 3). During the first quarter of 1885, 1886, and 1887, pharyngitis and tonsillitis were most prevalent. The cases were "characterized by a membranous exudation" and believed to be diphtheric in origin.¹² Although there were many diphtheria deaths among civilians living in the town of Annapolis, only three such deaths occurred among midshipmen.¹²

During the winter of 1889-1890, an influenza pandemic spread throughout the United States. It is thought to have initially been imported to the United States from U.S. Navy vessels that had visited Lisbon, Portugal, where influenza had been epidemic for some weeks. The disease appeared on the U.S. eastern seaboard late in December 1889, with the first cases occurring at the USNA on December 25, 1889. Over a period of 27 days, 56% of the 450 officers, midshipmen, and enlisted men suffered influenza infection.¹³ The attack rate was highest among midshipmen, with 75% infected.¹³ Symptoms included chills, fever, neuralgia, bronchitis, nausea, and vomiting. Although convalescence was prolonged, with extended debility the rule, there were few complications and sequelae among USNA personnel.¹³

Respiratory Illness at the U.S. Naval Academy: The 20th Century

From 1890 to 1915, respiratory illness continued to account for a significant number of sick days at the USNA.¹⁴⁻²⁹ Respiratory disease epidemics (catarrhus epidemicus) occurred in 1897 and 1908.^{18,23} The USNA suffered influenza epidemics in the autumn of 1901 and 1911, resulting in many additions to the sick list.^{21,25} However, it was reported that midshipmen were protected from larger epidemics by a rigid quarantine program and other preventive medicine measures.²¹

The influenza A pandemic of 1918-1919 actually began to build from focal epidemics occurring in previous years.³⁰ In 1915, influenza cases began to increase at the USNA. In that year, influenza caused a total of 161 hospital admissions and accounted for 42% of total sick days among midshipmen.³¹ In 1916, influenza again reached epidemic proportions.³² Influenza was not reported in 1917,³³ but it was again epidemic in 1918, when it accounted for 4,076 of the 8,153 disease sick days.³⁰ A midshipman, writing home to a friend, indicated that as of October 19, 1918, there had been 1,500 cases of "flu" with 11 deaths at the USNA.³⁴ Affected midshipmen were transferred to the hospital and quarantined for containment, and the local epidemic ran its course. However, again in January 1920, there were increased numbers of respiratory illnesses attributed to influenza. An official noted the following: "On February 3, this disease reached epidemic proportions, attaining its peak on February 10, declining until the 23rd, after which there were only sporadic cases. As a result of complicating pneumonia, three midshipmen died at the naval hospital. This influenza epidemic was of the same character, but much milder in type than that of 1918."³⁵

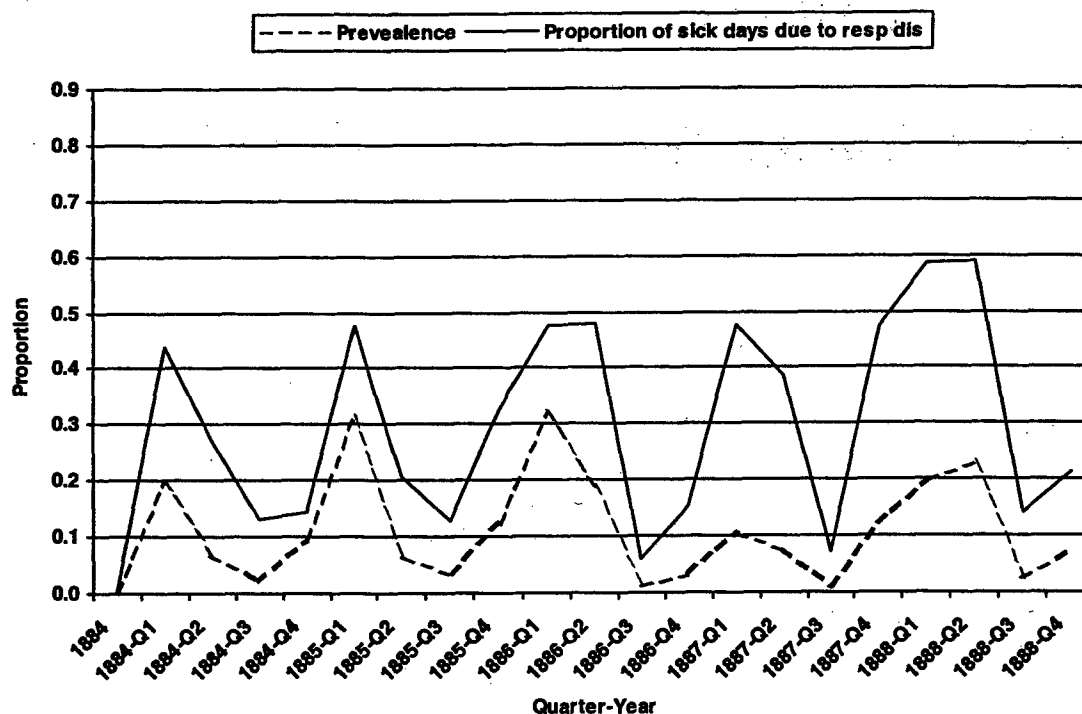


Fig. 3. Prevalence of respiratory cases and proportion of total sick days attributable to respiratory illnesses among midshipmen by quarter, U.S. Naval Academy, 1884 to 1888.

Since the 1918–1919 influenza pandemic, global influenza epidemics have occurred approximately every 10 to 15 years.³⁶ The pandemic of 1933–1935 was considered mild,³⁶ and we could find no reports of an epidemic among USNA midshipmen. In the early 1940s, the United States experienced an epidemic of influenza or “grip.” This was also a mild epidemic and not as serious as that experienced by Great Britain or Germany during the same period.³⁷ Then, with predictable periodicity, a more significant pandemic swept the world in 1957–1958. The first U.S. Navy cases occurred in April 1957 among personnel exposed to disease in the Far East (i.e., those aboard ships operating in the Pacific and those shore based in the Far East).³⁸ As the ships returned to port in the western United States, the disease spread rapidly in San Diego, California. After identification of the new strain of influenza, the U.S. Navy, concerned that high attack rates would impair operational readiness, agreed on a two-dose influenza immunization program.³⁹ In anticipation of the Far East influenza epidemic, the Naval Academy Medical Department received monovalent and polyvalent vaccine on September 20, 1957. Even though the majority of midshipmen received the vaccines during the period from September 23 to 26, 1957, cases of influenza began to occur at the Academy on October 1 (20–30 cases per day), with a large increase seen on October 7 (96 cases).⁴⁰ The daily rate thereafter was 90 to 275 cases, with a peak at 275 cases on October 15. On October 16, the epidemic curve took a downward turn. During the month of October, the epidemic affected approximately 60% of midshipmen.⁴⁰ Although fast spreading, the disease was relatively mild, with 50% of those affected able to resume taking classes after 24 hours.³⁹ The Navy Surgeon General's medical statistics report for 1957 demonstrates the marked impact of the 1957–1958 “Asian flu” on the U.S. Navy and Marine Corps (Fig. 4).³⁹

The most recent epidemics of respiratory infections occurred

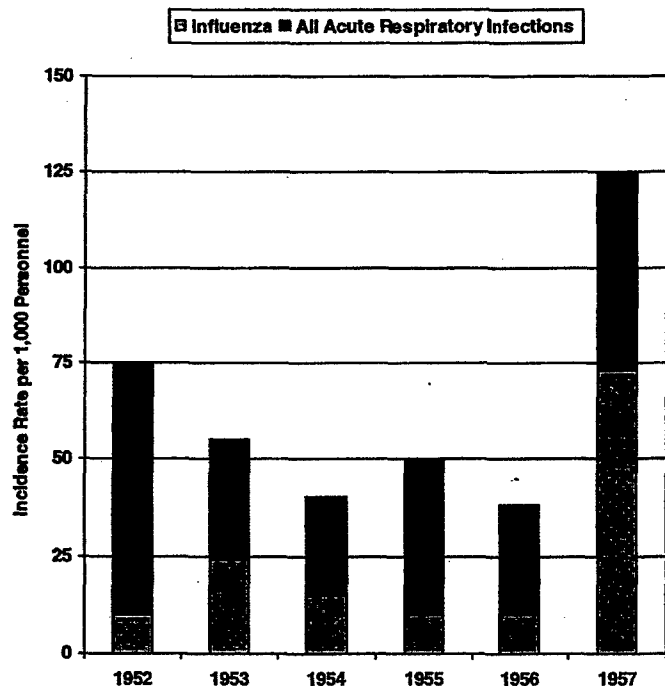


Fig. 4. Acute respiratory disease infections among U.S. Navy and Marine Corps personnel, 1952 to 1957.³⁹

at the Naval Academy during the winters of 1995, 1996, and 1997, with several hundred midshipmen seeking medical care each season. Diagnoses included tonsillitis and pneumonitis, but the causative agents were not identified. Although most of the cases were mild, several days of lost productivity per case ensued.

An investigation into the cause of these epidemics revealed that the most common causes of ARD were *Chlamydia pneumoniae* (52.6%) and *Mycoplasma pneumoniae* (33.3%).⁴¹ This finding of primarily bacterial infections among officer trainees is in contrast to the recent studies of enlisted trainees at U.S. Army, Navy, and Marine Corps recruit training sites. These studies have revealed epidemics with up to a 90% yield of adenovirus from throat culture.^{42–44} Such disparities in the causes of ARD and the emergence of new respiratory threats among U.S. military trainees, such as *Bordetella pertussis*⁴⁵ and new strains of adenovirus,⁴⁶ underscore the need for the Department of Defense to improve surveillance strategies.

The Centers for Disease Control and Prevention, in response to emerging disease, have formatted objectives for preventing and controlling them. These include strengthening disease surveillance, improving tools for identifying emerging infectious disease, and enhancing laboratory capability internationally and in the United States.⁴⁷ The Department of Defense has begun such measures through its newly developed Global Emerging Infections Surveillance Program,^{48,49} which has strengthened ARD surveillance, particularly for influenza,⁵⁰ and has improved Department of Defense public health support for respiratory diseases.^{49,51}

Summary

Throughout its history, respiratory illnesses have had a major impact on the health of midshipmen at the U.S. Naval Academy. Such illness is highly disruptive to the USNA's training mission. With the advent of vaccines and antibiotics, respiratory disease severity and mortality have been reduced, but respiratory infections remain a leading cause of morbidity at the USNA and among other military populations.^{3–5,52} New respiratory threats, such as antibiotic-resistant organisms and the development of more virulent strains of virus,³ promise to increase this morbidity. Continued modern epidemiological studies, which include robust, laboratory-based surveillance supported by sensitive and specific diagnostic tests, are needed to monitor military populations. Understanding respiratory disease risk factors and causes among service academy students will guide evidence-based health care decisions, such as antibiotic prophylaxis and vaccinations, and will serve to reduce such morbidity.

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References

- Richards AL, Hyams KC, Watts DM, Rozmajzl PJ, Woody JN, Merrell BR: Respiratory disease among military personnel in Saudi Arabia during Operation Desert Shield. *Am J Public Health* 1993; 83: 1326-9.
- Gray GC, Duffy LB, Paver RJ: *Mycoplasma pneumoniae*: a frequent cause of pneumonia among U.S. Marines in southern California. *Milit Med* 1997; 162: 524-6.
- Gray GC, Callahan JD, Hawksworth AW, Fisher CA, Gaydos JC: Respiratory diseases among military personnel: countering emerging threats. *Emerg Infect Dis* 1999; 5: 379-87.
- Cross ER, Hermansen LA, Pugh WM: Upper respiratory disease in deployed U.S. Navy shipboard personnel. *Milit Med* 1992; 157: 649-51.
- Pazzaglia G, Pasternack M: Recent trends of pneumonia morbidity in US Naval personnel. *Milit Med* 1983; 148: 647-51.
- Gihon AL: Contributions to Medical Science, Vol 4, Hygienic and Medical Reports by Medical Officers of the United States Navy, pp 813-97. Washington, DC, Government Printing Office, 1879.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1879, pp 130-8. Washington, DC, Government Printing Office, 1881.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1880, pp 380-5. Washington, DC, Government Printing Office, 1882.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1881, pp 610-53. Washington, DC, Government Printing Office, 1883.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1882, pp 573-6, 595-605. Washington, DC, Government Printing Office, 1884.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1883, pp 219-21. Washington, DC, Government Printing Office, 1884.
- Walton TC: Report on U.S. Naval Academy, Annapolis MD. In Report of the Chief of the Bureau of Medicine and Surgery, 1888, pp 39-44. Washington, DC, Government Printing Office, 1889.
- Andersen F: Report on influenza. In Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1890, pp 84-7. Washington, DC, Government Printing Office, 1890.
- Walton TC: Report on U.S. Naval Academy, Annapolis MD. In Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1893, pp 81-4. Washington, DC, Government Printing Office, 1893.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1894, p 4. Washington, DC, Government Printing Office, 1894.
- Walton TC: Report on U.S. Naval Academy, Annapolis MD. In Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1895, pp 63-5. Washington, DC, Government Printing Office, 1895.
- Walton TC: Report on U.S. Naval Academy, Annapolis MD. In Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1896, pp 118-20. Washington, DC, Government Printing Office, 1896.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1897, pp 13-4, 44-5, 71. Washington, DC, Government Printing Office, 1897.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1899, pp 896-7. Washington, DC, Government Printing Office, 1899.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1900, pp 1074-6. Washington, DC, Government Printing Office, 1900.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1901, pp 588-92. Washington, DC, Government Printing Office, 1901.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1902, pp 131-2. Washington, DC, Government Printing Office, 1902.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1908, pp 908-9. Washington, DC, Government Printing Office, 1908.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1910, pp 720-3. Washington, DC, Government Printing Office, 1910.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1911, pp 453-4. Washington, DC, Government Printing Office, 1911.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1912. Washington, DC, Government Printing Office, 1912.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1913. Washington, DC, Government Printing Office, 1913.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1914, p 355. Washington, DC, Government Printing Office, 1914.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1915, p 683. Washington, DC, Government Printing Office, 1915.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1919, pp 269-71, 358-451. Washington, DC, Government Printing Office, 1919.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1916, p 675. Washington, DC, Government Printing Office, 1916.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1917, p 767. Washington, DC, Government Printing Office, 1917.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1918, pp 110-3. Washington, DC, Government Printing Office, 1918.
- Haskell OS: Letter written to Audrey McDougall, dated October 19, 1918. Manuscript collection No. 259, Orin Shepley Haskell Letters. Special Collections and Archives Division, Nimitz Library, US Naval Academy, Annapolis, MD.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1921, pp 48-9. Washington, DC, Government Printing Office, 1921.
- Dolin R: Influenza. In Harrison's Principles of Internal Medicine, Ed 12, pp 695-700. New York, McGraw-Hill, 1991.
- Schubert P: A Benson & Hedges Broadcast from WOR/MUTUAL. Tuesday, December 14, 1943. Paul Schubert News Analyses: Radio Broadcasts 1939-1946. Special Collections and Archives Division, Nimitz Library, US Naval Academy, Annapolis, MD.
- Surgeon General USN: Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy for the Year 1957, pp 3-4. Washington, DC, US Bureau of Medicine and Surgery, 1957.
- Surgeon General USN: Ninety-Third Annual Report of the Surgeon General, U.S. Navy to the Secretary of the Navy, Relative to Statistics of Diseases and Injuries in the United States Navy for the Calendar Year 1957, pp 7-9, 36-9. Washington, DC, US Bureau of Medicine and Surgery, 1957.
- Gordon JNC: Report to the Superintendent from the Senior Medical Officer, U.S. Naval Academy. Dated November 12, 1957. Special Collections and Archives Division, Nimitz Library, US Naval Academy, Annapolis, MD.
- Gray GC, Schultz RG, Gackstetter GD, et al: A prospective study of respiratory infections at the United States Navy Academy. *Milit Med*. In press.
- Gray GC, Goswami PR, Malasig MD, et al for the Adenovirus Surveillance Group: Adult adenovirus infections: loss of orphaned vaccines precipitates military respiratory disease epidemics. *Clin Infect Dis* 2000; 31: 663-70.
- McNeill KM, Ridgely BF, Monteith SC, Tuchscherer MA, Gaydos JC: Epidemic spread of adenovirus type 4-associated acute respiratory disease between U.S. Army installations. *Emerg Infect Dis* 2000; 6: 415-9.
- Hendrix RM, Lindner JL, Benton FR, et al: Large, persistent epidemic of adenovirus type 4-associated acute respiratory disease in U.S. Army trainees. *Emerg Infect Dis* 1999; 5: 798-801.
- Jansen DL, Gray GC, Putnam SD, Lynn F, Meade BD: Evaluation of pertussis in U.S. Marine Corps trainees. *Clin Infect Dis* 1997; 25: 1099-107.
- Erdman DD, Xo WH, Gerber SI, Gray GC, Schnurr DP, Anderson LJ: Recent emergence of adenovirus type 7 genomic variants in the United States. Presented at the International Conference on Emerging Infectious Diseases 2000, July 16-19, 2000, Atlanta, GA.

47. Centers for Disease Control and Prevention: Preventing Emerging Infectious Diseases: A Strategy for the 21st Century. Atlanta, GA, US Department of Health and Human Services, October 1998.
48. Gaydos JC: The need for a military public health laboratory symposium. *Milit Med* 2000; 165: 5-7.
49. Bolton JC, Gaydos JC, Barker T, et al: Military public health laboratory workshop group B: a Department of Defense directory of public health laboratory services for infectious agents and public health laboratory system, 22-23 September 1999. *Milit Med* 2000; 165(suppl 2): 66-9.
50. Canas LC, Lohman K, Pavlin JA, et al: The Department of Defense laboratory-based global influenza surveillance system. *Milit Med* 2000; 165: 52-6.
51. Ryan M, Gray G, Hawkworth A, Malasig M, Hudspeth M, Poddar S: The Naval Health Research Center respiratory disease laboratory. *Milit Med* 2000; 165(suppl 2): 32-4.
52. Meiklejohn G, Zajac RA, Evans, ME. Influenza at Lowry Air Force Base in Denver, 1982-1986. *J Infect Dis* 1987; 156: 649-51.

Letters to the Editor (Cont'd)

already returned from deployment. My impression was that a number of factors in addition to those you studied also had an effect on their "mood."

- While "Vietnam" was certainly not a popular war, it was a major conflict, and young, healthy Americans (including healthcare providers) knew that their chances of serving in or near Vietnam were very great indeed. It was just a matter of when. Anticipatory grumbling among Navy healthcare providers about deployment was remarkably subdued. From my conversations with the generation you studied in USNS Comfort, I got the impression from physicians and nurses that they were more frustrated about: 1) being dislodged from a setting where they had stability, significant professional satisfaction, "power" and even "moonlighting" opportunities; 2) being sent to support a "political" situation about which they had personal misgivings; and 3) in retrospect (fortunately for the combatant troops!), the deployed healthcare providers fought off intense boredom when very few casualties materialized.

A bit of nostalgic narrative:

I arrived at monsoon-soaked Charley Med late in the evening of Christmas Eve, 1965. A typical backlog of injuries existed, and this young anesthesiologist was led hastily through the rain to the OR where his first combat patient was waiting. Twenty four hours later, when our magnificent team had completed its work with that particular wave of injuries, I had the chance to get some sleep and meet those I was to work with 13 months. I recall being given a warm coke and a Spam sandwich between cases that long night.

After perhaps 6 months of demanding duty at Charley Med, I found myself "pondering the meaning of life" occasionally during the slack period, but I really do not remember depression in myself or in my fellow workers. If there was an exception, it was our Navy psychiatrist, who had an excellent rapport with combat fatigue casualties, but he never participated in care of the physically injured. We had only one true internist, our CO, and he was magnificent as a triage officer and administrator. The remaining specialists were surgically oriented. (We had no nurses.) The GMOs and even the dentists carried much of the load of caring for the lesser injuries, but not the psychiatrists, who

invariably stayed in the "club" when incoming casualties swamped our facility. I do not know if he was depressed!

Again, I don't believe we had time to be depressed at Charley Med. In fact, when I was being driven away to meet the plane back to Okinawa and the States, I remember having tears in my eyes as I felt I was abandoning the finest healthcare team I ever worked with in my life, past, present, or future.

Toward the end of 1966, USS Repose, an aging hospital ship, arrived in Danang Harbor. Occasionally we had the opportunity to visit the ship, and my most vivid memories were "white-skirted nurses" and chilled drinking water. Occasionally during a prolonged lull in casualties, a helicopter load of medical personnel from the Repose would be ferried in to our compound for an afternoon of volleyball. I don't recall hearing of fears about the ship sinking, terrorist attacks, personal injuries, working with injured and/or dead, but I didn't ask, either.

Wills were part of commencing active duty in the 60s, and business obligations did not exist. In 1965, those of us heading for Vietnam had a brief period of training in combat medicine as it had been practiced in Korea, but none of us was prepared for the huge number of horrible injuries and the dozens of KIAs piled like so many logs, which we encountered regularly in Vietnam. Triage (abandoning the occasional alive-but-unsalvageable casualties so that our resources could be directed to salvageable injured Marines, and instantaneously separating arriving casualties into priority-based categories) became a difficult "School of Hard Knocks" lesson, learned only in the field and on the job.

In retrospect, our team members may have unknowingly been an informal support group. Perhaps that helped allay depression. Four or more of us shared several hardbacks where we could talk, and the "club," such as it was, was a place that we could solicit "silent understanding" from others on the team. During the inevitable lulls I read a lot, built an oscilloscope from a Healthkit, learned the fine points of classical music from a dentist I lived with, and tutored a Hospital Corpsman or two. But I insist that I (or we, as a team) never had the time to be depressed.

I have long been concerned that lessons learned by Navy medicine during the Vietnam conflict have not been recorded for posterity. Narrow topics such as frozen blood banks and sequelae to various forms of blood volume

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14. ABSTRACT (maximum 200 words)

Throughout history, respiratory diseases have been a frequent cause of morbidity in U.S. populations. Because of stress, crowding, and naïve immune systems, military training populations are particularly prone to acute respiratory disease epidemics. An examination of the history of respiratory illness at U.S. Naval Academy revealed, in the earliest decades at the school, respiratory illness was a primary cause of both disease and mortality. With the advent of antibiotics and vaccines, most respiratory-disease mortality has been reduced. Today morbidity remains significant. Health concerns regarding respiratory diseases are heightened by emerging and re-emerging respiratory disease agents, which have increased antibiotic resistance and/or increased virulence. Enhanced surveillance and rapid diagnostic capabilities, placed in military settings, will increase knowledge of the epidemiology of many respiratory diseases. These strategies can lead to earlier treatment and prevention measures, thus halting further transmission of disease and decreasing both morbidity and mortality. During the most recent history of the Academy, acute respiratory infections have remained a primary cause of medical morbidity.

14. SUBJECT TERMS

respiratory illness, US Naval Academy, military training populations

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