NAVY DISEASE REPORTING SYSTEM (NDRS)

Summary of 1997 Data

Tables 1 and 2 display the Medical Event Reports (MERs) received at NEHC for 1997. Interested readers may calculate rates by dividing the frequencies by estimated mid-year strength of 400,000 for USN and 174,000 for USMC. Table 1 shows active duty only. Table 2 shows beneficiaries who were included in the reporting system only since October, 1997. The second and third column may not sum to the first column because of inclusion of personnel from other Armed Services seen by the Navy Medical Corps and reported in the Naval reporting system.

Table 1. Reportable Diseases, Combined Navy & Marine Corps Active Duty Case Frequencies, 1997

Disease	Total	USN	USMC	Disease	Total	USN	USMC
Amebiasis	1	1	0	Measles	0	0	0
Anthrax	0	0	0	Meningitis (viral)	43	21	8
Bites, Non-venomous rabies vax given	103	53	47	Meningococcal disease	1	0	0
Bites, Venomous	9	3	5	Mumps	5	5	0
Botulism	0	0	0	Occ HIV exposure	1	1	0
Brucellosis	0	0	0	Onchocerciasis	0	0	0
Campylobacter	1	1	0	Paratyphoid Fever	0	0	0
Chancroid	6	4	2	Pertussis	0	0	0
Chlamydia*	464	231	222	Plague	0	0	0
Coccidioidomycosis	1	0	1	Poliomyelitis	0	0	0
Cryptosporidiosis*	0	0	0	Psittacosis	0	0	1
Dengue Fever	1	1	0	Q Fever	0	0	0
Diphtheria	0	0	0	Rabies Human	0	0	0
E. coli 157 Infection*	3	0	2	Relapsing Fever	0	0	0
Encephalitis	6	4	1	Rheumatic Fever	1	1	0
Ehrlichiosis	0	0	0	Rift Valley Fever	0	0	0
Filariasis	0	0	0	RMSF	7	0	7
Gonorrhea*	161	100	60	Rubella	2	0	0
Giardiasis	24	21	2	Salmonellosis	25	17	9
Gullian-Barre Syndrome	1	1	0	Schistosomiasis	0	0	0
Hantavirus Infection*	0	0	0	Shigellosis	11	9	2
Hepatitis A	24	21	3	Smallpox	0	0	0
Hepatitis B	14	9	4	Strep, Invasive	0	0	0
Hepatitis C	3	3	0	Syphilis	46	29	10
H Flu, Invasive	0	0	0	Tetanus	0	0	0
Influenza (outbreak only)	0	0	0	Toxic Shock Syndrome	3	3	0
Lassa Fever	0	0	0	Toxoplasmosis	0	0	0
Legionellosis	1	1	0	Trichinosis	0	0	0
Leishmaniasis	0	2	0	Trypanosomiasis	1	0	0
Leprosy (Hansen's Disease)	1	0	0	Tuberculosis (Pulmonary)	10	6	1
Leptospirosis	1	1	5	Tularemia	0	0	0
Listeriosis	0	0	0	Typhoid Fever	0	0	0
Lyme Disease	16	9	8	Typhus	0	0	0
Lymphogranuloma Venereum	27	3	8	Varicella*	20	15	4
Malaria	13	6	24	Yellow Fever	0	0	0

***Reportable as of October, 1997**

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Figures 1 through 5 provide additional details on the most commonly reported sexually transmitted diseases and gastrointestinal diseases. Chlamydial infections and gonorrhea are the most commonly reported diseases in both services, and were only reported from October to December 1997.

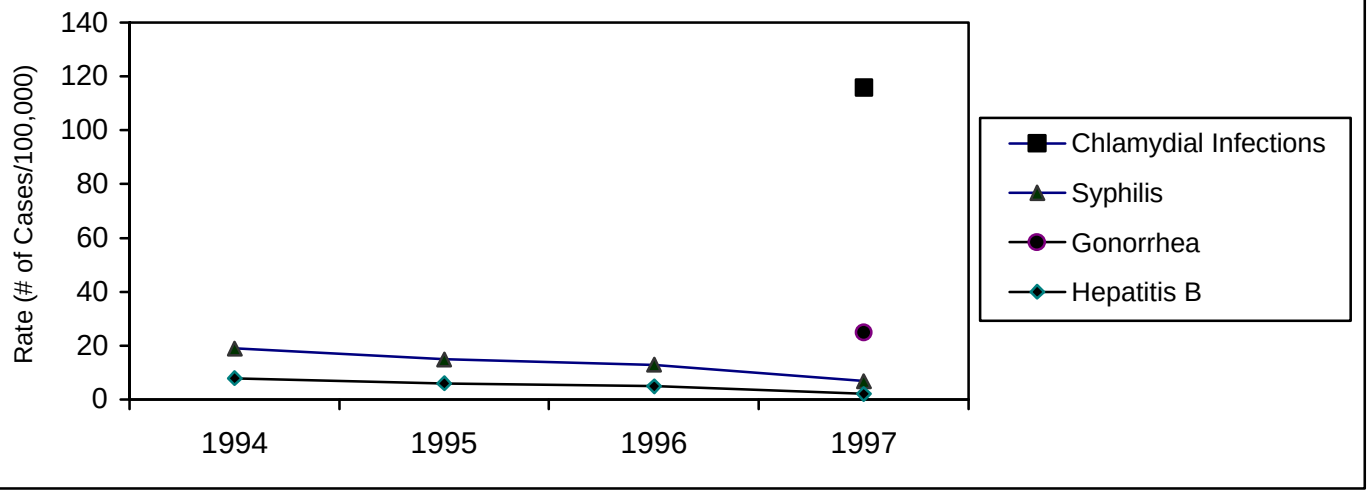
Table 2. Reportable Diseases 1997, Combined Navy & Marine Corps Beneficiaries Case Frequencies

Disease	TOTAL	USN	USMC	Disease	TOTAL	USN	USMC
Amebiasis	0	0	0	Measles	1	0	0
Anthrax	0	0	0	Meningitis (viral)	10	6	0
Bites, Non-venomous rabies vax given	95	27	68	Meningococcal disease	0	0	0
Bites, Venomous	0	0	0	Mumps	1	0	0
Botulism	0	0	0	Occ HIV exposure	0	0	0
Brucellosis	0	0	0	Onchocerciasis	0	0	0
Campylobactor	0	0	0	Paratyphoid Fever	0	0	0
Chancroid	0	0	0	Pertussis	0	0	0
Chlamydia*	170	102	94	Plague	0	0	0
Coccidioidomycosis	3	0	0	Poliomyelitis	0	0	0
Cryptosporidiosis*	2	0	0	Psittacosis	0	0	1
Dengue Fever	0	0	0	Q Fever	0	0	0
Diptheria	0	0	0	Rabies Human	0	0	0
E. coli 157 Infection*	0	0	0	Relapsing Fever	0	0	0
Encephalitis	1	0	0	Rheumatic Fever	0	0	0
Ehrlichiosis	0	0	0	Rift Valley Fever	0	0	0
Filariasis	0	0	0	RMSF	0	0	0
Giardiasis	12	12	1	Rubella	0	0	0
Gonorrhea*	25	14	1	Salmonellosis	23	15	0
Gullian-Barre Syndrome	0	0	0	Schistosomiasis	1	1	0
Hantavirus Infection*	0	0	0	Shigellosis	8	0	0
Hepatitis A	3	3	0	Smallpox	0	0	0
Hepatitis B	3	3	0	Strep, Invasive	4	3	0
Hepatitis C	0	0	0	Syphilis	4	0	0
H Flu, invasive	1	1	0	Tetanus	0	0	0
Influenza (outbreak only)	0	0	0	Toxic Shock Syndrome	1	1	0
Lassa Fever	0	0	0	Toxoplasmosis	0	0	0
Legionellosis	0	0	0	Trichinosis	0	0	0
Leishmaniasis	0	0	0	Trypanosomiasis	1	0	0
Leprosy (Hansen's Disease)	1	0	0	Tuberculosis (Pulmonary)	6	6	0
Leptospirosis	1	1	5	Tularemia	0	0	0
Listeriosis	0	0	0	Typhoid Fever	0	0	0
Lyme Disease	16	9	8	Typhus	0	0	0
Lymphogranuloma Venereum	1	0	0	Varicella*	15	12	0
Malaria	0	0	0	Yellow Fever	0	0	0

***Reportable as of October, 1997**

For comparison to the NEPMU2, we present trends in rates of sexually transmitted diseases (STDs) and a few commonly reported non-sexually transmitted diseases in the U.S. Navy and Marine Corps (1994-1997). Reporting of chlamydial infections and gonorrhea only began in October, 1997; however, the quantity reported in that short time merits their inclusion in this report.

Figure 1. Trends in rates of most commonly reported sexually transmitted diseases, USN, 1994-1997



The rates of chlamydial infections and gonorrhea for October through December 1997 were 116 and 25 per 100,000. This gives an estimated yearly rate of 454 and 100 per 100,000, respectively. These rates are forty and ten times the rate of syphilis.

Figure 2. Trends in rates of most commonly reported sexually transmitted diseases, U.S. Marine Corps, 1994-1997

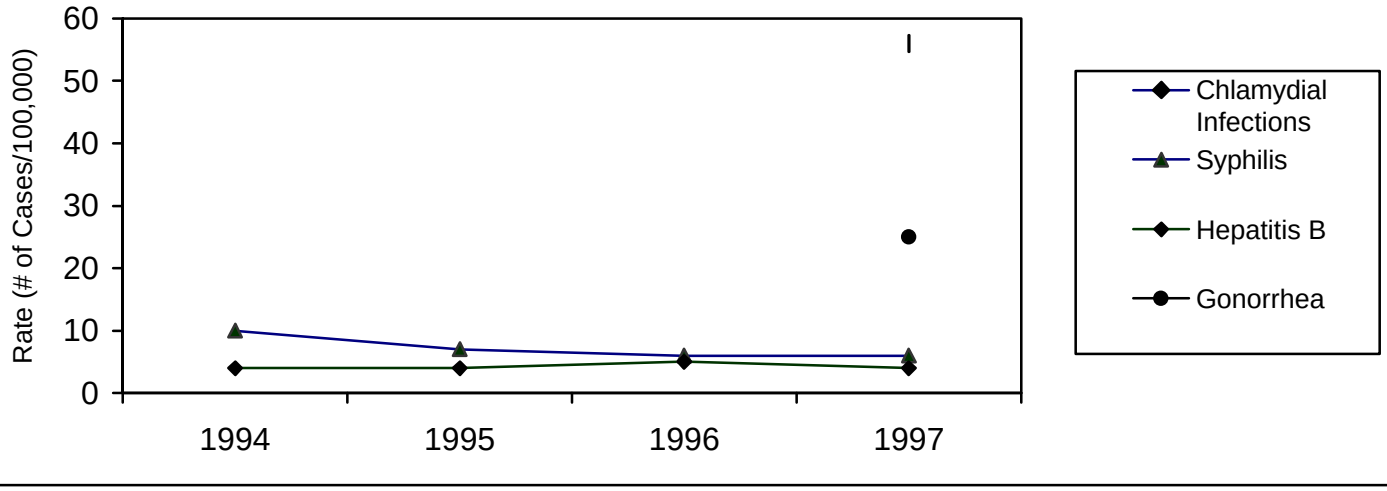


Figure 3. Trends in rates of most commonly reported gastrointestinal illnesses, USN, 1994-1997

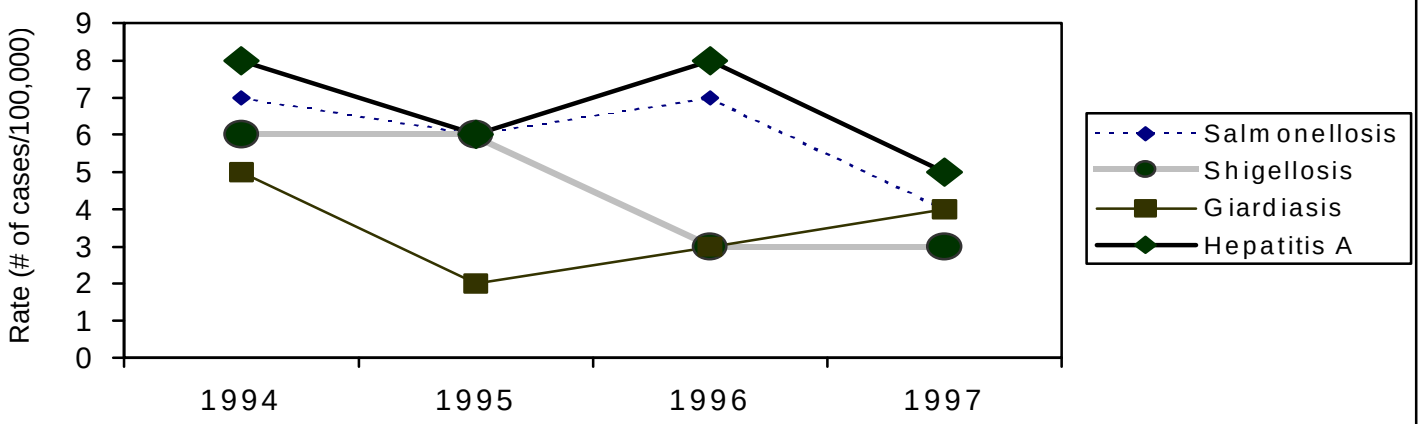


Figure 4. Trends in rates of most commonly reported gastrointestinal illnesses, USMC, 1994-1997

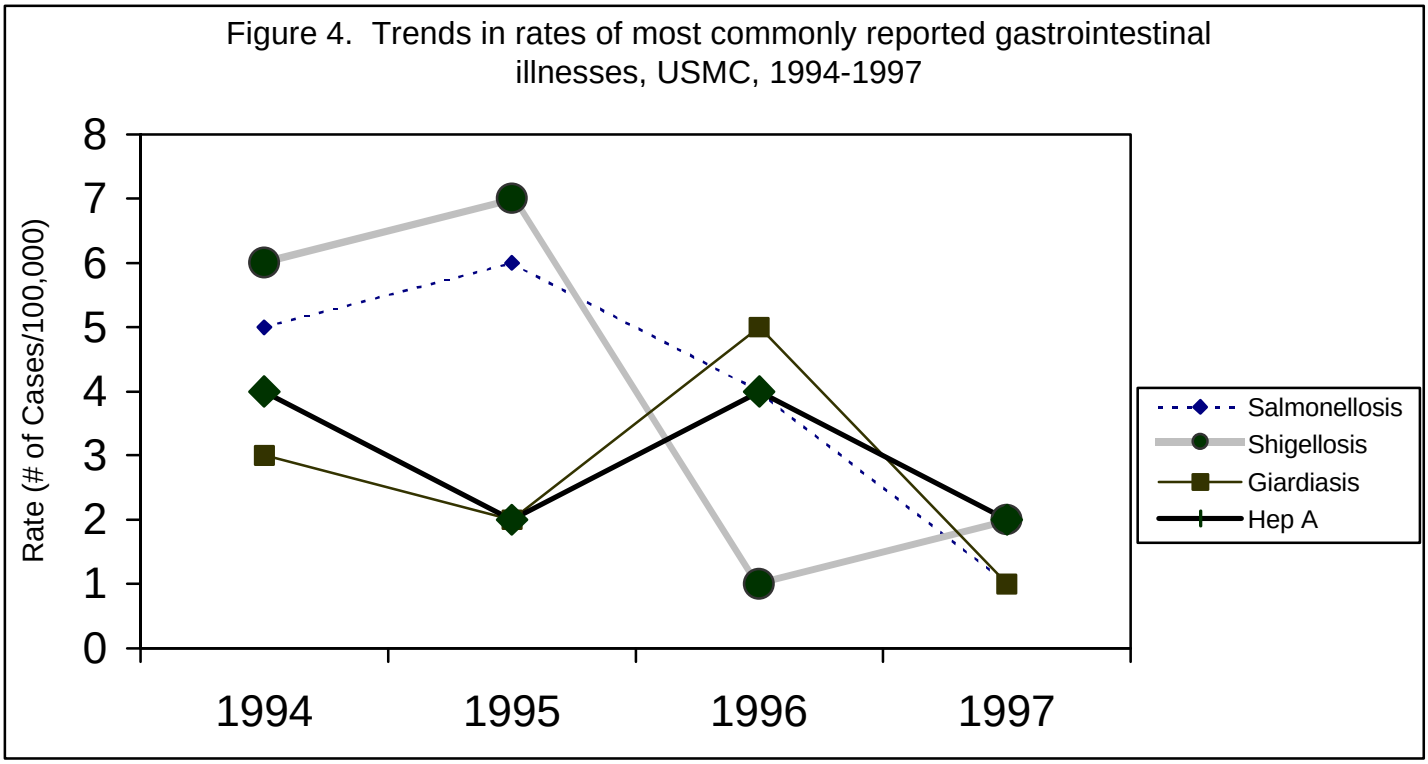
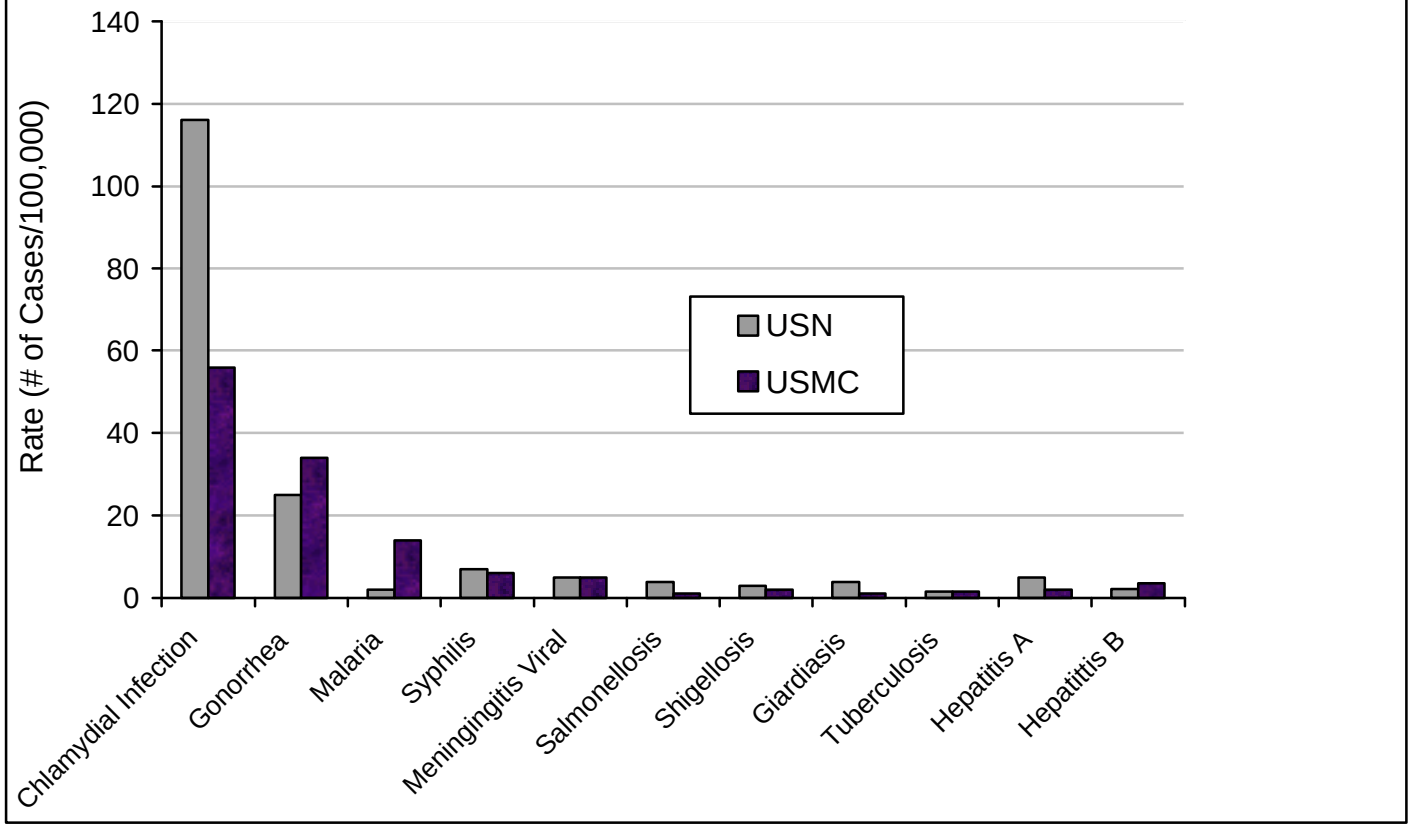


Figure 5. Comparison of USN and USMC, most commonly reported diseases, 1997



Summary of Common STDs Reported to NEPMU2

CAPT(s) Barbara Schibly, MC, USN,
Epidemiologist, NEPMU2, Norfolk, VA

STDs comprise the largest group of reported diseases in 1997 within the AOR of NEPMU2 (Figures 6-9). Chlamydia and gonorrhea were the most frequently reported STDs, as well as the most frequently reported diseases overall, despite the fact that both these diseases were only reported from October through December 1997.

Among cases of STD (figure 10), 66% were male, 34% were female; 55% were black, 28% white, 17% other or unknown race. These figures represent access to care variables as well as incidence variables, since the older caucasian cases may have access to private civilian care that would take them out of this reporting system.

Most STDs were acquired while not deployed, with 97% of infections occurring in the United States, 29% in the state of Virginia (97% of these were acquired in the Hampton Roads area), 20% in the state of North Carolina (80% of these were acquired in the Jacksonville area), 8% in Florida (80% of these were acquired in the Jacksonville or Pensacola areas), and 7% in the state of South Carolina (74% of these were acquired in the Beaufort area). STDs were most common in the lower enlisted rates, with 82% of all cases occurring in rates E1-E4.

The area of responsibility (AOR) of the Navy Environmental and Preventive Medicine Unit 2 (NEPMU2) includes the eastern and midwestern parts of the U.S., Central America, South America, Iceland, and the Caribbean. This information demonstrates the kind of use that we encourage at the local and regional level within the reporting system. These reports from NEPMU2 show strong similarity to the overall figures reported in Tables 2 and 3, in part, because NEPMU2 contributed the majority of the reports during 1997.-Ed.

Figure 6. Distribution of most common disease reports, by selected category

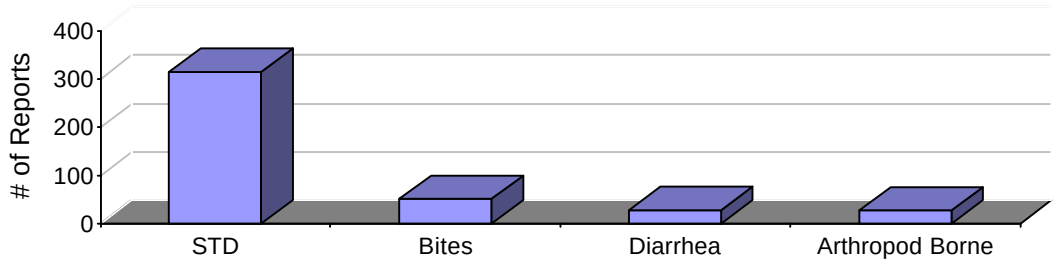


Figure 7. Most frequently reported STDs

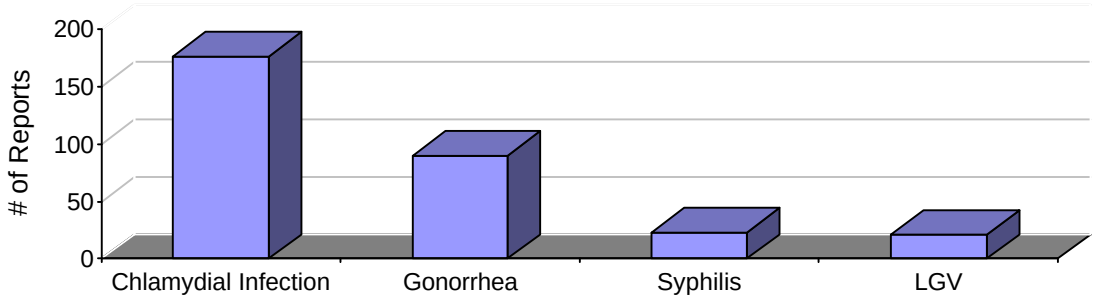


Figure 8. Most frequently reported gastrointestinal diseases

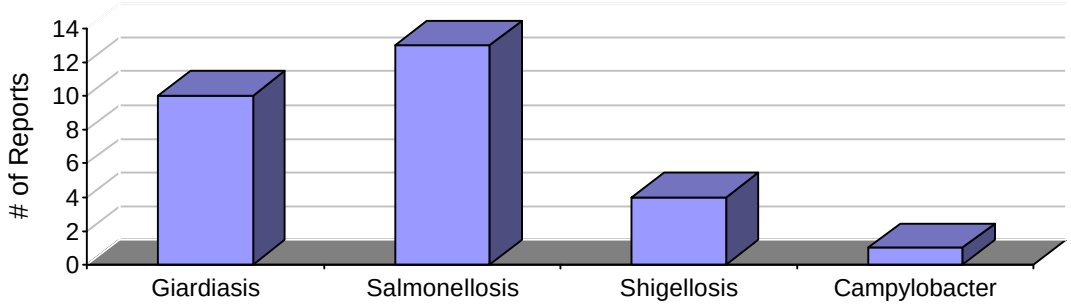
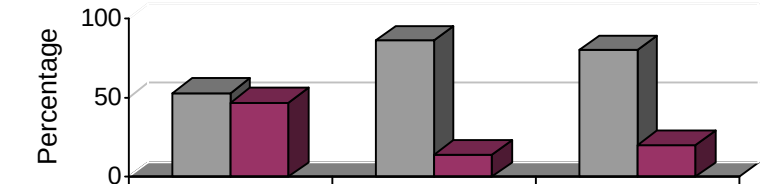


Figure 9. Distribution of reported STDs, by sex, USN/USMC, 1997



	Chlaymdia	Gonorrhea	Syphilis
Male	53	86	80
Female	47	14	20

Among arthropod-borne disease on the East coast, the geographic distribution is interesting *(numbers are too small to portray graphically-Ed.).* There were 15 Lyme disease, six malaria, and one eastern equine encephalitis reports. The Lyme disease was widely dispersed: four cases from Maryland as probable site of infection, four from N.C. (LeJeune), two from Groton,CT, two from Parris Island SC, two from Jacksonville, FL, and one from Ft AP Hill, VA. All malaria was acquired outside of the Continental U.S.: two in Panama, one in Nigeria, one in Sierra Leone, and one in Ethiopia.

GLOBAL SURVEILLANCE OF EMERGING DISEASES

International Conference on Emerging Infectious Diseases

LTC Patrick Kelley, MC, USA

The Department of Defense (DoD) made many important contributions to the International Conference on Emerging Infectious Disease, which was held in Atlanta, GA (March 8-11, 1998). About 2,600 people from over 90 countries attended. Participants included Health and Human Services Secretary Shalala, Assistant Secretary Satcher, Ms. Laurie Garrett, author of *The Coming Plague,* and Dr. D. A. Henderson, leader of the WHO Smallpox Eradication Program, who addressed bioterrorism. DoD was one of 40 co-sponsors and had two representatives on the 30 member Program Committee. DoD personnel moderated three scientific sessions and gave five invited presentations. Of 105 peer reviewed oral presentations, 18 represented work done by DoD. Twenty-nine of 375 peer reviewed poster presentations also displayed DoD projects. The DoD Global Emerging Infections System had a booth to develop professional and cooperative links. About 1,000 people stopped by the booth and about 50 had questions requiring a letter or telephone response.

The areas addressed in the DoD presentations included: malaria drug development, re-emergence of malaria in Korean and U.S. forces (*see article on page 11-Ed.*), hepatitis E in Kathmandu, dengue vaccine development, acute encephalitis of unknown etiology, preparing for bioterrorism, respiratory disease due to adenoviruses in the military, chlamydia and human papilloma virus infections in soldiers, tuberculosis, and international influenza surveillance. This meeting demonstrated that DoD is identifying and dealing with new infectious diseases threatening U.S. forces and their families while, at the same time, being an important, cooperative and productive participant in both national and international efforts to address emerging infections in all people.

Further information on this conference is available at: http://www.ha.osd.mi/geis/ and http://www.pc176.nhrc.navy.mil:80/disease.-Ed.

Emerging Diseases Since 1973

A report frequently referenced at the recent conference was *Infectious Disease—A Global Health Threat, 1995: Report of the National Science and Technology Council, Committee on International Science, Engineering, and Technology, Working Group on Emerging and Re-emerging Infectious Diseases.* That group listed examples of newly recognized pathogens (Table 3), and cited several factors in the re-emergence of others. They consider twenty other known diseases to be "re-emerging."

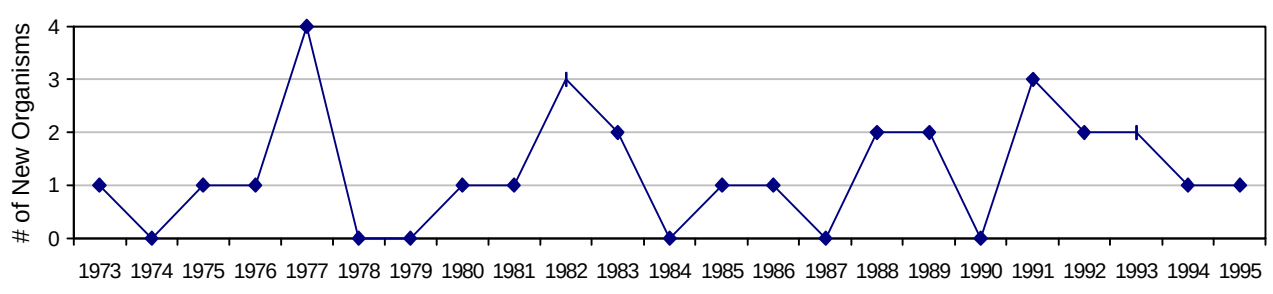
Of the factors responsible for the re-emergence of these threats, change in organism was thought to be important in only four of the twenty. The most important factor was breakdown in public health measures. This assessment underscores the importance of activities of the preventive medicine community in the Navy and Marine Corps.

Figure 10 shows the number of newly identified organisms by year, indicating a nearly constant trend over the past 25 years:

Table 3. Newly recognized pathogens, 1973-1995

Year	Organism	Type	Disease
1973	Rotavirus	Virus	Infantile diarrhea, now vaccine preventable
1975	Parvovirus B19	Virus	Aplastic crisis in hemolytic anemia
1976	Cryptosporidium parvum	Parasite	Acute, chronic diarrhea
1977	Ebola virus	Virus	Hemorrhagic fever
	Legionella pneumophilia	Bacterium	Legionnaires' disease
	Hanta virus	Virus	Hemorraghic fever/renal syndrome
	Campylobacter jejuni	Bacterium	Diarrhea
1980	Human T-lymphotropic virus I	Virus	T-cell lymphoma-leukemia
1981	Toxin producing *Staph. aureus*	Bacterium	Toxic shock syndrome
1982	E. coli 0157:H7	Bacterium	Hemolytic uremic syndrome
	HTLV-II	Virus	Hairy cell leukemia
	Borrelia burgorferi	Bacterium	Lyme disease
1983	Human Immunodeficieny Virus (HIV)	Virus	AIDS
	Helicobacter pylori	Bacterium	Peptic ulcer disease
1985	Enterocytozoon bieneusi	Parasite	Chronic diarrhea
1986	Cyclospora cayatanensis	Parasite	Chronic diarrhea
1988	Human Herpesvirus-6	Virus	Roseola subitum
	Hepatits E	Virus	Hepatitis
1989	Ehrlichia chafeensis	Bacterium	Ehrlichiosis
1991	Guanarito virus	Virus	Venezuelan hemorrhagic fever
	Encephalitozoon hellem	Parasite	Conjunctivitis, disseminated disease
	Babesia (new species)	Parasite	Atypical babesiosis
1992	Vibrio cholerae 0139	Bacterium	New strain of cholera
	Bartonella henselae	Bacterium	Cat-scratch disease/ bacillary angiomatosis
1993	Sin nombre virus (no name virus)	Virus	Adult Respiratory Distress Syndrome
	Encephalitozoon cuniculi	Parasite	Disseminated disease
1994	Sabia virus	Virus	Brazilian hemorrhagic fever
1995	HHV-8	Virus	Kaposi Sarcoma & AIDS

Figure 10. Newly identified pathogenic organisms, 1973-1995



OUTBREAKS

Giardiasis Aboard an Amphibious Vessel

CDR Jeff Yund, MC, USN,
Epidemiologist, NEPMU6, Pearl Harbor, HI

Recently, a ship with a crew of about 900 (including embarked Marines) had a port visit in Surabaya, Indonesia. The ship took on trucked water from an unapproved source four days in a row. Chlorine residuals in each truck load were reported to have been "at least trace." No additional treatment of the ship's tanks was performed. The ship got underway late on the last day water was taken on.

Over the next week to ten days, approximately 170 crew members were seen for gastrointestinal illnesses, mostly watery diarrhea. Most cases were mild, and responded to symptomatic medications. A number were more severe, with fever and/or bloody diarrhea. These were treated with ciprofloxacin, mostly with good results. Questionnaires were administered to 56 persons who presented during the initial peak of the outbreak.

After the first wave of illnesses, a number of individuals developed diarrhea which did not respond to symptomatic treatment and/or ciprofloxacin. Stool samples were submitted for ova and parasite examination. 37 individuals had stool samples positive for *Giardia lamblia* cysts or trophozoites. These individuals were treated with metronidazole, and all recovered.

Most crew members went ashore during the stay in Surabaya, raising the possibility that illness could have been acquired off the ship. However, there were three persons who became ill even though they had not gone ashore during the port visit. This fact favors a shipboard exposure.

The water delivered to the ship was unapproved and from an unknown source. Furthermore, there was no treatment of the ships tanks after filling. Likely, there was mixed contamination. The initial outbreak of illnesses with short incubation times may have been caused by a combination of bacterial and viral agents. Giardiasis can also have a short incubation time, but is more commonly seven to ten days, explaining the giardiasis cases developing a longer time after departure from Surabaya.

The ship requested advice from NEPMU6 about three weeks after departure from Surabaya. New onsets of illness were occurring at a much reduced rate by that time. The ship was advised to achieve and maintain residual chlorine levels of 2 ppm for the remainder of its voyage, about two weeks.

This episode calls attention to the importance of maintaining strict water discipline aboard ship. The 200+ illnesses on this ship could have been prevented at several steps along the way. First, an approved water source is always best. There are times when an approved water source is not available. In these circumstances, it is essential to follow the guidance in the Manual of Naval Preventive Medicine for handling "water of doubtful quality." This is specified in 6-21.2.d., and involves either brominating or chlorinating so that there is a halogen residual of at least 2 ppm at the end of a 30-minute contact time.

Influenza at Barber's Point, HI

CAPT James Beecham, III, MC, USN,
Epidemiologist, NEPMU6, Pearl Harbor, HI

On 15 January 1998, the epidemiologist at NEPMU6 (Pearl Harbor, HI) received a call from a Navy flight surgeon at Naval Air Station Barbers Point, to report cases of influenza-like illness occurring among active duty members of his aviation squadron. He was particularly concerned that cases seemed to be occurring among members who had received the 1997-98 Influenza immunization in November 1997. Arrangements were made to provide throat viral isolation kits to the clinic. Although other unit medical officers were seeing flu cases, the majority of the recognized outbreak appeared to begin within one squadron. Use of amantadine was discussed and recommended.

A questionnaire was prepared and administered on 2 February. With nine health care providers, Barbers Point Clinic provides medical care for some 4,000 active duty personnel, and covers four aviation squadrons (an additional rotating squadron is always deployed).

During January, 25 isolates of Influenza Type A, mostly from active duty personnel seen at sick call, at Barbers Point and at Makalapa Clinic, had been found positive by Armstong Laboratory, Brooks AFB, San Antonio, Texas. At least 4 of the positive isolates were confirmed to be from members of the outbreak squadron who completed a questionnaire.

Two hundred and fifty-four (254) of 362 squadron members (70%) from the outbreak squadron completed a questionnaire. Eighty-three (83) of 254 (32.7%) stated that they had experienced a flu-like illness during January. While all 83 had experienced a "flu-like" or respiratory illness, we further refined our case definition of influenza to include only those who had experienced fever and cough plus any other respiratory symptom. Fifty-four (54) of 254 (21.3%) met this refined case definition. (Only 3 of 4 of the patients with a positive Influenza type A isolate met this refined case definition.) Symptoms experienced by cases were: fever 100% (54/54); headache 81% (44/54); cough 100% (54/54); myalgias 74% (40/54); fatigue 81% (44/54); head/nose congestion 87% (47/54); nausea 33% (18/54); vomiting 7% (4/54); and diarrhea 28% (15/54).

Flu immunizations were confirmed in each squadron member by referring to the squadron's immunization log or to the patient's health record. One hundred ninety-seven (197) of 251 or 78.5% of squadron members for whom we had information, were confirmed to have received the 1997-98 flu shot.

The CDC in Atlanta isolated influenza virus from 25 samples. One of these isolates was further characterized as A/Sydney/05/97(H3N2). This strain was not covered in the 97 vaccine, which contained Type A (H3N2)/Wuhan/359/95.

Summary: This outbreak highlights the continued need for timely viral laboratory surveillance, especially during epidemics; and exemplifies the positive impact and knowledge to be gained when even "common" outbreaks can be examined with the epidemiologic method. It further emphasizes the need for the military medical community to be familiar with the use of amantadine during the influenza epidemic season.

This outbreak was reported in part in the March 26 issue of the MMWR: Morbidity & Mortality Weekly Report, March 20, 1995, Vol 47, No 10, Centers for Disease Control, U.S. Department of Health & Human Services, p 199.-Ed.

COMMUNICABLE DISEASE

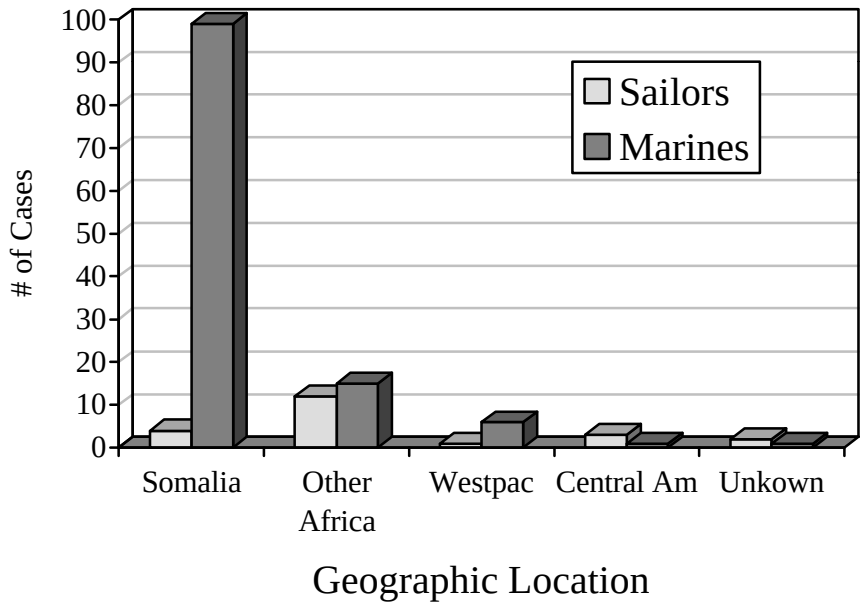
REPORTED CASES OF MALARIA IN ACTIVE DUTY USN AND USMC, 1993-1997

LCDR Sitta Gombeh-Alie, MC, USNR, Preventive Medicine Directorate, NEHC

There were 144 cases of malaria in active duty USN/USMC personnel reported by Disease Alert Reports (DARs) from 1993 through 1997 (Figure 11). The majority of the cases (96) occurred in Marines who participated in Operation Restore Hope in Somalia in 1993. There was also a small cluster of cases (6) in Marines that participated in Operation Assured Response in Liberia and Sierra Leone, in 1996. The total annual cases for 1994 –1997 were 20, 8, 7 and 13, respectively. *Plasmodium vivax* (52%) and *Plasmodium falciparum* (27%) accounted for most of the cases. Although 138 (96%) of the cases reported taking chloroquine, doxycycline, mefloquine, or primaquine for prophylaxis, many of them also reported noncompliance with personal protective measures. It is reasonable to assume, therefore, that these outbreaks were due to inadequate or noncompliant prophylactic regimens.

Malaria remains a major threat to military units deployed in endemic areas. Since there is no vaccine currently available, the main method of control remains the appropriate utilization of available preventive measures, including unit and personal protective measures and chemoprophylaxis.

Figure 11. USN/USMC malaria cases by Disease Alert Reports, 1993-1997



Resurgence of Malaria in the Republic of Korea

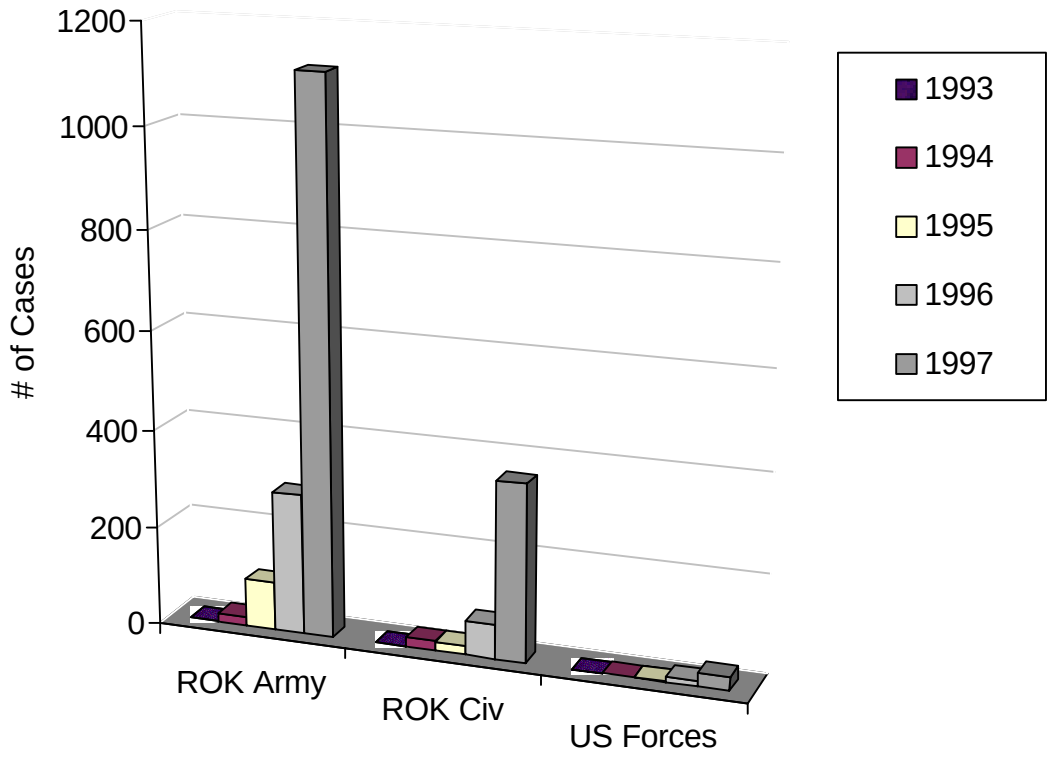
LTC Brian Feighner, USA

There has been a resurgence of malaria in the Republic of Korea. Table 4 and Figure 12 show the number of cases for Republic of Korea (ROK) Army , Republic of Korea Civilian, and U.S. Forces Korea.

Table 4. Number of Reported Malaria Cases

Year	Republic of Korea Army	Republic of Korea Civilians	U.S. Forces Korea
1993	1	1	0
1994	18	20	1
1995	98	19	1
1996	285	71	11
1997	1117	360	27

Figure 12. Malaria Resurgence in Korea



The geocenter of this malaria activity is along the Northwestern DMZ. The annual cases are distributed in a normal distribution from June to October which corresponds with the warmer months. Of the 27 U.S. forces cases in 1997, three were diagnosed after their return to CONUS, one was in Okinawa, and the rest in the ROK. All of the U.S. cases were enlisted, none were Black *(possibly an effect of the Duffy factor?*-Ed). All cases responded to standard therapy. There were no deaths or complications.

CASE REPORTS

Legionnellosis

CAPT Richard Thomas, MC, USN, OIC, NEPMU2, and
CAPT(s) Barbara Schibly, MC, USN
Epidemiologist, NEPMU2, Norfolk, VA

On November 27, 1996, a 22 year old MM3 (E-4) from a cruiser based on the east coast reported to shipboard medical department with complaints of fever, malaise, and cough of 4-5 days duration. He was referred to a medical branch clinic where he was treated with oral antibiotics and acetaminophen. He was placed SIQ and reportedly felt better. Two days later he became very weak and was transported to a Naval Medical Center where he rapidly deteriorated, requiring intubation and ventilatory support. Despite appropriate antibiotic treatment, he had a difficult clinical course, never improved, and expired on January 7, 1997.

During the hospitalization, no infectious agent was cultured from his sputum. Urinary antigen was positive for *Legionella pneumophila* sero-group 1. The patient also had a fourfold rise in antibody titer to this organism. This confirmed *Legionella* as the agent of his fatal pneumonia.

Epidemiological investigation revealed no clear source of infection. This young sailor lived onboard ship and reportedly rarely went ashore except to visit a local laundromat and a bar. According to his shipmates, he did not swim, fish, go boating, use a hot tub, or have any other known contact with natural or man-made bodies of water during the two week period preceding the onset of his illness. He had visited his parents in Maryland from 18-24 November, but, according to them, had already begun feeling ill at that time. No family members became ill and there were no other cases of legionellosis reported from the states of Virginia or Maryland during this period.

Legionella is ubiquitous, and its presence in a water system is not considered to be unusual or an environmental risk. Two samples grew out a different species, *Legionella cherii*, which has never been associated with human disease, and which represents a normal flora of potable water. The cultures of the water supply aboard the vessel grew no *Legionella pneumophila*. After obtaining the water samples, however, the ship's water system was hyperchlorinated to 200 ppm for four hours to eliminate any *Legionella* bacteria that might have been present.

This young sailor had no unusual medical history or medical problem. It is not clear why this apparently healthy 22 year old contracted and died from a disease that typically affects older and/or immuno-compromised persons.

INJURY DATA

Hearing Conservation Program Effectiveness

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Hearing loss claims cost the Navy approximately $60,000,000 per year. Measures of effectiveness of the Hearing Conservation Program are limited by the chronic nature of both the exposure and the subsequent hearing impairment. The Navy Environmental Health Center (NEHC) recently undertook an assessment of the program by comparing data from 1976, 1990, and 1997, for a total of 266 individuals in specific ratings. All individuals had 20+ years of service. Data are from 1976, 1990, and 1997. Data from 1976 and 1990 were extracted from published Naval Aerospace Medical Research Laboratory (NAMRL) and NEHC Reports, respectively. Data from 1997 were obtained from audiograms forwarded to NEHC. We used age greater than 40 as a surrogate for 20+ years time in service, which is not recorded on the audiogram forms. The sum of hearing thresholds at 3000, 4000 and 6000 Hz bilaterally provides an index of high frequency hearing loss. Therefore, the greater the value, the more high frequency hearing impairment. The average value for bilateral high frequency hearing loss for each rating considered is as follows:

Rating	1976	1990	1997
AB	200	105	137
AD	170	175	91
AM	210	167	93
BT	192	132	106
MM	235	132	106

Conclusion: While this is a limited sample, the data appear to indicate a remarkable downward trend over the past 20 years. Efforts are currently underway to strengthen this data to allow assessment of individuals of other ratings.

HIV Seroconversion Trends in USN and USMC for 1997

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In 1985 the DoD began testing all active duty military personnel for HIV, the Human Immunodeficiency Virus, the virus that causes AIDS (Acquired Immunodeficiency Syndrome). As of January 15, 1998, there have been 4,443 documented cases of HIV infection among U.S. Navy and Marine Corps active duty personnel. The number of newly identified cases of HIV have dropped since testing began. It should be noted that the first five years of testing data may not reflect infection while serving on active duty status because recruits were not screened for HIV prior to enlistment. However, it may be assumed that seroconverters after 1990 more accurately reflect infection while serving in an active duty capacity. The 1990-97 seroconversion data was published in the NMSR Vol 1/No1, page 12.

The incidence rate (the number of seroconverters per 1,000 population) has steadily decreased over time while the percent of the Force tested has increased. While the decreased incidence of seroconverters cannot be statistically linked to any given intervention, it may be partly attributed to selection criteria for enlistment and appointment. The U.S. Centers for Disease Control and Prevention (CDC) reports that 75% of all cumulative AIDS cases (through June 1997) are among men who have sex with men and injecting drug users, two categories which are prohibited from serving in an active duty status.

Surveillance data is widely used for tracking and forecasting trends for the HIV epidemic. In addition to this, HIV data should be used to target and allocate resources for prevention services. An in depth analysis is used to provide a more detailed picture of HIV infection among Naval personnel. The following is a review and analysis of HIV data for those identified as HIV+ in 1997.

From 1 January to 31 December, 1997, there were 83 newly identified seroconverters among Naval active duty personnel (Table 5).

Table 5. Number of HIV seroconverters, 1997

	Officer	Enlisted	Total
Navy	3	58	61
Marine Corps	1	21	22
Total	4	79	83
% of Total	5%	95%	100%

Enlisted personnel constitute 85% of total force strength, and 95% of seroconverters. To gain a better understanding of the demographic breakdown of HIV+ enlisted personnel we provide you with Table 6. Noteworthy is the high seroconversion rate of black Navy enlisted individuals. This rate is over 6 times higher than their white counterparts. Black seroconverters account for 60% of all seroconversions in 1997, yet they account for 19% of the Navy's enlisted population, hence this population is disproportionately represented. Also of interest is that 82% of Navy and 86% of Marine Corps male seroconverters were less than 34 years old, with almost half of the Navy and 67% of the Marine Corps males in their 20's.

A breakdown of enlisted personnel by sex and paygrade reveals that almost all seroconverters were male (97%) with only 2 Navy and 0 Marine female seroconverters

(Table 7). Enlisted women account for 13% of the total strength force of the Navy yet only 3% of the seroconverters and, therefore, are disproportionately lower than their male counterparts. This variation can not be statistically accounted for by risk behavior.

Table 6. Number and rate of HIV seroconverters, active duty enlisted, by age and race, 1997

Navy								
	Number of Seroconverters				Rate per1,000			
Age	**White**	**Black**	**Other**	**Total**	**White**	**Black**	**Other**	**Total**
17-19	0	3	0	3	0	.51	0	.11
20-24	3	12	0	15	.04	.56	0	.14
25-29	5	8	1	14	.11	.54	.27	.21
30-34	7	8	1	16	.21	.79	.25	.34
35-39	2	4	0	6	.07	.56	0	.15
40-44	4	0	0	4	.36	0	0	.25
45+	0	0	0	0	0	0	0	0
Total	21	35	2	58	.09	.56	.08	.19
Marine Corps								
	Number of Seroconverters				**Rate per 1,000**			
Age	**White**	**Black**	**Other**	**Total**	**White**	**Black**	**Other**	**Total**
17-19	0	0	0	0	0	0	0	0
20-24	3	4	0	7	.05	.36	0	.08
25-29	4	3	0	7	.20	.63	0	.25
30-34	2	1	1	4	.25	.32	.81	.33
35-39	1	0	0	1	.17	0	0	.11
40-44	0	0	1	1	0	0	3.85	.3
45+	0	1	0	1	0	3.03	0	.82
Total	10	9	2	21	.09	.34	.1	.13

Of the enlisted males, 73% of Navy and 71% of Marine Corps seroconverters were in the paygrades of E-4 through E-6. This would indicate that active duty enlisted males were in the military for some time prior to their exposure and subsequent seroconversion.

Finally, Table 8 indicates the number of HIV seroconverters by homeport. While Washington, DC has the highest rate per 1,000 population; Norfolk, VA; and San Diego, CA; account for 57% of all seroconverters in 1997 and represent the 2nd and 3rd highest incidence rates, respectively. Certainly, this data is influenced by the large Naval stations located in these areas. Cursory data indicate that HIV infections are occurring within the continental United States and not during deployment.

Table 7. Number of HIV seroconverters by paygrade and sex, active-duty enlisted personnel, 1997

Navy						
	Number of Seroconverters			Rate per 1,000		
Pay-grade	Male	Female	Total	Male	Female	Total
E-1	3	0	3	.1	0	.1
E-2	4	0	4	.2	0	.1
E-3	6	1	7	.2	.1	.1
E-4	14	1	15	.2	.1	.2
E-5	16	0	16	.3	0	.2
E-6	11	0	11	.2	0	.2
E-7	1	0	1	.1	0	.1
E-8	1	0	1	.2	0	.2
E-9	0	0	0	0	0	.0
Total	56	2	58	0.2	0	.2
Marine Corps						
	Number of Seroconverters			Rate per1,000		
Pay-grade	Male	Female	Total	Male	Female	Total
E-1	0	0	0	0	0	0
E-2	0	0	0	0	0	0
E-3	5	0	5	.1	0	.1
E-4	3	0	3	.1	0	.1
E-5	5	0	5	.2	0	.2
E-6	7	0	7	.7	0	.7
E-7	1	0	1	.2	0	.2
E-8	0	0	0	0	0	0
E-9	0	0	0	0	0	0
Total	21	0	21	.1	0	.1

Table 8. Number of HIV seroconverters and rate per 1,000 individuals tested by homeport, active duty Navy enlisted personnel, 1997

Port	Number of Seroconverters	# Tested	Rate per 1,000
Boston	0	546	0
Bremerton (includes Seattle)	0	13,183	0
Charleston	0	6,733	0
Chicago	3	27,810	.11
Jacksonville	4	20,203	.2
Long Beach	0	6,326	0
Norfolk	21	74,514	.28
Pearl Harbor	3	13,587	.22
Pensacola (includes New Orleans)	4	21,699	.18
San Diego	12	48,242	.25
San Francisco	1	5,210	.19
Washington DC	5	7,664	.65
Overseas Atlantic	1	9,184	.11
Overseas Pacific	1	113,445	.07
Other/unspecified	3	43,836	.07
All Ports	58	312,182	.19

This analysis of HIV seroconversion data supports the need to target prevention efforts to groups at higher risk for acquisition of HIV. The specific Naval groups likely to be at greater risk tend to be minority, enlisted, and males in their 20's. While prevention efforts appear to be strong during deployment, they need to be strengthened within the continental United States and possibly within major homeports of high HIV seroprevalence.

Mortality, Morbidity, and Mishaps

Mortality USN/USMC, 1993-1997

The years 1993-1997 were the "best ever" in terms of fatalities in the Navy and Marine Corps. The rates were lower than in previous years and were lower than the national average. Figure 13 shows that in this period in the USN there were 725 deaths, and in the US Marine Corps there were 466 deaths for an estimated rate of 166/100,000 and 267/100,000, respectively (based on USN mid period population of 435,617 and USMC of 174,639). During the first half of fiscal year 1998, there have been 49 deaths (29 Navy, 20 Marine Corps) which means, at this pace, this fiscal year will have the lowest ever rates of 15 and 22 per 100,000. The figures of the setting of death given in Figures 13 and 14 suggest where more effective prevention efforts could lower these rates further. Motor vehicle accidents involving alcohol, speeding, and youth account for more than half the deaths. The mortality attributable to disease is extremely small by comparison.

Figure 13. Setting of death by mishap, USN, FY1993-1997

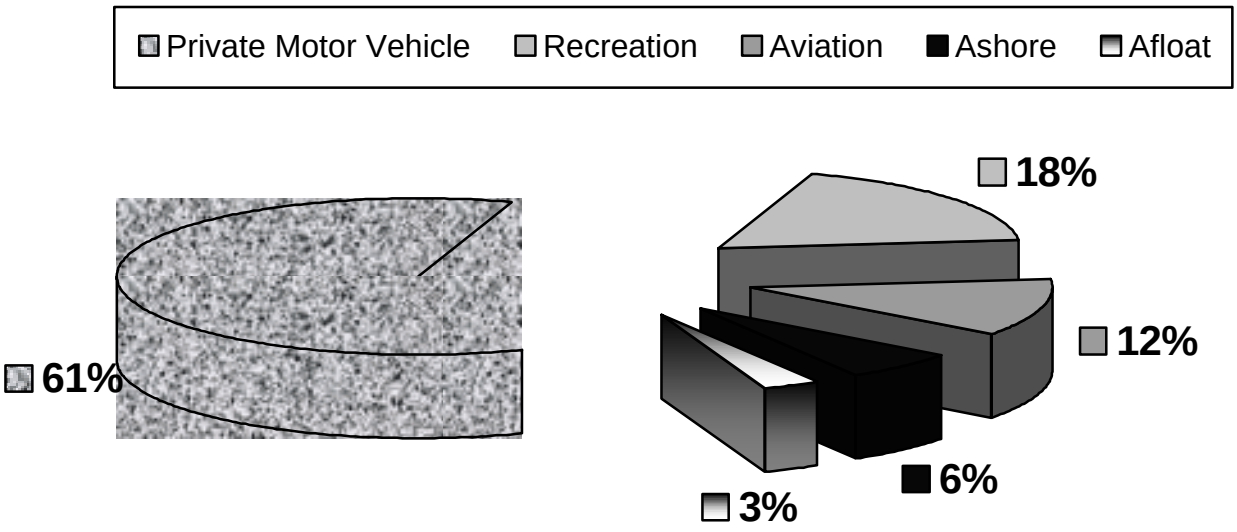
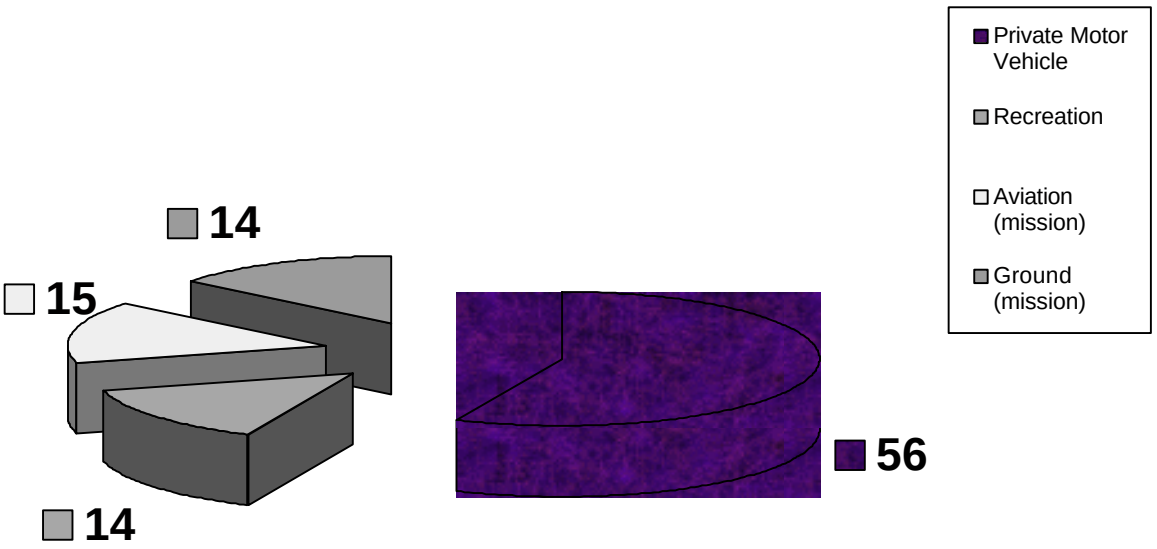


Figure 14. Setting of death by mishap, U.S. Marine Corps, FY1993-1997



In the fatal traffic accidents, the following factors were significant contributors to the accident:

Age < 26	74%
Nighttime	72%
Weekend	50%
No seatbelt	38%
Alcohol	35%
Speeding	21%
Fatigue	10%

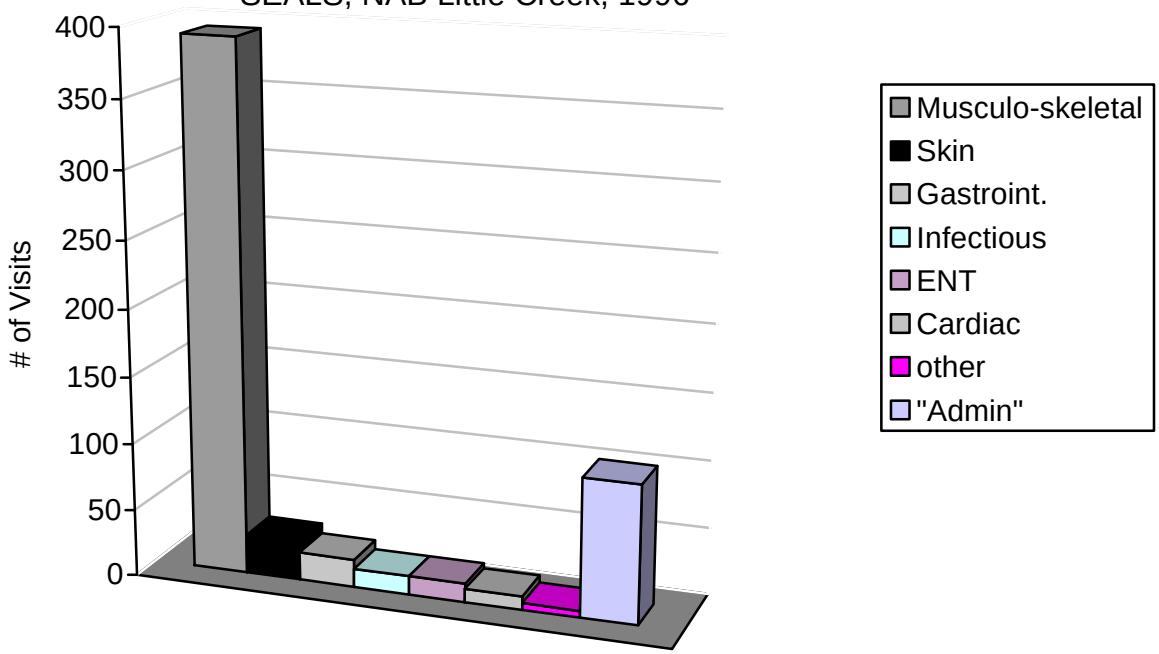
The mortality rates from disease, and work-related mishaps are extremely small in the U.S. Navy and U.S. Marine Corps. There are extensive and active preventive programs in place to which we attribute at least a large part of this success. However, the mortality rate from mishaps is approximately 1,000 times higher than the mortality rate of disease, and the U.S. Marine Corps mishap mortality rate is consistently one and a half times the rate in the U.S. Navy.

Naval Special Warfare Group Two: Medical Events Among SEALs, 1996

LCDR Lisa Thorson, MC, USN, Epidemiologist,
Preventive Medicine Directorate, NEHC

As part of a Naval Health Research Center study, injury and illness data on all SEALS presenting to the Naval Special Warfare Group Two Medical Department, Naval Amphibious Base, Little Creek , VA, from Jan 1 through Dec 31, 1996, were tabulated via a computerized passive surveillance system (see Figure 15).

Figure 15. Distribution of chief medical complaint among SEALS, NAB Little Creek, 1996



The majority of the musculo-skeletal injuries (N=371, 83%) were associated with some form of training or official operation:

Unit Physical Training	126	visits
Mission-related Training	100	"
Personal PT	81	"
Official operations	9	"

"Unknown" causes accounted for 46 visits, most of these were low back pain, degenerative disk disease, or osteoarthritis.

Non-training related activities accounted for 29 visits. Nine (9) of these were for motor vehicle accidents. The majority of "administrative" visits were physical exams.

When interpreting these results, it is important to note that actual time spent conducting official operations is small compared to the time SEALS spend in training. The high number of musculo-skeltal injuries associated with Unit PT is bothersome, as the goal of the physical training program should be to prepare for missions and reduce, not increase, the number of injuries experienced by the unit.

Suicide in the Navy & Marine Corps

Department of the Navy Suicide Prevention Program, Bureau of Naval Personnel

Suicides represent a special subset of mortality statistics. There are many support programs and individuals devoted to the prevention of this tragedy. The Bureau of Naval Personnel keeps records on the number of suicides which provides information and guidance to these prevention efforts.

Table 9. USN deaths, 1997

Causes	Number	Rate per 100,000
Motor Vehicle Accident	77	19.6
Suicides	57	14.5
Natural Causes	42	10.7
Aviation Accidents	13	3.3
Crime	7	1.8
All Other Causes	35	8.9
Totals	231	58.7

Table 10. USMC deaths, 1997

Causes	Number	Rate per 100,000
Motor Vehicle Accident	55	32.0
Suicides	20	11.7
Natural Causes	17	9.9
Aviation Accidents	12	7.0
Crime	11	6.4
All Other Causes	14	8.2
Totals	129	75.2

Figure 16. Comparison of DON & civilian suicide rates

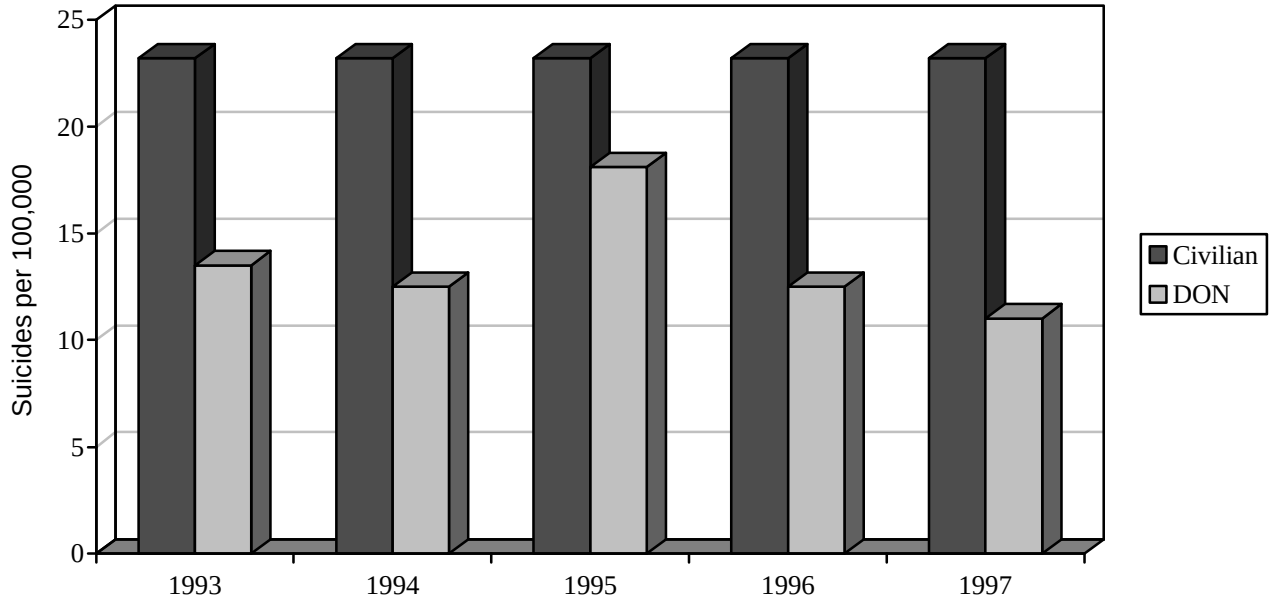
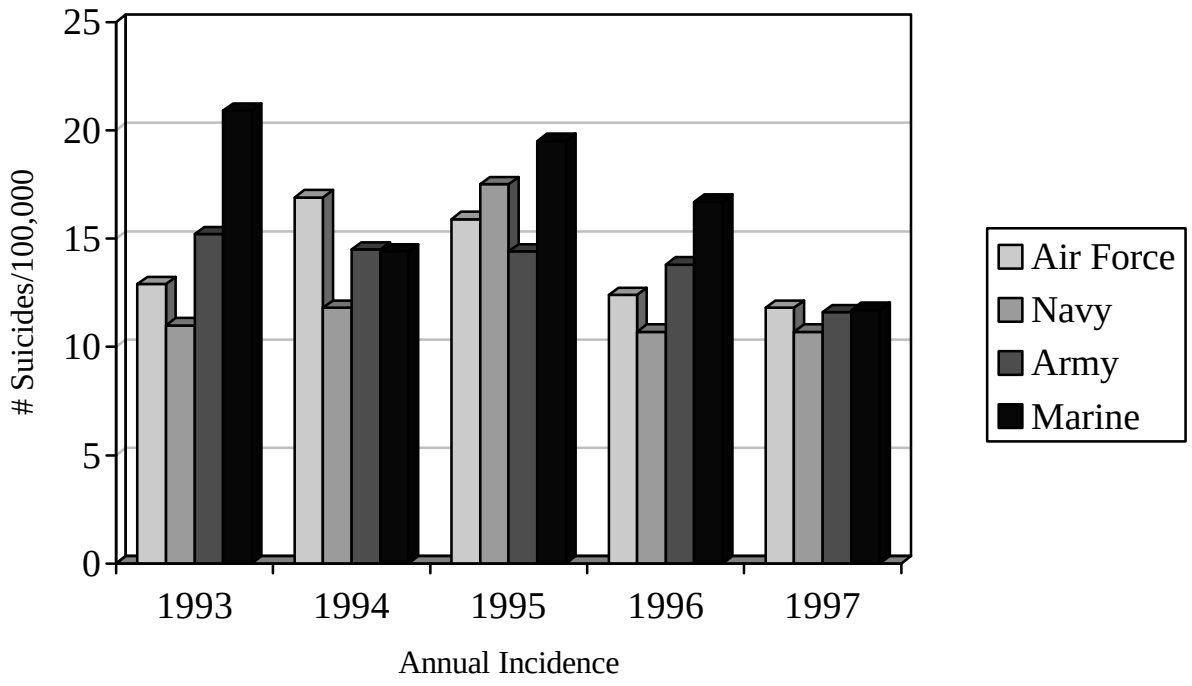


Figure 17. Suicide rates by service



Conclusion: DON suicide rate of 11.0/100,000 for 1997 was the lowest in a decade.

- DON suicide rate is 42% less than civilian rate when matched by age, gender, and race.
- DON SP provides education and training in prevention, risk factor recognition, treatment, and counseling for family members, as required.