

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
Camp Lejeune, NC 28542-0042

FMST 502

Diseases of Operational Importance

TERMINAL LEARNING OBJECTIVE

1. Given an operational plan and Commanding Officer's guidance, identify diseases of operational importance to prevent spread of sickness and disease. (HSS-MED-2006)

ENABLING LEARNING OBJECTIVE(S):

1. Without the aid of reference and given a description or list, **identify signs of and preventive measures for diseases and infections in an area of operation**, per the MCRP 3-40A.4, Field Hygiene and Sanitation. (HSS-MED-2006a)

2. Without the aid of reference and given a description or list, **identify disease surveillance methods within an AOR** to include, immunization requirements, preventive medications and education for potential health hazards, per the MCRP 3-40A.4, Field Hygiene and Sanitation. (HSS-MED-2006b)

3. Without the aid of reference and given a description or list, **identify the disease reporting process** and the required information for reporting, per the MCRP 3-40A.4, Field Hygiene and Sanitation. (HSS-MED-2006c)

1. MILITARY MEDICINE AND WAR

a. Throughout the history of the world, disease has been man's worst enemy. Probably the most dreadful episode in recorded history was the infamous "Black Death" epidemic of the 14th century, which was responsible for the death of one-fourth of the population of Europe. Other epidemics, though not so dramatic as the plague epidemic, have wreaked havoc upon civilizations and primitive populations as well.

b. When diseases are present in the general population, the hazard is even greater to armies. Because of the large numbers of soldiers who live in close association with one another--sometimes in a hostile environment and with less than desirable facilities--diseases, once started, can run rampant if they are not immediately checked.

c. Until World War I, disease took a far greater toll of manpower than did enemy fire. Napoleon Bonaparte, though considered a military genius, lost over 400,000 of his 500,000-man army which invaded Russia in 1812 to disease and cold injury, while only 60,000 were killed as a result of direct battle injury. In a previous expedition in Haiti, he had lost 20,000 of a 22,000-man force to the ravages of yellow fever.

d. The U.S. experience has not been without similar tragedies. During the Civil War, more than twice as many men in both the Union and Confederate armies died from disease as from battle wounds. During the Spanish-American War, more than seven men died from disease (primarily yellow fever) to each man who fell in combat.

e. Improved medical techniques, antibiotics, and research have done much to bring disease, as a military factor, under control; however, hospital admissions due to disease and noncombat injury continue to far outweigh those due to direct battle causes. It is, thus, of the utmost importance that you know and understand the causes and means of prevention of those diseases that are of military importance.

f. History shows that disease and injury, as military problems are factors for which the military leader must plan. In figure 1, the periods of war listed were ones in which combat was the heaviest. In spite of these concentrated fighting periods, hospital admissions for disease and non-battle injury far exceeded admissions because of hostile action of the enemy. Furthermore, experience reveals that hospital admissions for disease usually exceed hospital admissions for non-battle injury and battle injury.

War Period and Location	Disease and Noncombat Injury (percentage)	Battle Injury (percentage)
Pacific Theater of Operations Nov 1942 to Aug 1945 (WWII)	95	5
European Theater of Operations June 1944 to May 1945 (WWII)	77	23
Korean War July 1950 to July 1953	83	17
Vietnam War 1 Jan 1969 to 31 Dec 1969	81.8	18.2

Figure 1.

g. The commander employs the troops to fulfill his mission; however, he requires troops in good health. His plans and decisions are based in part on information he receives concerning the health of the command and on recommendations of medical personnel.

h. Military medicine is an active part of the machinery of war. Unless military medicine is thoroughly integrated into military plans and operations, unnecessary costs in manpower and in time loss may be the price paid to gain objectives.

2. Diseases of Military Importance.

a. Intestinal diseases are caused by the ingestion of infectious microorganisms or their waste products. They are often transmitted by food or water which has become contaminated with bacteria, viruses or intestinal parasites. These infectious agents are introduced as a result of a breakdown in personal hygiene, sanitation, food preparation or water treatment. Food or water becomes contaminated by direct contact with the infectious agent or by contact with a mechanical vector such as flies, rodents, etc.

(1) Some intestinal diseases of particular importance to the military in field environments are typhoid and paratyphoid fevers, amebic dysentery (amebiasis), bacillary dysentery (Shigellosis), cholera, hepatitis, leptospirosis, food infection

and food intoxication. Symptoms typically associated with these diseases include:

abdominal cramps, diarrhea, fever, nausea, dehydration, jaundice, vomiting and weakness.

(2) Control is relatively easy in that the infectious agents are ingested. Therefore, proper handling, storage, inspection and preparation of food, and adequate treatment of potable water supplies, will effectively eliminate intestinal diseases in a field unit. Troop education is strongly emphasized.

(3) Diseases of the respiratory tract are caused by direct inhalation of infectious microorganisms which are carried on airborne droplets or dust particles. These bacteria and viruses may also be indirectly transmitted through ingestion by the use of common cups, food utensils, cigarettes, etc.

(4) Some diseases which can be spread in this manner are influenza, common colds, diphtheria, rubella, rubeola, pneumonia, scarlet fever, strep throat. Some diseases which can be spread in this manner are influenza, common colds, diphtheria, rubella, rubeola, pneumonia, scarlet fever, strep throat and tuberculosis. Symptoms range from mild fevers to permanent incapacitation.

(5) Control involves:

(a) Isolation of known or suspected cases, where practical. Avoidance of overcrowding and close physical contact is ideal but will be dictated by the tactical situation.

(b) Frequent ventilation of living spaces.

(c) Providing medical surveillance, education and patient/contact interviewing.

(d) Providing prophylactic immunization/treatment of susceptible personnel.

(e) Use of personal protection devices such as dust masks/scarves to reduce exposure to noxious or infectious dusts, spores etc.

b. Vector-borne diseases.

(1) Arthropods transmit many communicable diseases. Two classes of arthropods involved are insects (fleas, flies, lice, mosquitoes, etc.) and arachnids, (ticks, mites, spiders, etc). Diseases transmitted by these vectors may include malaria, yellow fever, sandfly fever, typhus, plague, spotted fever, dengue and hemorrhagic fevers. Troop morale and major operations will be adversely affected, and relapse and extended recovery time can be anticipated with these diseases.

(2) Transmission occurs in two ways. Mechanical transmission is the carrying of disease agents on or in the body of the vector with deposition on food, water, open sores or soil which is inhaled as dust. Biological transmission occurs when a vector ingests the disease agent by feeding on an infected person or animal. At this point, the infectious agent can remain the same, multiply, and transform within the body of the vector. The disease is transmitted to a susceptible host when the vector bites, defecates or regurgitates on the host with subsequent

introduction of infectious agents into the blood or other tissues.

(3) Control involves:

1 Surveillance for vector identity, prevalence and breeding sites.

2 Chemical applications targeted to one of the stages in the life cycle of the infected vector.

3 Physically controlling the vector by eliminating breeding sights and harborages; properly using netting, screens, protective clothing, etc.; the liberal use of approved repellents.

4 Obtaining and using prophylactic medications such as doxycycline or chloroquine and primaquine for malaria prevention, or vaccination for Japanese encephalitis virus.

c. Parasitic Diseases

(1) There are a variety of parasitic diseases in which man plays a part in the life cycle, or in which man accidentally becomes infected with a disease agent by unintentionally interrupting the life cycle of a parasite.

(2) Some parasitic diseases are the result of poor sanitation, inadequate clothing, or improper cooking methods. All food, particularly food taken from the native countryside, should be thoroughly cooked or disinfected. Fresh fruits and vegetables should be washed carefully and chemically disinfected, as "Night Soil" (human feces) is commonly used as a fertilizer in many underdeveloped nations. All troops should be discouraged from going barefoot and from drinking, bathing and swimming in rivers and streams. It is also commonplace in many areas of the world to defecate or urinate in irrigation ditches which are also used by the local populace as a source of cooking and washing water. Emphasis should be placed on careful disposal of human wastes.

d. Zoonotic Diseases are those transmitted under natural conditions from vertebrate animals (hosts) to man either directly (rabies) or indirectly by vector borne means (plague). The best prevention for this broad group of diseases is avoidance of animals that are acting unnaturally, dead animals and animal nests and burrows. Medical intelligence is essential in identifying enzootic or epizootic diseases in the area of operation (AO).

e. Sexually Transmitted Diseases (STD) are passed from one person to another by intimate sexual contact. The types of STD most frequently encountered in field environments are gonorrhea, non gonococcal urethritis, chancroid, syphilis, lymphogranuloma venereum, herpes and veneral or genital warts (condylomata acuminata). In recent years, gonorrhea has developed a

resistance to penicillin therapy (i.e., penicillinase producing *Neisseria gonorrhea*, PPNG). This is particularly true in the Far East and Indian ocean areas. Refer to current instructions and literature for appropriate therapy. Vigorous educational efforts must be made prior to and during a deployment in order to effectively reduce STD morbidity. Lectures/training should emphasize abstinence and the correct use of condoms. In planning for deployments in countries where prostitution is legal or widespread, the local availability of condoms should be considered.

f. Other Diseases of Military Importance.

(1) Pediculosis is an infestation of lice on various parts of the body, depending on the species of the louse. The adult lice and eggs (nits) generally stay in the hairy parts of the body or in the clothing worn close to the body, particularly in the seams. Lice are spread from person to person by direct contact or by indirect contact such as sharing of clothing, head gear or sleeping bags.

(2) Scabies is an infectious disease of the skin caused by a mite. Penetration of the skin is visible as papules, vesicles, or tiny linear burrows containing the mites and their eggs. Mite lesions are prominent in the webbing between the fingers, anterior surfaces of wrists and elbows, anterior axillary folds, belt line, thighs and exterior genitalia in men. Nipples, abdomen and lower portion of the buttocks are frequently affected in women. The transmission of mites is by direct, skin-to skin contact, frequently during sexual contact and to a limited extent, from undergarments or soiled bed clothes freshly contaminated by an infected person.

g. Venomous Animals. There are numerous species of venomous animals throughout the world. Prior to deployment, a thorough review of available medical intelligence is necessary. Once dangerous and venomous species are identified, troop education will help reduce morbidity and mortality from these sources. In some cases, anti-venoms are available, and should be included in medical supplies if practical. If the anti-venoms are too expensive or fragile to take on the deployment, identification of their nearest location must be made prior to deployment.

3. Communicable Disease Reporting.

a. Regulations pertaining to communicable disease reporting are contained in NAVMEDCOMINST 6220.2 series, Disease Alert Reports. These reports are required for specified diseases or increased sick call morbidity that may affect operational readiness, be a hazard to the community, be spread through transfer of personnel, require diagnostic, epidemiologic, or

other medical assistance or be of such political or journalistic significance that inquiry may be made to the Bureau of Medicine and Surgery or higher authority. The medical unit that initially suspects or diagnoses disease occurrence as noted above, is usually the Battalion or Regimental Aid Station. Further guidance may be obtained from organic Preventive Medicine Services, the area Naval Hospital Preventive Medicine Department, or the cognizant Navy Environmental and Preventive Medicine Unit.

REFERENCE(S) :

Field Hygiene and Sanitation MCRP 3-40A.4

Navy Sanitation NAVMED P5010

Tactics, Techniques, and Procedures for the Medical
Company FM 8-10-1