

# Introduction to Disease

## GENERAL TERMINOLOGY

**Disease**—impairment of the health, condition, or normal functioning of the body.

**Pathology**—the study of disease.

**Pathophysiology**—the study of the physiologic processes of a disease.

**Pathogenesis**—the pattern of development of a disease.

**Epidemiology**—the study of the occurrence, transmission, and distribution of a disease.

**Etiology**—the study of the causes of a disease.

**Mortality rate**—the death rate for a specific region or population affected by a disease.

**Morbidity**—the ratio of people who are diseased to those who are well.

**Endemic**—term used to describe a disease affecting a community.

**Epidemic**—term used to describe a disease affecting an entire region.

**Pandemic**—term used to describe a disease affecting the entire world.

**Diagnosis**—identification of a specific disease or condition.

**Prognosis**—the expected outcome of a particular condition (including or not including various forms of treatment).

**Acute**—term used to describe a condition with an intense, sudden onset and short duration.

**Chronic**—term used to describe a condition with a less intense, long-term onset and long duration.

**Local**—confined to a specific area of the body.

**Systemic**—affecting the blood or the entire body.

**Signs**—outward, observable abnormalities (e.g., fever, rash, bleeding).

**Symptoms**—abnormalities that the patient complains of that cannot necessarily be detected by an observer (e.g., pain, fatigue, discomfort, achiness).

**Syndrome**—a group of signs and symptoms, usually with a common cause.

## ETIOLOGY

### Terminology

**Trauma**—physical, chemical, or radioactive damage to the body.

**Infection**—invasion of a pathogenic microorganism.

**Degeneration**—the breakdown of body tissues, usually because of “wear and tear.”

**Autoimmunity**—a condition in which the body’s immune system creates an immune response to destroy its own tissues.

### Risk Factors

#### AGE

Each age group is susceptible to certain diseases that may or may not affect any of the other age groups. For example, premature infants are prone to respiratory problems, teens are prone to mononucleosis and venereal diseases, and the elderly are prone to bone fractures.

## GENDER

Some diseases may be limited to one gender, or at least more prevalent in one gender than in the other. For example, males develop prostate cancer and are predisposed to hemophilia and muscular dystrophy. Females are predisposed to breast cancer, urinary tract infections, and lupus erythematosus.

## HEREDITY AND RACE

Some diseases are passed down genetically through generations so that different families or ethnic groups are more prone to different diseases than other groups. For example, African-Americans are eight times more likely to have sickle cell anemia than whites. Also, if a woman has a sister, mother, or daughter who develops breast cancer, her chance of developing breast cancer doubles.

## PHYSICAL EXPOSURE

Exposure to the physical elements (e.g., cold, heat) can damage the body's systems. For example, prolonged or frequent exposure to the sun can lead to skin cancer.

## NUTRITION

Improper diets or diets deficient in certain necessary nutrients lead to disease. For example, a lack of iodine in the diet may lead to hypothyroidism or a goiter, and a lack of vitamin D may lead to osteomalacia (rickets). Diets high in cholesterol or fats predispose to atherosclerosis and coronary artery disease.

## CONGENITAL DEFECTS

Some diseases are present from birth. For example, cleft palate and spina bifida are both congenital defects.

## OCCUPATION

Different occupations predispose to different diseases. For example, typists and massage therapists are predisposed to carpal tunnel syndrome.

## PREEXISTING DISEASE

Having one or more diseases can increase the risk of contracting other diseases. For example, diabetics are more prone to developing kidney disease, retinal problems, and atherosclerosis.

## PSYCHOGENIC INFLUENCES

Mental and emotional health influences overall health. Factors such as anger, low self-esteem, hard-driving "type A" personality, anxiety, depression, and stressful life events have been shown to be major factors in the development and progression of cancer and cardiovascular disease. (See Chapter 37 for a discussion of emotional states and stress.)

## LIFESTYLE AND HABITS

Certain lifestyles and habits have been linked to disease. For example, smoking has been shown to be one of the most significant factors leading to lung cancer and heart disease.

## MICROORGANISMS

**Virulence**—the ability of an organism to cause a disease; a measure of the potency of a microorganism.

**Aerobe**—an organism that can live in the presence of oxygen.

**Anaerobe**—an organism that can live without oxygen.

**Asepsis**—the state of being without infection or contamination; sterile.

**Disinfection**—the process of killing microorganisms but not necessarily bacterial spores.

**Antisepsis**—the process of inhibiting microorganism growth; preventing microorganism reproduction.

**Sterilization**—the act of completely removing all living organisms, including bacterial spores.

**Bacteria**—small, single-celled organisms with no nucleus; prokaryotic cells found in virtually every environment; reproduce by dividing into two daughter cells (binary fission); come in many shapes and sizes.

**Staphylococcus and Streptococcus**—common spherical bacteria; part of the normal flora (normal microorganism population) of the skin, nose, mouth, and mucous membranes; may cause many infections (e.g., “strep” throat, “staph” infections of the blood, pimples, impetigo, meningitis, bronchitis, pneumonia).

**Viruses**—single-celled organisms covered by a protein shell; not considered true living cells; have no independent metabolic processes; contain their own genetic material (DNA or RNA); when a virus enters a living cell, the viral genes are released and used by the host cell to produce more viruses; the production of viruses by the host cell eventually alters or destroys the cell itself.

**Fungi**—eukaryotic cells; multiply by budding and producing spores; grow in dark, damp places; examples include yeasts, molds, and mushrooms.

Many antibiotics, such as penicillin, have been developed to fight against prokaryotic cells like bacteria. Antibiotics will not destroy the cells of a person who has a viral or fungal infection because human cells are not prokaryotic. To fight against fungal or viral infections, an antifungal or antiviral medication must be used.

## INFLAMMATION

### Phases of Inflammation (Table 23-1)

#### Signs of Inflammation

- Redness
- Swelling
- Heat
- Pain

Inflammation can be either acute or chronic. Acute inflammation is brought on by a nonspecific injury, has a greater degree of blood vessel involvement, and usually subsides in a relatively short time. Chronic inflammation is brought on by persistent irritation and aggravation, spreads slowly, and leads to a larger amount of scar tissue buildup.

Phase	Duration	Events
Initial phase	24-48 hours after initiation	Vasodilation Edema Some leukocytes attracted to the area Inflammatory chemicals released (histamine and serotonin released into surrounding tissues)
Migratory phase	Days 3-5	Start to see capillary budding into damaged tissues Epithelialization of skin Chemotaxis (inflammatory cells, such as macrophages and lymphocytes, attracted to the site of injury or infection) Inflammatory barrier established (macrophages and lymphocytes wall off infected or injured area; dead bacteria, macrophages, and lymphocytes accumulate to form pus or inflammatory exudate)
Proliferative phase	Days 6-21	Debridement or abscess formation <sup>a</sup> Repair cells called fibroblasts form scar tissue where normal tissue has been destroyed Cells grow in random directions and adhere to all adjacent tissues
Remodeling phase	>21 days	Scar tissue reshaped and remodeled according to stresses on the tissue Cell pattern is more unidirectional Scar tissue cells are broken down and reabsorbed <sup>b</sup>

<sup>a</sup>Debridement occurs in superficial tissues; abscesses form in deeper tissues.  
<sup>b</sup>Massage facilitates realignment of scar tissue and breakdown of unneeded tissue.

## Problems from Chronic Inflammation

**Restricted range of motion**—the presence of fluid around joints prevents normal range of motion.

**Adhesions**—abnormal joining together of tissues surrounding organs and joints; may result from scar tissue buildup.

**Excess scar tissue**—scar tissue that accumulates as a result of chronic inflammation, replacing the normal active tissue; impairs the functioning of the organ.

## Functions of Histamine

1. Vasodilation
2. Increase blood vessel permeability

It is important for a massage therapist to remember that the purpose of massage is not to eliminate inflammation—specifically, not acute inflammation. Each phase of inflammation is the natural and necessary way the body heals damaged tissues. However, inflammation that becomes chronic is disruptive and damaging and needs to be stopped.

Allergic reactions involve the release of histamine from the tissues of the upper respiratory tract, which causes the characteristic congestion, running nose, and itchy eyes. Taking an antihistamine blocks the effect of histamine and therefore prevents these undesired reactions by the body.