

PN-AAT-051  
40592

CAUSATION OF DISEASE MODULE

STUDENT TEXT

1980  
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## ACKNOWLEDGEMENTS

Nurse Clinician training materials are Lesotho adaptations based upon the MEDEX prototype curriculum for training mid-level health workers.

The prototype MEDEX materials were developed by the Health Manpower Development Staff of the John A. Burns School of Medicine, University of Hawaii. The original prototypes were based on training experience in over a dozen third-world countries. These were revised on the basis of HMDS experience in Micronesia, Thailand, Pakistan, and Guyana before being made available to Lesotho under a U.S.A.I.D. funded contract.

Major adaptation in Lesotho began at the National Nurse Clinician Training Programme Curriculum Adaptation Workshop held at Mazenod in January 1980. The nearly fifty participants represented all major health and health related activities in Lesotho, both Government and private. These participants and others working as individuals and then as review committees have adapted the Nurse Clinician training materials to meet the conditions and needs of Lesotho.

The Government of Lesotho and particularly the staff of the Nurse Clinician training Programme are grateful to HMDS for supplying the prototype materials and to all those individuals who have helped in the Lesotho adaptation process.

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## INTRODUCTION

## THE DETERMINANTS OF HEALTH AND DISEASE

The purpose of this module is to give you a clearer understanding of the reasons why people become ill. If you understand what determines illness, by turning it around you will also know what determines good health. And finally, if you know what keeps people healthy, you will be able to provide them with services that will help them stay healthy.

Many illnesses seen in communities, clinics and hospitals are infectious diseases. This means these diseases are the result of infections by micro-organisms or microbes. Microbes are tiny creatures so small that they cannot be seen without a microscope. But they do exist and can be seen in any laboratory equipped with a microscope. It is also clear that microbes cause specific diseases. The various types of microbes and the diseases they cause are discussed in this module.

Other diseases are the result of disturbances in the balance of food we eat. They are termed nutritional diseases and are often closely inter-related with infectious diseases.

Trauma is an obvious cause of many illnesses and is handled in a specific Trauma and Emergency Module.

Degenerative illnesses are those illnesses that occur because the body is getting older and various parts of the body are wearing out or changing.

Allergic and immunologic illnesses are the result of chemical reactions to foreign substances or abnormal proteins in the body. These also will be discussed in this module.

Neoplastic changes occur when certain cells begin to grow abnormally at an increased rate. Neoplastic changes cause certain benign lumps and cancer.

Emotional stress also may cause specific illnesses or make other illnesses worse. Sociological problems also become a contributory cause of illnesses. Poor, inadequate or wrong treatment by health workers may cause illness in patients, and this also will be introduced in this module.

Causation of disease is often interrelated. There may be one primary cause of a disease as well as several secondary causes of that same disease, all operating at the same time to create the disease in one particular person. In some cases, the primary causes of the disease may not be easily determined. This module introduces some of the major causes of disease, so that you may become better able to prevent disease, promote health and when necessary, treat disease.

## REVIEW QUESTIONS

Match the causes of disease with their definitions.

- |                            |  |
|----------------------------|--|
| ___ 1. Allergic illnesses  | a. Imbalance of foods eaten                |
| ___ 2. Infectious illness  | b. Chemical reaction to foreign substances |
| ___ 3. Nutritional illness | c. Abnormal cell growth                    |
| ___ 4. Neoplasms           | d. Disease causing microbes in the body    |
5. Why do we study the causation of disease?

## STUDENT GUIDE

## MICROBES

## I. Entry Level Knowledge and Skills

Before starting on this unit, you should have read the Introduction to this module and familiarized yourself with the definition of words used in it and answered the Review Questions.

## II. Objectives

Using the information and experiences provided by the instructor and the module text, you will be able to:

1. List five categories of disease-causing microbes and discuss their important characteristics.
2. Discuss the relationship between resistance to infection and environment.
3. Explain the influence of nutrition and immunization on resistance to infection.
4. Describe the three principal mechanisms by which microbes are spread from one person to another.
5. Locate information relating to specific infectious diseases in other modules.

## III. Evaluation

Upon completion of this unit, you will be assessed on the following:

1. Knowledge - Written test based on the contents of this unit - acceptable performance, 80%.
2. Skills - Your ability to classify causes of disease seen in clinic according to their determinants.

## IV. Activities

In order to accomplish the objectives of this unit, you will participate in the following activities:

1. Read module text and answer Review Questions.
2. Participate in discussion of module text content.

We live in a world surrounded by many types of living things - plants and animals - which we see all the time. In addition to the living things which we are able to see, there are also many living creatures which are so small that we cannot see them except with a microscope. These organisms are collectively referred to as micro-organisms or microbes. (Micro = small; bios = life.) There are hundreds of different kinds of microbes living under all kinds of conditions - in animals, in plants, in soil, in water, and even in the air. Most of these microbes are harmless, and many are essential to our well-being. A few microbes, however, cause disease in humans. These diseases we refer to as infectious diseases or infections. The categories of microbes and the important infectious microbes within each category will be reviewed.

Microbes vary widely in the way they cause disease. In general though, microbes enter the body, multiply and spread. The body responds by fighting the microbes. Locally, this reaction to the multiplying microbes causes swelling, heat, redness and pain such as seen in a boil. As the microbes spread, the general body reaction causes clinical symptoms such as fever, chills, muscle pains, lymph node enlargement and gastrointestinal upsets. These symptoms are due to the body defending itself against the disease causing microbes.

For practical purposes the infectious microbes can be divided into the five categories given below.

1. Bacteria
2. Viruses
3. Protozoa
4. Parasites
5. Fungi

### Bacteria

Bacteria is the most important category of disease producing microbes. From a medical point of view, the important feature of bacteria is that they respond to antibiotics, whereas the other microbes (with a few exceptions) do not.

Common conditions which are caused by bacteria are listed below with the module in which they are discussed.

| <u>Condition</u> | <u>Module</u>                             |
|------------------|---|
| Boils            | Skin Disease Module                       |
| Bronchitis       | Respiratory System & Heart Disease Module |
| Cellulitis       | Skin Disease Module                       |
| Conjunctivitis   | DEENT                                     |
| Croup            | Disease of Infant and Children Module     |

| <u>Condition</u>            | <u>Module</u>                                |
|-----------------------------|--|
| Diphtheria                  | Diseases of Infants & Children               |
| Gingivitis                  | Dental Module                                |
| Gonorrhoea                  | Genito-urinary Module                        |
| Impetigo                    | Skin Disease Module                          |
| Leprosy                     | Common Communicable Diseases                 |
| Meningitis                  | Common Communicable Diseases                 |
| Osteomyelitis               | Common Medical Problems                      |
| Otitis media                | EENT Module                                  |
| Pelvic Inflammatory Disease | Problems of Women                            |
| Pharyngitis                 | EENT Module                                  |
| Pneumonia                   | Respiratory System & Heart Disease<br>Module |
| Septicaemia                 | Diseases of Infants & Children               |
| Stye                        | EENT Module                                  |
| Syphilis                    | Genito-urinary Module                        |
| Tetanus                     | Common Communicable Diseases                 |
| Tonsillitis                 | EENT Module                                  |
| Tuberculosis                | Respiratory System & Heart Disease<br>Module |
| Typhoid                     | Gastro-intestinal Module                     |
| Urinary Tract infection     | Genito-urinary Module                        |
| Whooping cough              | Diseases of Infants & Children               |
| Typhus                      | Common Communicable Diseases                 |

### Viruses

Viruses are some of the smallest forms of life. They have the ability to live only inside of normal healthy cells of humans, other animals or plants. Viruses do not respond to antibiotics.

The important disease causing viruses are listed below.

| <u>Condition</u>                             | <u>Module</u>                  |
|--|--------------------------------|
| Poliomyelitis                                | Diseases of Infants & Children |
| Enteroviruses (causing gastro-<br>enteritis) | Gastro-Intestinal Module       |
| Varicella (causing chickenpox)               | Diseases of Infants & Children |
| Measles                                      | Diseases of Infants & Children |
| Influenza                                    | Respiratory & Heart Problems   |
| Common cold                                  | Respiratory & Heart Problems   |
| Mumps  | Diseases of Infants & Children |
| Hepatitis                                    | Gastro-Intestinal Module       |

### Protozoa

Protozoa are generally larger and more complex than either viruses or bacteria. But they also are not visible by the naked eye. A microscope is necessary.

Some protozoa, trichomonads, giardia and amoeba, live and multiply in body spaces such as the intestinal lumen or vaginal lumen where they cause a local reaction - fluid, mucous, pus, bleeding and pain.

Common conditions caused by protozoa are listed below.

| <u>Condition</u>      | <u>Module</u>            |
|-----------------------|--------------------------|
| Amoebiasis            | Gastro-intestinal Module |
| Trichomonas vaginitis | Problems of Women Module |

### Parasites

Certain worms live in the human body and cause illness. Worms cause general clinical symptoms when they migrate through the body tissues, but some live and multiply primarily in the intestinal lumen where they cause local symptoms of cramping pain, mucous and bleeding.

Some of the common ones include:

| <u>Condition</u> | <u>Module</u>   |
|------------------|---|
| Pinworm          | Gastro-intestinal Module                              |
| Roundworm        | Gastro-intestinal Module, Environmental Health Module |
| Tapeworm         | Gastro-intestinal Module, Environmental Health Module |

### Fungi

Fungi are very small plant-like organisms that live on or in the human body and cause illness.

Some common ones include:

| <u>Condition</u>  | <u>Module</u>                  |
|-------------------|--------------------------------|
| Candida Vaginitis | Problems of Women Module       |
| Ringworm          | Skin Disease Module            |
| Thrush            | Diseases of Infants & Children |

### Insect Infestations

Very small insects may live on a human body and cause discomfort. The reaction is often a local allergic reaction with the insect causing itching and inflammation. The scabies insect is too small to see with the eye, but lice can be seen without a microscope.

| <u>Condition</u> | <u>Module</u>       |
|------------------|---------------------|
| Lice             | Skin Disease Module |
| Scabies          | Skin Disease Module |

### REVIEW QUESTIONS

Match the five categories of microbes.

- |                  |   |
|------------------|---|
| ___ 1. Bacteria  | a. Live outside the body's cells.         |
| ___ 2. Viruses   | b. Cause amoebiasis.                      |
| ___ 3. Protozoa  | c. These microbes respond to antibiotics. |
| ___ 4. Parasites | d. Plant-like organisms.                  |
| ___ 5. Fungi     | e. Certain worms                          |

Match disease with cause.

- |                     |              |
|---------------------|--------------|
| ___ 1. Trichomonas  | a. Insect    |
| ___ 2. Scabies      | b. Bacteria  |
| ___ 3. Common cold  | c. Virus     |
| ___ 4. Thrush       | d. Fungi     |
| ___ 5. Measles      | e. Protozoa  |
| ___ 6. Chickenpox   | f. Parasites |
| ___ 7. Boils        |              |
| ___ 8. Gonorrhoea   |              |
| ___ 9. Tuberculosis |              |
| ___ 10. Roundworm   |              |

### Resistance and Environment

Many diseases result from microbe infections, but why is it, for example, that some countries have much lower rates of infections than others? Why are some families in a community healthier than others in that same community? In short, what are the factors which determine which people stay healthy while others get infections?

The answer to these questions is actually very simple. There are two basic factors which determine whether a person becomes ill or remains well. The first and most important is the body's ability to resist infections by microbes. If the resistance (the ability to fight) is strong, the body is able to avoid illness. If the body's resistance is weak, then an infectious illness is more likely to occur and more likely to be severe. The second factor determining health or illness is the environment in which a person lives. If the environment brings a person into frequent contact with large numbers of microbes, then that person is more likely to become ill than is a person living in a relatively clean environment. (See Environmental Health Module.)

In England tuberculosis used to be very common. Many people believe that the decline in death from T.B. in England was the result of anti-tuberculous drugs. But, most of the reduction took place long before these drugs became available, as you can see from the graph (Fig. CD 1). The great reduction in T.B. in England was most certainly a result of first, an improvement in the diet, especially the diet of small children, and second, an improvement in sanitation, especially the pasteurization of milk. Drugs have played only a small part.

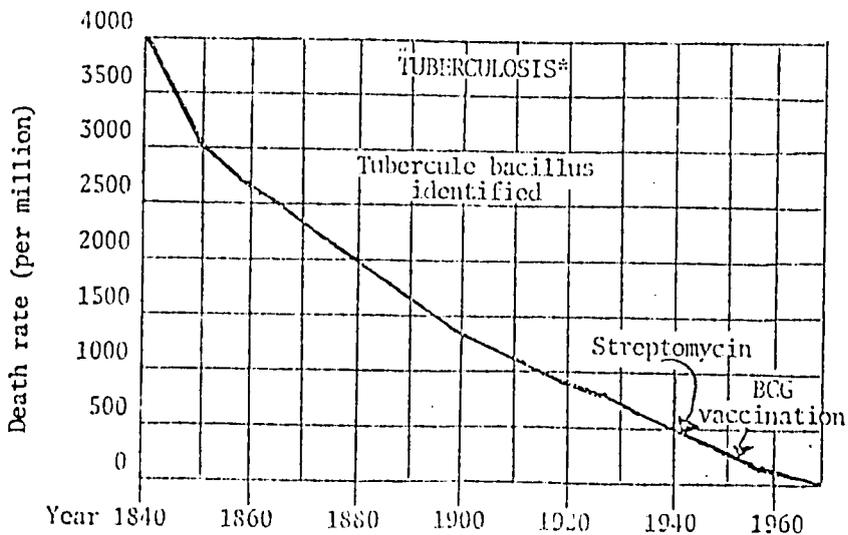


Figure CD 1 -- Reduction in T.B. Deaths  
in England

\*Note: Taken From Thomas McKeown, "Determinants of Health," Human Nature 1:4(April 1978), p.66.

A major decline in deaths prior to effective drugs was, also, the case with most other important infectious diseases in England, including cholera, scarlet fever, whooping cough, measles, malaria, smallpox, and infantile diarrhoea.

Clearly, the great improvements in the health of the people in the "developed countries" has come about primarily as a direct result of improvements in the people's resistance and environmental sanitation. The effect of drugs and surgery has been and is, today, undoubtedly much smaller.

#### Means of Improving Resistance Against Infections

What are the important factors determining people's ability to resist infections which can be improved? There are two important factors that all health workers should concentrate on to improve resistance to infections, especially in younger children. These factors are:

1. Nutrition
2. Immunization

#### Nutrition

Nutrition refers to the amount and types of foods we eat and the effect that these foods have on our bodies. People, like all living things, need adequate amounts of proper foods. These foods are essential in order for the mechanisms of resistance mentioned earlier to function adequately. A well fed child's body is able to respond well to infectious microbes with inflammation, antibodies and general body responses. A well fed child is, therefore, likely to survive such an infection. A poorly fed child, however, cannot respond well to infections. The inflammation response is weak, which allows microbes to reproduce and spread more widely. The antibody response is also reduced in malnourished children. The body is simply not able to produce enough antibodies to adequately fight the invading microbes.

What about antibiotics? Don't they help? Antibiotics can help to fight some types of microbes - bacteria. But antibiotics are not nearly as important in fighting infections as the body's own natural defense mechanisms. Antibiotics merely assist the body's own defense mechanisms. They cannot do the job alone. In fact, most experts now agree that a good diet containing adequate amounts of protein; calories, vitamins and minerals is the one most important determinant of good health, especially in children.

Child spacing refers to the frequency with which women give birth to babies. The effect of child spacing upon resistance to disease is related to nutrition. When mothers give birth every 3 to 4 years instead of every 1 to 2 years, both the mothers and the children are simply better nourished. And, as we have seen above, if people are better nourished they are more resistant to infections.

### Immunization

Immunization is another factor affecting resistance to infections. Immunization refers to the body's resistance to a specific disease. We say that a person is immune to disease if that person has antibodies which will destroy the microbes which cause that disease.

Antibodies are elements in the blood which destroy particular microbes. For example, tetanus antibodies destroy tetanus bacteria, and measles antibodies destroy measles virus.

Antibodies are produced by the white blood cells.

There are three possible ways that a person can acquire antibodies.

1. "Natural immunization." If a person has had the disease, his body will develop antibodies against that disease. Some of these antibodies will provide life long immunity such as measles but others provide shorter periods of immunity such as tetanus.
2. Vaccination or immunization (by injection or by mouth). When a person is immunized against a microbe, he is given a killed or weakened dose of that microbe such as "tetanus toxoid". The body responds by producing antibodies to this just as it would to the microbe during an infection. The length of immunity varies depending on the vaccine used.
3. Mother to child. During pregnancy, antibodies from the mother's blood will pass into the baby's blood. Antibodies are also passed from mother to child in breast milk. This gives the baby antibodies, and, therefore, some immunity to all microbes for which the mother has antibodies. This gives infants very important protection from infections while developing their own antibodies. This immunity lasts only as long as the antibodies from the mother last. They are mostly gone from the baby's blood by the time of weaning. If they are replaced, it will be through "natural immunization" or vaccination. That is why it is important to vaccinate children against the common infections before they are weaned from the breast.

## REVIEW QUESTIONS

1. Some countries have much lower rates of infections than others because: (mark the best answer)
- \_\_\_ a. The countries with lower rates have more antibiotics.
- \_\_\_ b. The resistance of people is better and the environment more sanitary in some countries.
- \_\_\_ c. Some countries have more hospitals.

By looking at the graph Figure CD 1, answer the following questions:

2. When the use of streptomycin began in England, did it change the death rate trend?
3. When the use of BCG began in England, was there a change in the death rate trend?
4. Why do you think this was the case?

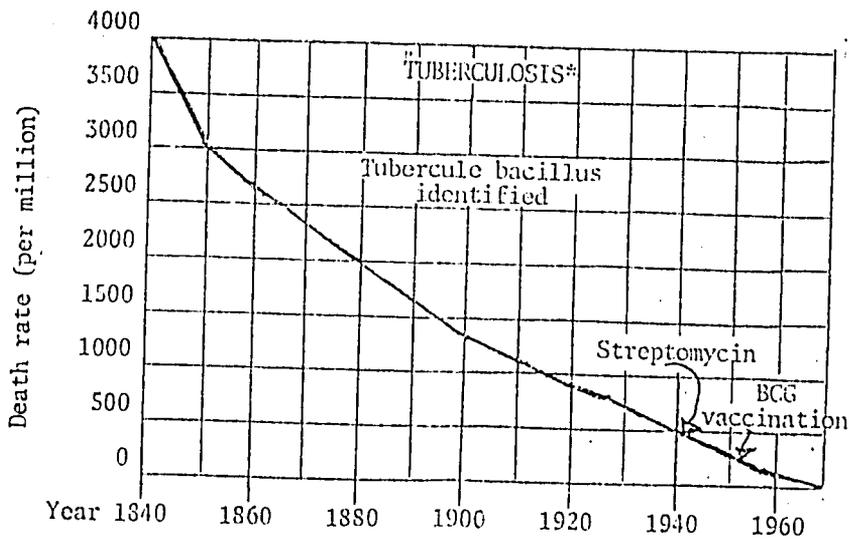


Figure CD 1 -- Reduction in T.B. Deaths in England

\*Note: Taken from Thomas McKeown, "Determinants of Health," Human Nature 1:4 (April 1978), p.66.

5. What are the three ways people can acquire antibodies?

### Factors Responsible for the Spread of Microbes

There are 3 main mechanisms by which microbes causing infectious diseases are spread from an infected person to other people. (Some microbes are spread by more than one mechanism.) These 3 mechanisms are:

1. Direct contact
2. Faecal contamination
3. Vectors

#### Direct Contact

This means that the infecting microbes are spread from one person to another directly, through touching or by "air droplets." By air droplets we mean the tiny mucous and water droplets in the air which are produced by breathing and coughing.

Diseases spread by direct contact:

Skin infections

Respiratory infections - colds, bronchitis, pneumonia, T.B.

Venereal diseases - syphilis, gonorrhoea and other sexually transmitted diseases.

Some generalized infections - measles, smallpox, chickenpox, polio, meningitis.

#### Faecal Contamination

This means that the microbes are spread by way of faeces (excrement). The microbes are excreted in faeces. They are then spread to others by contamination of food, water, open sores or simple contact with the skin. People, especially children, often come in contact with excrement, while cleaning themselves, by touching sewage or contaminated soil, or when contacting other individuals. The microbes then find their way to the mouth or breaks in the skin, resulting in an infection. Equally important is the faecal contamination of drinking water. This is very common in the rural areas where water for drinking is taken from the surface (ponds, streams and rivers) or from unprotected wells. These sources of water are very often polluted with the sewage and excrement from nearby houses and fields.

Diseases commonly spread by faecal contamination:

Gastro-intestinal diseases, including:

Infantile diarrhoea

Dysentery

Intestinal parasites

Typhoid

Tetanus

### Vector or Carrier Spread

These are carried by animals and insects. The animal is called the vector or carrier. Some vectors and the diseases they carry are listed below:

| <u>Vector</u> | <u>Disease(s) Carried</u>   |
|---------------|---|
| Common flies  | Gastro-intestinal infections, hepatitis, enteric fever, skin infections |
| Ticks         | Tick-bite fever   |

### Reducing the Spread of Microbes

Ways in which the spread of infectious microbes can be greatly reduced are briefly discussed below. This is simply an outline of the steps that must be taken to reduce the spread of these microbes. These measures, along with the measures for improving resistance to infections, are the most effective, if not the only effective, means for improving the health of the rural population. They will be discussed further in the Clinical and Community Health modules.

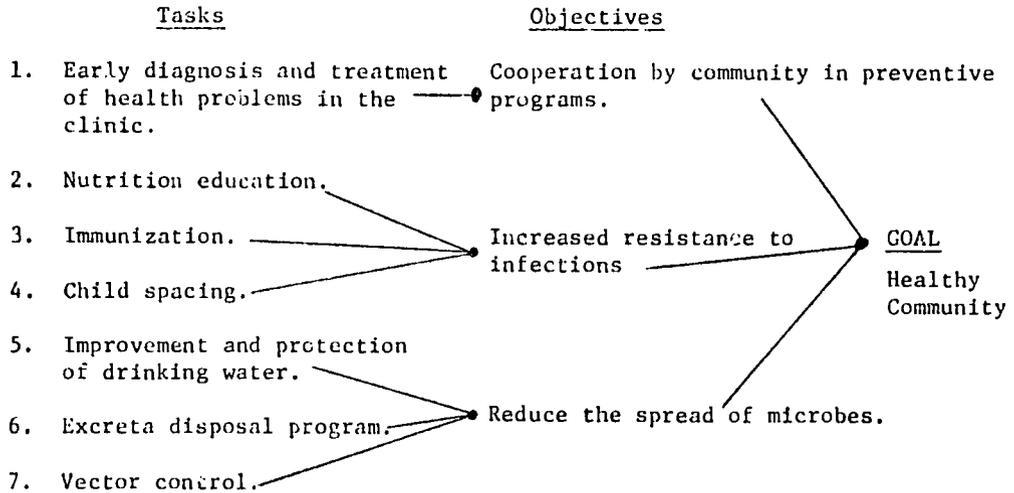
There are six means of reducing the spread of microbes that all health personnel must concentrate upon. They are:

1. The prompt treatment and, with some diseases, the prompt isolation of persons with infectious diseases.
2. The effective protection and sterilization of sources of water for drinking and cooking. If it is not immediately possible to protect and sterilize the source, then families should be strongly encouraged to sterilize their drinking water by boiling, by chlorination, or by other effective means.
3. The elimination of open sewage. There are several types of latrines that can be used for safe excreta disposal.
4. The improvement of personal hygiene and food handling.
5. The control of vectors - tick, flies.
6. Immunization of susceptible populations.

None of these tasks can be accomplished by the health service personnel alone. These are programs that must be carried out by the community members themselves. It is the job of the health service personnel, however, to educate and lead the community in the performance of these tasks.

A primary health care program has "improving the health of the population" as its primary goal.

Since diseases caused by microbes - infectious diseases - are prevalent and can be prevented and treated - a program directed towards the decrease of infectious diseases will lead us towards our goal of having a healthy community.





## OTHER CAUSES OF DISEASE

## I. Entry Level Knowledge and Skills

Before starting this unit, you should have completed the unit on Microbes.

## II. Objectives

Using the information and experiences provided by the instructor and the unit text, you will be able to:

1. List 8 common causes of illness and the associated disease.
2. Locate information pertaining to specific illnesses discussed in other modules.

## III. Evaluation

Upon completion of this module, you will be assessed on your attainment of the above objectives:

Knowledge: Written test - acceptable performance 80%

## IV. Activities

In order to accomplish the objectives of this unit, you will participate in the following activities:

1. Read unit text and answer Review Questions.
2. Participate in group discussions.

### Nutritional Illnesses

The food we eat is very important to our state of health. Illnesses may be caused or worsened by an imbalance in nutrients.

#### Mild to Moderate Imbalances:

Mild to moderate imbalances in the food we eat contribute to the worsening of diseases caused by microbes, trauma, cancer or stress. These imbalances also prolong the healing time necessary to recover after surgery or after child bearing. (See Community Nutrition Module.)

#### Lack of Specific Nutrients:

A decrease or lack of certain essential nutrients will cause specific illnesses. Essential nutrients are those vitamins, minerals and components of protein that the human body cannot make for itself.

| <u>Disease</u>              | <u>Nutrient</u>   | <u>Module</u>                                  |
|-----------------------------|-------------------|--|
| Goitre, cretinism           | Iodine            | Community Nutrition, Common Medical Conditions |
| Rickets                     | Vitamin D, sun    | Community Nutrition                            |
| Nightblindness, Bitot spots | Vitamin A         | Community Nutrition, EENT                      |
| Anaemia                     | Iron, folic acid  | Community Nutrition, Prenatal                  |
| Pellagra                    | Vitamin B, Niacin | Community Nutrition                            |
| Scurvy                      | Vitamin C         | Community Nutrition                            |

#### Lack of General Nutrients:

Insufficient food or water will lead to serious disease and death. This may occur very quickly in children. These clinical signs and symptoms due to a lack of food or water have been given names and are described in the modules.

| <u>Disease</u> | <u>Nutrient</u>  | <u>Module</u>  |
|----------------|------------------|--|
| Marasmus       | Lack of calories | Diseases of Infants and Children, Community Nutrition      |
| Dehydration    | Lack of water    | Diseases of Infants and Children, Gastro-intestinal Module |

#### Excess Food and Nutrients:

An excess of food and some specific nutrients will also cause disease.

Taking in too much food (calories) will result in obesity. Obesity contributes to the worsening of a variety of illnesses including hypertension, diabetes, heart and lung diseases.

An excess of certain vitamins and minerals can lead to a form of poisoning. This occurs when tablets are taken and rarely, if ever, occurs due to an excess of food. Vitamin D, iodine and iron can cause illness if taken in excess. (See Community Nutrition Module.)

### Trauma

Injury to the body in any way causes local damage to skin, muscles and bones.

Injury may occur by extremes in temperature such as cold resulting in freezing of an extremity or heat through scald, sunstroke or direct heat of fires resulting in burns.

Falls, car accidents, blows to the body, gunshot wounds, etc. all result in severe damage to body tissues. Surgery is another form of trauma to the body which is performed in order to correct another illness.

The body has corrective powers to begin to heal the damaged parts as soon as trauma occurs. Our responsibility as health workers is to assist the body to heal itself. We do this by:

- Approximation of tissues and bones that have been separated
- Giving I.V. fluids when excess fluids are lost during the trauma
- Giving antibiotics to protect against disease causing microbes that have entered the body
- Washing and debriding wounds to remove dead tissue and contaminated foreign products containing disease causing microbes
- Etc., See Trauma and Emergency Module

### Degenerative Illnesses

As the body grows older, changes in the tissues occur due to age and use.

Weight bearing joints have been carrying the body for many years. Other joints have been moving and working for the same number of years. Some wear and tear on these joints eventually occur just as seen in machines which have been working for years.

The heart muscle pumps at least 70 times a minute every hour of every day a person lives and eventually some changes occur. Supporting elastic tissues in the body and muscles begin to gradually lose their elasticity and strength. Arteries gradually lose their ability to respond to increases and decreases in the blood rushing through them and begin to have some roughening on their inner surfaces.

These changes occur earlier in some people than others and may begin in only one or two places in the body but usually occur slowly and generally throughout the body.

Some conditions caused by degeneration:

| <u>Conditions</u>      | <u>Module</u>             |
|------------------------|---------------------------|
| Degenerative arthritis | Common Medical Conditions |
| Stroke (CVA)           | Common Medical Conditions |

### Neoplastic Illnesses

Certain illnesses are caused by the growth process of cells going awry. A group of cells begin to multiply faster than neighboring cells and this is called a neoplasm. Neoplasms are divided into two types - benign and malignant.

Benign neoplasms occur when the cells are multiplying faster than their neighbouring cells but retain their normal cell structure and function. A bump or lump of normal cells is formed. Benign neoplasms seem to have a limit to their growth period and stop growing after a period of time.

Malignant neoplastic illness occurs when the cells that are multiplying faster than their neighbouring cells change their cell structure and function. They become abnormal cells that multiply quickly and then spread throughout the body where they begin growing new masses. Malignant neoplasms are called cancer and often go on to cause death.

In order to cure cancer, it is important to identify it quickly and since it is difficult to determine whether a growing bump or lump is benign or malignant, all new bumps or lumps and sores that won't heal are referred to a hospital. Removal of the bump and examination under a microscope can determine what kind of neoplasm it is. Many cancers can be cured if they are found early enough.

### Review Questions

Match illnesses with specific nutritional cause.

- |                               |                                |
|-------------------------------|--------------------------------|
| ___ 1. Obesity                | a. Mild to moderate imbalance  |
| ___ 2. Marasmus               | b. Lack of a specific nutrient |
| ___ 3. Anaemia                | c. Lack of general nutrients   |
| ___ 4. Prolonged healing time | d. Excess of nutrients         |
| ___ 5. Goitre                 |                                |
| ___ 6. Dehydration            |                                |
7. Trauma may occur in several ways. Name 4.

### DISEASES CAUSED BY HEALTH WORKERS

The first rule all health workers learn is "Do No Harm"; however, there is a word used by doctors to describe illnesses that are caused by the doctor (iatrogenic). All health workers are trusted with the health of many people but due to inadequate knowledge or errors may, in fact, harm people by their actions or inactions.

The misuse of drugs may cause serious illness and even death. A penicillin reaction occurring in a person with a cold is a serious error that may result in the death of the patient because she was given a drug she didn't need. A person with bleeding peptic ulcer requiring surgery may have been caused by a health worker who gave cortisone for mild arthritis. Fatal hepatitis may be caused because too many unnecessary injections were given instead of tablets.

The drugs health workers are allowed to use are powerful, have serious side effects and must be used with wisdom so we don't harm our patients.

Errors in diagnosis will also do harm to the patient. If the dehydration associated with diarrhoea is missed, the child may be returned home without the proper follow-up necessary.

Errors in advice given or inadequate health education may result in the person returning again for medical care because of worms, under-nutrition, etc. The health worker must do his/her part in giving complete services.

Ill-considered remarks may also harm people who come to a health worker. People when ill are usually anxious and upset. A non-serious or even too serious approach may cause hurt and harm. The person must always be respected as a person. Any diagnosis, treatment or follow-up advice should be thoroughly and sensitively explained to him and his family. People have been so hurt and insulted by health workers that they never return to the health post even when very ill. People have been confused and changed their approach to living because a health worker has not adequately explained the significance of the illness, i.e. exactly what can and cannot the patient do.

Iatrogenic disease means disease caused by doctors. Perhaps we should coin a word for diseases by nurse clinicians such as "nurse clinicianogenic" diseases. It should keep us alert and aware of the potential harm we can cause people. "Nurse clinicianogenic" diseases can be prevented by our willingness to continue to review, learn and study.

### Allergic and Immunologic Illnesses

The body reacts to foreign substances that enter it in a variety of ways. For some substances such as normal saline, no significant response occurs, if injected into the bloodstream in small amounts. For other substances, the body response occurs that is helpful in correcting a specific problem. This occurs when drugs and vaccines are given at the right time, for the right illness, in the right amounts. Any foreign substance given in very large amounts can cause a severe response in the body and act like a poison. But there are some substances that cause an allergic response by the body.

Substances that cause allergic responses are usually composed of a foreign protein. The response that occurs is so typical that it can usually be predicted to happen. An obscured response may be identified as an illness. Two such illnesses are described in the modules:

| <u>Conditions</u>           | <u>Module</u>        |
|-----------------------------|----------------------|
| Insect bites                | Trauma and Emergency |
| Drug Reactions (Penicillin) | Formulary            |

The body may respond late to a foreign substance and cause an illness. Two major illnesses are late reactions to a bacteria infection (streptococcus) and its proteins as in rheumatic fever and nephritis. Other allergic or immunologic illnesses occur when the body responds to some of its own protein as a foreign substance as in rheumatoid arthritis.

| <u>Condition</u>                  | <u>Module</u>                    |
|-----------------------------------|----------------------------------|
| Rheumatic Fever and Heart Disease | Diseases of Infants and Children |
| Nephritis (Glomerulonephritis)    | Genito-urinary Module            |
| Rheumatoid Arthritis              | Common Medical Conditions        |

### Emotional Stress

At times of life crisis such as a death in the family, marriage, financial setback, examinations in school, national disasters or political upheaval, people react emotionally with fear and worries. This reaction is called stress. At times of stress, existing illnesses may become worse or new ones may arise.

Stress may also occur in daily living, unrelated to a life crisis. Continued family disagreements or money problems may cause stress. Pressure and worries about work or school may cause stress. This type of continual

stress may cause specific illnesses, make other illnesses worse or may result in people having more recognizable physical complaints than usual such as headaches, backaches, and difficulty sleeping.

| <u>Conditions</u> | <u>Module</u>            |
|-------------------|--------------------------|
| Depression        | Mental Illness Module    |
| Peptic Ulcer      | Gastro-intestinal Module |

### Sociological Illnesses

Interrelationships within families or communities may go awry and result in contributing to illness or causing new illnesses.

For example, in some societies, infants and children are not allowed to be taken into the sunlight. These children become deficient in Vitamin D (sunlight produces Vitamin D in the skin) and get rickets. Some societies do not allow women to go to the hospital at delivery time and when a high risk pregnancy occurs, the infant or the woman may, in fact, die. Both rickets and a death of the woman or infant in these examples are caused by a sociological reason.

Families may respond to their members in abnormal ways. In some cases, they may neglect or actively abuse a person. For example, a child may be neglected because of its sex, because he has no mother or father, or for no discernible reason. Wives and children may be physically beaten. This occurs in disturbed families and are very real causes of illnesses and disease in the victims.

Some families are over-concerned about members of their families and with all good intentions do harm to their members. For example, a favourite child may be treated to sweets so much that his appetite is ruined for nutritious foods or he becomes obese and gets dental caries. A parent may think that bottle feeding is better than breast feeding, switch and result in a child with severe diarrhoea. These reasons for disease may be called "killing with kindness" and must be treated with education to help the parents realize the effects of their actions.

Sociological causes of disease are very commonly linked with other more apparent primary causes of disease but if they are not addressed, serious results (death) may occur.

## REVIEW QUESTIONS

1. List and describe four ways health workers commonly cause illness in their patients.
  
2. What is the first rule for all health workers?
  
3. How is rheumatic fever an allergic or immunologically caused illness?

The following case studies describe patients being seen in a clinic. Record whether this is probably a) sociologically caused, b) nurse clinicianogenic or c) stress caused condition.

- \_\_\_ 4. A fifteen-year-old boy has been studying for one week for his final exams at the end of this week. He is having difficulty concentrating and has a backache when he sits too long for the past two days.
  
- \_\_\_ 5. A 24-year-old woman comes in with a black eye, a broken arm and general bruises over her body. You know that her husband is an alcoholic.
  
- \_\_\_ 6. A 50-year-old man comes in vomiting blood. You find out he has been taking cortisone for the past year prescribed by another health worker.
  
- \_\_\_ 7. A fat eight-year-old child is brought in with dental caries.
  
- \_\_\_ 8. You walk through a nearby village and see an obviously ill, feverish middle-aged woman lying on a bed. You find out she has been ill for four weeks and ask why she hasn't gone to the health post. She tells you that during her last visit one year ago, the health worker told her to go home, there was nothing wrong with her but laziness, and she won't return again.