A

GUIDE FOR

BACHELOR OF SCIENCE (NURSING)

LICENSING EXAMINATION

PAPER III

UNIT ONE	**:**	**INTRODUCTION TO COMMUNITY HEALTH**
UNIT TWO	**:**	**PRIMARY HEALTH CARE**
UNIT THREE	**:**	**ENVIRONMENTAL HEALTH**
UNIT FOUR	**:**	**COMMUNICABLE DISEASES**
UNIT FIVE	**:**	**COMMUNITY DIAGNOSIS**
UNIT SIX	**:**	**SPECIAL HEALTH ISSUES**
UNIT SEVEN	**:**	**HOME-BASED CARE**

Printed By

Advantage
Research Consultants
&
Bishop's Computers

PAPER III

TABLE OF CONTENTS

PAPER III: UNIT ONE – UNIT SEVEN

UNIT ONE: INTRODUCTION TO COMMUNITY HEALTH

This unit gives an introduction to the concept of community health and is divided into five sections. The first section looks at the concept of community health nursing and how people organise themselves within the community. The second section looks at the principles of community health nursing and the roles and functions of a community health nurse. The third section looks at vital statistics and epidemiology in the community. The fourth and fifth sections describe the organisation of health care services in the community and how you can apply Information, Education and Communication (IEC) to promote health.

This unit is composed of five sections:

Section One: Concept of Community Health Nursing
Section Two: Principles of Community Health
Section Three: Vital Health Statistics and Epidemiology
Section Four: Organisation of Health Services
Section Five: Information, Education and Communication (IEC)

Unit Objectives

By the end of this unit you will be able to:

- Describe the concept of community health nursing
- Describe the principles of community health nursing
- Explain the role of a community health nurse in the provision of health care
- Explain vital health statistics
- Describe the principles of epidemiology
- Describe the organisational structure of the Ministry of Health
- Explain the health sector reforms
- List the IEC skills in sharing health messages

SECTION 1: CONCEPT OF COMMUNITY HEALTH NURSING

Introduction

As mentioned in the introduction to this module, community health is concerned with the promotion of health and prevention of diseases through close community participation.
In this section you will start by defining the community before moving on to explore the concept of community health. You will also look at how people organise themselves in the community as individuals and families and how their behaviour can affect community health. Finally you will look at home visiting.
You will begin by looking at the objectives for this section.

Objectives

By the end of this section you will be able to:

- Define a community
- Define the concept of community health nursing
- List the aims of family health care
- Describe the process of home visiting

The Community

What is a Community?
A community is a group of people (a large or small group) living in a certain geographical area and working together for a common goal. They share the same resources such as water, climatic and geographic conditions, health services, administration and leadership, as well as disadvantages such as shortages, risks and dangers.
family. The graphic on the right illustrates these three components, with the individual surrounded by the immediate and extended family, all of

whom are a part of the larger community.

You will now look at the components that make up a community starting with the individual.

Individual

Each individual you know is different and unique. Each has a mixture of characteristics, some of which they share with others and some of which are part of a particular culture. Culture is all those things which people learn, share and pass on to later generations. One of the most important of these things is language, for it is the means by which people communicate with one another.

As a health worker you must be able to communicate with individuals in the community where you work and acquire some knowledge of the language they speak. It is important to be able to show respect and understanding for other people and their culture as well as knowing their local practices like greetings.

Individuals learn beliefs and customs about right and wrong behaviour as they grow up. For example, in some areas, young people are taught that dead ancestors can influence the lives of living people. If the ancestors become angry they can cause disease and misfortune. Therefore, when you teach such individuals about the effects of germs on their health status, they may not be convinced and may opt to follow their traditional beliefs.

Sometimes, people follow both sets of ideas – traditional and modern, whereby they consult the dispensary for treatment of the symptoms and return to the traditional healer to get rid of what they think is the 'real' cause of the illness. As a community health worker you need to understand human behaviour and the factors that influence their behaviour in order to be effective in your community health activities.

An individual can only attain full health if they have wholesome growth. The place where this wholesome growth can best be cultivated is the family.

The Family

The family is the smallest recognised group of individuals in a community. It begins with a marriage union in which husbands and wives have certain rights and obligations. It is one of the oldest institutions that mankind has known. It defies time, boundaries, cultures and human understanding.

It is therefore not surprising that scholars from all over the world who have studied the family of mankind do not agree on one single definition of the family. Rather than look at every available definition of the family, you will consider one which tends to agree on many aspects of the family.

The family is a group of two or more persons, who share emotional bonds and material things, usually live in the same household, are related by blood, marriage or adoption, and sexual relationship is socially approved for the parents.

The family is a very important social group in community health.

The family provides love, security and a sense of belonging for individuals from the time they are born. Many of a person's characteristics are influenced by their family. For example, a child learns from their family what behaviour is acceptable in the community and the language its parents speak. Families have a strong influence on what each member does.

Often there is an important figure in the family who makes the decisions or whose opinions are highly valued. The opinion of people in the family may be more important to a person than the opinion of a health worker. This has important effects on health behaviour and the use of health services. For example, in some communities women may not be free to go to or take their children to a health centre, even if they want to, because their husbands do not allow them. These are important things to remember when you advise individuals about a health problem.

Types of Families

There are different types of families in a community. Look at each in turn.

The Nuclear Family

This consists of a husband and a wife with or without children. This type of family brings forth children (family of procreation). Children born in this family consider it to be the family of their origin.

The Extended Family

This is also called a joint extended family. This family includes members of nuclear families and other relatives, aunts, uncles, cousins, nephews and grandparents.

Single Parent Family

This is formed when one parent brings up children alone either because of divorce, separation, death or desertion of their spouse.

The Blended Family

This type of family is formed when husband and wife bring into the new marriage unrelated children from their previous marriages.

Cohabitation and homosexual marriages are also referred to as blended families.

Functions of the Family

The family has many important functions, these include:

- Bringing about a sense of togetherness and a balance between individual and shared (mutual) action by each family member; nurturance and trust; stability and integrity of the group; interdependence and the ability to meet demands for survival and development
- Socialising its members into the larger community
- Teaching respect for individual members and their property. This includes respect for differences among the family members and others
- Teaching tolerance, fairness and a sense of right or wrong among its members and others
- Caring for its members and developing a sense of trust between and among its members
- Providing an environment for learning and internalising individual and gender roles and responsibilities
    - Inducing its members to its religious faith and teaching respect and tolerance for religious differences
    - Sharing leisure and recreation together
    - Seeking external help from the community for itself and its members
    - Providing security and refuge for its members in times of need
    - Providing a socially sanctioned environment for sexual expression amongst married adults
    - Seeking health care for its sick members and providing nursing care for its sick, disabled or dependent members
    - Maintaining a healthy home environment conducive to the development of its members

Factors Affecting Family Health

The health of the family can be influenced by both internal and external factors. In order for you to be able to assess and improve the health of a family, you need to have knowledge of these factors. Look at each group of factors in turn.

Internal Factors

The internal factors that influence the health of the family include:

- Family size
- Structure
- Type, members
- Relationship
- Biological characteristics and values

External Factors

The external factors which influence the health of a family include:

- Family locality
- Terrain
- Climate
- Water supply
- Air
- Biological environment (insects, rodents, etc.)
- Housing and residence

Functions of a Community

Having seen the different components that make up a community, now look at the functions of the community.

The functions of a community include:

- Transmitting and sharing information, ideas and beliefs
- Educating its children about their culture (socialising) and welcoming newcomers into the group's culture (acculturation)
- Producing and distributing services and goods
- Providing companionship and support to individual members and smaller groups
- Sharing and utilising space for living, schools, health facilities, fields, roads etc.
- Protecting individual and group rights and welfare

Remember: The greatest human possession is health.

A healthy community is a productive community.

From the previous page, you can see that a community functions as a medium for the growth and development of its individual members. It imposes the standards by which the individuals are evaluated, if the community has high expectations of its members, their performance also tends to be high. A good community is judged by the kind of people it produces.

What are the characteristics of a healthy community?

Characteristics of a Healthy Community

- Safe and healthy environment, relatively free from natural and man-made hazards
- Community members have high standards of personal hygiene
- Adequate supply of wholesome water
- Availability of adequate nutritious food
- Suitable housing
- Harmonious interpersonal relationships among members
- Availability and accessibility of health care facilities
- Availability and accessibility of suitable educational, social and recreational facilities
- Gainful occupational activities (availability of stable or reliable sources of income)
- Sound communication infrastructure
- Communal approach to and participation in tackling community problems

What kind of problems affect the health of the community?

Problems that Affect the Health of the Community

- Unsanitary environment
- Overcrowding
- Poverty
- Unclean and inadequate water supply
- Lack of nutritious food
- Unsafe environment
- Epidemic and endemic disease
- Unstable family life
- Illiteracy and ignorance
- Poor leadership and lack of participation
- Adverse weather conditions
- Poor infrastructure
- Political instability

Community Sub-systems

A community is made up of various sub-systems, all of which have a bearing on how people live and behave. For a community to function smoothly the various sub-systems must work in harmony. In the next sub-section you will look at the eight sub-systems found in a community and how they influence the health of its people.

A community has eight essential sub-systems, which interact and interrelate continuously. Take a look at each of these sub-systems in detail to understand how they influence the health of people living within a community.

Socio-cultural System

This system is made up of all the customs and beliefs, family and kinships, leadership and power structures in society. This sub-system exerts a powerful influence on the lifestyles of the community members, their priorities and their attitudes and values towards health and illness.

For example some cultural factors promote either acceptance or stigma towards a certain illness. High-risk behaviour may be a result of cultural traditions.

Political System

This sub-system is made up of the government and its development policies as well as political organisations.

If there is political support towards improving health care delivery, the government provides the mechanism and structure for the planning, implementation and evaluation of the health care delivery system. The constitution of Kenya contains a declaration for the elimination of poverty, ignorance and disease; hence the establishment of the Ministry of Health and several other ministries

Economic System

The government's ability to provide health and other services to its citizens depends on the state of the economy. The poorer the economy of the country, the more disadvantaged its people will be. Low economic status is highly associated with malnutrition and communicable diseases.

Education System

Education is the main tool of changing behaviour and improving individual and community health. Low educational status perpetuates under-development, harmful traditions and superstitions.

The educational system can be effectively used to pass health related information and messages that could significantly transform the perception of the communities on healthy living and prevention of illnesses.

Religious System

The religious system may be a source of health promotion when its values and teachings positively influence lifestyles and healthy

behaviour, for example, forbidding smoking, alcohol consumption, pre-marital and extra-marital sex.
On the other hand, religious teachings may promote ill health, for example, by forbidding the followers from seeking treatment in hospitals.

Environmental System

Environmental sanitation is one of the leading promoters of individual and community health. Clean water supply, proper disposal of waste and adequate housing are key to community wellness. Environmental pollution is a cause of various illnesses.

Communication and Transport System

Communication includes all the means of contacting and exchanging information with one another such as roads, bridges, railroad, telephone, television, radio, computers, internet, fax, and postal services.
The communication system is important in spreading health messages. Transport aids in communication by moving people from place to place.

Health Care system

The health care system exists to provide promotive, preventive, curative and rehabilitative services in hospitals, nursing homes, clinics, health centres, dispensaries, and through special health projects and programs.
The health care system is enhanced through linkages that bring together the government, non-governmental organisations, private institutions and individuals in providing continuous and comprehensive health services. These linkages strengthen the multi-sectoral approach of achieving health for all.

Concept of Community Health

So far, you have defined the community and described its functions, characteristics, and sub-systems. You should now have acquired a good understanding of the community as it is the main focus of attention in community health.

Community health is the science and art of promoting health and preventing diseases through organised community participation.

The term 'community health' is also referred to as:

- Population medicine
- Social medicine
- Community medicine
- Preventive medicine

Aims of Community Health

Community health aims to achieve the following:

- Improved sanitation in the environment
- Prioritisation of the community's needs
- Control of communicable diseases
- Health education to promote healthy behaviour and practices
- Early diagnosis and prevention of disease
- Disease surveillance
- Case/contact tracing and treatment
- Empowerment of all individuals to realise their rights and responsibilities for the attainment of good health for all

The main goals of community health are to:

- Identify community health problems and needs
- Plan ways of meeting community health needs
- Implement activities geared towards meeting the community health needs
- Evaluate the impact of community health services/activities

A successful community health programme is one in which the community and health care providers collaborate to achieve the following benefits:

- Increased life expectancy (life span) of every individual
- Decreased mortality rates particularly of mothers and children
- Decreased morbidity rates from all causes
- An increase in the total well being (physical, mental and social) of every individual
- An increase in the quality of life for all people
- Overall social and economic development of the population
- Equitable distribution of resources
- Having looked at the aims, goals, and benefits of community health, you will now explore the activities which you are expected to undertake in community health, also referred to as the scope of community health.
- **What examples of community health activities can you think of?**

Examples of Community Health Activities

- Health education, counselling, and the training of other health workers

- Community health assessment and diagnosis
- Information, education and communication
- Environmental sanitation and supply of adequate clean wholesome water
- Food hygiene and household food security
- Personal hygiene
- Vector and pest control
- Control of communicable diseases
- Provision of prenatal services to pregnant women
- Provision of family planning services
- Provision of child health/welfare services for children under five years old
- Provision of school health services
- Home visiting and home-based nursing care
- Occupational/industrial health
- Care of the disabled, the elderly, the disadvantaged, the chronically ill
- Inter-sectoral collaboration

Many of these activities are described at length in subsequent units of this module

Earlier on in this section, you saw that the family is an important group in the community and that it exerts a lot of influence on the health seeking behaviour of individuals. It is therefore clear that the description of the concept of community health would not be complete without investigating family health care. In the following sub-section, you will therefore examine the concept of family health care, giving attention to its aims, principles and process.

Concept of Family Health Care

Family health care is a holistic approach to the achievement of wholesome health for the family.

Aims of Family Health Care

- Identifying and appraising health problems of the family
- Providing health education for the promotion of health and prevention of diseases
- Sharing health information with the family to enable members to understand and accept health problems
- Providing community health nursing services according to the needs of the family
- Helping the family to develop competence at assessing their health problems and at carrying out remedial health action through health education, instructions and demonstrations
- Contributing needed materials for personal and social development of family members
- Helping and encouraging the family members to utilise available resources to maintain all aspects of the health of the family

Principles and Process of Family Health Care

In order for you to work successfully with a family and achieve your goals of promoting health and preventing disease, you must observe the following principles:

- Establish a good working relationship with the family
- Plan relevant health education and sharing of clear health messages, which will guide them on how to take care of themselves
- Gather relevant information about the family which will enable them to identify health problems and set priorities
- Provide need-based support and services to the family regardless of sex, age, income, and religion, in order to improve their health status
- Work in collaboration with other health service agencies to avoid duplicating family health care
- To succeed in your family health care activities, following these principles alone is not enough. You also need to employ the nursing process approach in the care of families.

Step 1: Assessment

You need to assess the family so as to identify (diagnose) the family health problems, needs and resources.

This involves collecting data using interviews, observation, communication, subjective appraisal, and reviewing available records and reports

Step 2: Planning

This involves planning for health action by choosing effective and affordable alternatives and setting priorities after considering the

available internal and external resources. You should work hand-in-hand with the family members at all stages of planning.

Step 3: Implementation
You should implement the interventions or health actions agreed with the family members. Implementing also includes increasing the family's ability to function effectively and removing barriers to health care as well as assisting the family to do those things which they cannot do by themselves.

Step 4: Evaluation
This involves evaluating or measuring whether the expected outcome has been achieved. If no achievements have been made, find out what factors interfered and change your approach accordingly.

Home Visiting

Assessment is the first step in the process approach to family health care, but when do you carry out this assessment?
You could assess family members when they visit your health facility. However, in order to get a comprehensive picture of a family's health, you need to visit them at home. Home visits are an important part of your work as a community health nurse as they allow you to see families and their needs in their own homes.
Home visiting is one of the essential community health services that you should provide. It has two main purposes:

- It allows you to follow up individual families at home to find out why some health problems persist in the community despite efforts to prevent or control them, for example malnutrition, communicable diseases, or repeated failure to attend clinics, especially if the family is at risk
- It keeps you aware of what is going on in your catchment area

In order for you to conduct home visiting successfully, you need to have the following skills:

- Good technical skills and knowledge of preventive and therapeutic measures
- Good communication skills and teaching ability
- Good leadership skills and rational thinking to make sound judgments
- Good counselling skills and an understanding of human relations

During home visits you act on your own, making decisions on the spot and carrying them out. You need to be prepared. When planning and implementing home visits, you should be guided by some basic principles in order to make a success of it.

Principles of Home Visiting
Home visits should be:

- Planned and of benefit to the patient
- Purposeful, clear and meet the patient's needs
- Regular and flexible according to the needs of the patient
- Educative to the patient. Home visits provide an excellent opportunity for health education
- Used to demonstrate principles of health
- Convenient and acceptable to the patient
- Respectful of the patient's right to refuse care
- Recorded in the appropriate case file

If you follow these basic principles when planning your home visits, you will find your home visits fun and productive.

The Process of Home Visiting
The process of home visiting is carried out in five phases.

Entry or Initiation Phase
The community health nurse shares information with the patient on the reason and purposes for home visits.
This interaction may occur in a hospital ward or at a clinic
Pre-visit Activities
Before the actual home visit, you have to look for information regarding the patient and the family. You also need to gather information regarding the location of the house, distance from your health facility and the physical address. During pre-visit activities, you should investigate the community resources, assemble supplies and prepare for the first contact with the patient at their doorstep.
Activities During Home Visiting
This is the working phase during which you put into action your planned health activities. During this phase you must establish trust and rapport with the patient and the family so that there can

be a positive interpersonal relationship (a professional nurse-patient relationship). This relationship will enhance the achievement of the mutually determined health-oriented goals

Termination Phase of Visit

This occurs when the health oriented goals have been met. Termination of home visits can occur due to any of the following reasons:

- The patients' health has been restored and the patient can function without the nurse
- The patient has changed their residence
- The community health nurse has transferred the patients' care to another nurse or agency
- **Post-visit Activities**
- Post-visit activities include recording and reporting important events of the home visits, and sharing the reports with the appropriate authorities and individuals about the patient family

Advantages and Disadvantages of Home Visiting

There are many good nursing reasons (advantages) for carrying out home visiting. Though the activity does have its disadvantages, they are quite insignificant compared to its advantages. You should therefore try to overcome them through careful planning so that they do not prevent you from carrying out this important activity.

Advantages of Home Visiting

- Home visiting gives a more accurate assessment of the family structure and behaviour in their natural environment.
- Home visits provide an opportunity to observe the physical environment of the home and identify barriers to, and resources for achieving family health.
- At home, the nurse works with the patient first hand to implement health action using realistic resources.
- By meeting the family on its home ground the nurse will be enhancing the family's sense of control and active participation in meeting its health needs.
- It provides an excellent opportunity to implement planned health care.
- It provides an opportunity to learn about the home and family situation.
- It provides an opportunity to render health care services to the family members in their own surroundings.
- It creates a good understanding between the nurse and the patient and builds a good image of nurses.
- It provides an opportunity to clarify the doubts and misconceptions raised by family members.
- It provides an opportunity to observe and appreciate family practices and progress of care given by the nurse and others.

Home visiting provides an excellent opportunity to implement health care which was planned or was started in the hospital.

Disadvantages of Home Visiting

The disadvantages of home visiting include the following:

- Home visits consume a lot the nurse's time and energy as well as transport fuel (petrol or diesel) or bus fare.
- Unforeseen events may occur during home visits, which will interfere with planned activities.
- The patient's family may not accept the nurse due to various factors such as cultural or religious differences, personal characteristics of the nurse and the patient or to some extent, socio-economic status of the nurse and the patient.
- Confusion of the nurse's role in a community where there may be a lack of knowledge and understanding of the role of the community health nurse.

Section 2: Principles of Community Health

Introduction

In this section you are going to cover the principles of community health nursing. In addition, you will look at the role and functions of a community health nurse.

Objectives

By the end of this section you will be able to:

- List the principles of community health
- Describe the functions of a community health nurse

Principles of Community Health

Before you explore the principles of community health, first look at the definition of the word 'principle'. A principle can be defined as:

A basic belief, theory, or rule that has a major influence on the way in which something is done.
- Macmillan English Dictionary for Advanced Learners (2002).

Principles are the basic ideas of conduct or rules of action.
They provide the community health nurse with a clear and rational framework to guide their work.

Principles of Community Health (Alma Ata Declaration - WHO 1978)

- Availability of health care for all people and at a cost they can afford
- Promotive and preventive aspects of health care
- Integration of curative and preventive services
- Active participation of individuals and communities in the planning and provision of care
- Development of maximum potential for self-care
- Utilisation of all levels and types of community manpower
- Inter-sectoral approach

Principles of Community Health (Hentsch - 1985)

- Health care should be shaped around the life patterns of the population. It should meet the needs of the community.
- Primary health care should be an integral part of the national health system.
- Health care activities should be fully integrated with the activities of the other sectors involved in community development such as agriculture, education, public works, housing and communication.
- The local population should be actively involved in the formulation and implementation of health care activities, so that health care can be brought into line with local needs and priorities.
- The health care offered should place a maximum reliance on available community resources, especially those that have hither to remained untapped and should remain within the cost limitations relevant to each country.
- The majority of interventions should be undertaken at the most peripheral practice level of the health services and by the workers most suitably trained for performing these activities.

Principles of Community Health Nursing

So far you have looked at the principles of community health.
Now look at the principles of community health nursing.

- Community health nursing services should be available to all, according to their health needs regardless of sex, age, culture, religion, social or economic status, race, political affiliation, ethnicity or nationality.
- A community health nursing programme must have clearly defined objectives and purposes for its services.
- Community health nursing should not be a vertical programme. A community health nurse must work with other stakeholders in the development, implementation, monitoring and evaluation of the community health programme.
- Community health nursing should involve the community right through the planning implementation and evaluation of the programme.
- The community health service should build the capacity of the community to run their own health programme for the purpose of sustainability. These include training of the Communities Own Resource Persons (CORPs).
- Health education and counselling for the individual, family and community are integral parts of community health nursing.
- Community health nursing services should be based on the identified needs of the patient and there should be continuity of services to the patient.
- Community health nursing should work within the community's culture and norms without compromising professionalism.
- Community health nursing is a service and there should therefore be no room

to demand favours, gifts or bribes from clients.

- Community health nursing is dynamic and the nurses should therefore actively participate in continuing professional development so as to keep abreast with new developments.
- Community health nursing services should develop proper guidelines and maintain proper records and reports.

Remember: The community health nurse must maintain ethics as well as a professional relationship with all the individuals and groups in the community, at all times.

The Roles and Functions of a Community Health Nurse

As a nurse, you have achieved the right to perform your duties through merit (formal training). You are trained to play a certain part as a member of a health team which is bound by the legal and moral expectations of your profession. This is what you call your role. In your role as a nurse, you have developed ideas about what is appropriate to say or do within this role. The role of the community health nurse is to prevent illness and maximise the health of individuals in the community.

Your function, on the other hand, refers to the job that you are expected to perform as a nurse. That is, the broad areas of responsibility which you assume as a nurse. Your functions as a nurse may vary according to your training, experience, and designation. The functions of a community health nurse are many and emanate from your role.

Roles and Functions of a Community Health Nurse

Roles	Functions
Manager	Organising and managing health care programs, being a team leader for nursing and supervising community health nursing activities.
Implementer	Implementing community health action/programs in collaboration with the other stakeholders in community health. Creating community awareness and interest in their health. Developing the community's ability to assess their health status and resources. Sharing knowledge and skills with the community on how to improve their health and to prevent illness.
Advocator	Advise the health care providers, planners and other agencies on the needs/problems of the community.
Advisor	Sharing technical health information with individual families and communities.
Health educator	Teaching individuals and families how to prevent disease and improve their health.
Assessor/Identifier	Assessing the health status of the community. Identifying existing and potential health needs/problems and resources in the community.
Planner	Planning for health action with the other health team members and community members.
Evaluator	Evaluating the performance and the outcome of community health activities.
Researcher	Carrying out surveys, studies and research to identify problems related to your work.
Trainer	Training other community health workers, both designated and voluntary community-based health workers.

SECTION 3: VITAL HEALTH STATISTICS AND EPIDEMIOLOGY

Introduction

Welcome to section three on vital health statistics and epidemiology.
In the last section you covered principles of community health and the roles and functions of a community health nurse. In this section you are going to learn the types of statistics collected in community health, the various methods used to measure disease burden and death, and the meaning of epidemiology and its relevance in community health.

Objectives

By the end of this section you will be able to:

- Define the term 'statistics'
- Describe the various types of descriptive statistics used in community health
- Describe the 'catchment area'
- Describe the various sources of health information
- Calculate vital health statistics
- Describe epidemiology concepts
- Describe the measures for preventing diseases

Statistics

Statistics is the science that deals with the mass of numerical data emanating from various activities and the environment, and which seeks to mould such data into forms from which you can draw useful conclusions. Onyango & Plews (1987).

You can see from this definition that a statistician is primarily concerned with numbers. There are two types of statistics. The first is concerned with clarifying the hidden (but significant) relations that exist between the figures. This is known as descriptive or summary statistics. Descriptive statistics are used to describe values obtained from measurement of variables.
The other type of statistics is known as inferential statistics. It uses various mathematical devices to draw useful conclusions from summarised data. In community health nursing, you mainly use descriptive statistics also called summary statistics. In the next sub-section you will consider the various types of descriptive statistics and their uses.

Descriptive Statistics

Descriptive statistics are used to describe frequency distribution, measures of dispersion (or variability), standardised scores and measures of central tendency.

Remember:

Descriptive statistics summarise, describe and organise data.

Now look at some of the types of descriptive statistics that you use regularly in your work. These include:

- Frequency distribution
- Proportions, rates and ratios
- Percentage distribution
- Measures of central tendency:
  - Mode
  - Median
  - Mean
- Measures of dispersion:
  - Range
  - Variance
  - Standard deviation

You will now look at each in turn in the following pages

Frequency Distribution

This is a method used to organise data in tabular form according to the frequency of their occurrence. There are two types of frequency distribution: Ungrouped and Grouped.

Ungrouped Frequency Distribution

Ungrouped frequency distribution lists variables in the form of a column of the values and the frequency of occurrence of the values. It is used when dealing with discrete data or variables. Discrete data are types of variables that can only take whole number values, such as the daily attendance in your health facility or the number of syringes in a box. Obviously, you can not have 13.5 people attending your clinic or 30.4 syringes. Consider the following example.

Suppose you survey ten families and find that three of them had two members, two of them three members, one of them had four, and the other four had six members. This information may be displayed as illustrated in the table above. As you can see from this example, the variables are given without any grouping.

Size of Family	Number of Families Observed
2	3
3	2
4	1
6	4
	Total: 10

Grouped Frequency Distribution

Grouped frequency distribution is used when there are a large number of figures with many values and frequencies. The values are grouped in what is known as 'class intervals' (for example 0-5 years) thus making the data easier to understand.

Consider the following example: suppose you interview 50 members from your community at random and ask them to give their age. The data may then be tabulated as shown in the table opposite. As mentioned earlier, one advantage of a grouped frequency distribution table is that it makes large amounts of data easier to understand. For instance, one can quickly see that 20 out of the 50 people in the sample (40%) fall in the under-fives age group.

Age	Number Interviewed
0 - 5	20
5 - 10	12
10 - 15	5
15 - 20	6
20 and over	7
	Total: 50

Proportion

These types of measures are used to describe data in relation to the wider population. The numerator is usually a part of the denominator.

For example the proportion of people suffering from malaria in a population may be expressed as; one person out of six people in a community is suffering from malaria.

Ratio

A ratio is a type of descriptive statistic in which the numerator is not connected to denominator. It is mainly used for comparison of various populations in relation to a given variable or disease.

An example is when you say that the ratio of women to men suffering from malaria is three to one (3:1).

Rate

A rate is the most commonly used measure for descriptive statistics. It is widely used since it includes the events, the population affected and the time specifications within which the event has occurred. The morbidity rate (prevalence) of malaria in a community can be expressed as 20 per 1000 cases in the last three months.

Percentage Distribution

This is another type of descriptive statistic used to indicate the percentage of the samples whose scores fall into a specific group, as well as the number of scores in that group. The numerator is described in relation to the denominator per a hundred. Percentage distribution is mainly useful for comparing the present data with findings from other studies that have differing sample sizes.

Measures of Central Tendency

These are generally referred to as 'average' measures. The three measures of central tendency commonly used are the mode, median, and mean. They describe how closely related the data is.

Mode

Mode is the numerical value or score that occurs most times - it is the most frequently occurring item or value. The mode is the most suitable measure of central tendency for nominal data (naming category type of data).

Median

Median is the score at the exact centre of a distribution; it is also called the 50th percentile. The median is the most central value when raw data is arranged on a scale from the highest to the lowest - it is obtained by rank ordering of the scores.

Mean

Mean is the measure most commonly used. It is the total sum of scores divided by the number of scores being summed. The mean is the most suitable measure of central tendency for interval and ratio level data.

Some of the Symbols and Formulae used in Statistics

There are some symbols and formulae used in statistics, especially in the calculation of the mean. Study the symbols and the formulae opposite, as you will be using them in your statistical work.

Symbols and formula used in Statistical Analysis	
Total Number of scores	N
Sample size	n
Total sum of the scores	∑n
Arithmetic Mean	X
Mean (formula)	∑n/M

Measures of Dispersion

The measures of dispersion are used to measure the individual differences of scores in a sample. Measures of dispersion give an indication of how scores in a sample are dispersed around the mean. They show how different the scores are or the extents to which individual scores deviate from one another. If the individual scores are similar, the measure of variability is small and the sample is relatively similar or homogeneous in terms of those scores. A wide variation in scores may indicate a heterogeneous sample. The most common measures of variability used are range, variance and standard deviation.

Range

The range is a simple measure of dispersion that is obtained by subtracting the lowest score from the highest score. The range is the difference between the highest and lowest score. It is not a very significant statistical measure.

Variance

The variance is a measure of how individual scores in a set of data vary in their distribution from one to the other. To understand the calculation of variance, it is recommended that you read further on this topic from any textbook on statistics or research methodology

Standard Deviation

The Standard Deviation (SD) is the other measure of dispersion. Standard deviation is calculated by finding the square root of variance - that means you have to calculate the variance first.

Having seen the different types of descriptive statistics that you use regularly in the work, now move on to find out how to look for information and measure disease.

Looking for Information and Measuring Disease in a Community

The Catchment Area

In order to look for information in your community and measure disease, you need to be familiar with the area served by your health facility. Indeed, you will agree that an effective health care provider is one who is familiar with the area from where their patient comes from and their common health problems. This area is known as the catchment area. There are two ways you can find out the catchment area of your health facility:

- You can outline the administrative boundary around the area.
- You can draw a circle with a radius of 5, 10 or 20km from the health facility, depending on the distances at which people live.

It is important for the community health nurse to establish their catchment area and mark it out on a map or draw the map.

The area from where most of the patients in your health facility come from is called the Catchment Area.

Once you have established your catchment area, you still need to know how many people are there in the area and whether they are scattered all around or concentrated at certain areas/sections.

Information about the catchment area's population distribution can be obtained from recent local or national census estimates. You would then have to adjust this information according to the birth and death rates in the catchment area. Another method would be to conduct a simple survey of the catchment area. This would provide you with information such as the location of houses, the density of houses, and the number of people in each house. You will learn the skills of conducting a health survey in module four.

One of the most important sources of information on health and disease are the records you keep in your routine work at health centres, clinics and hospitals. Outpatient cards, inpatient notes, daily registers, monthly and annual reports, clinic records and health visiting books are examples of such records. If information is carelessly or incompletely entered into these records, they do not provide accurate or reliable information for measuring disease. It is the responsibility of each health worker to endeavour to keep accurate or good records.

You now know how to locate your catchment area and where to look for information. Next, you will examine the types of information you need to look for.

In order to work effectively, you have to plan. To plan, you need information. To plan for people, you need information about people. This kind of information is called demographic information. In the next sub-section, you will consider the types of demographic information that you will use in health care planning, how to obtain this information and how to use it for planning activities at your health facility.

Demographic Information

Demography is the study of population dynamics in relation to births, deaths, migration and related factors such as age, sex and geographical distribution among others.

Demographic information is information about people -- how many people there are, where they live, how many are born, how many die.

Demographic information is very useful in health care planning. Some of the common methods used to collect demographic information include:

- Population census
- Civil registration for example identity card issuing, birth and death registration
- Special community surveys
- Hospital and health centre records
- Epidemiological studies

You will now explore each of these methods over the next few pages.

Population Census

A census is the procedure of counting people. In many countries including Kenya, a census is conducted every ten years (decennially). In Kenya, the last census was carried out in 1998.

Population Census

Some of the information collected about each person included the following:

- Sex
- Age
- Level of education
- Marital status
- Profession, number of children etc
- Migration status (where the person came from)

The government uses the results of census for formulating long-term developmental plans including provision of health care services. A census enables the government to estimate the annual population growth rate. Currently the population growth rate of Kenya is estimated at 2.56% per year (2005 estimates). At the community level, it helps you to carry out specific measurements that allow you to plan for your health services more effectively.

A census is carried out only once every ten years so it can not tell you about what happens to people in between one census and the next. To find out more about people, you need to employ other demographic methods, such as civil registration.

Civil Registration

In Kenya, births and deaths are recorded by the Registrar of Births and Deaths. Births and deaths are important events in a community. The information recorded in the birth and death certificates can be useful for finding out more about the people in different areas. The number of births and deaths have an important effect on the total population, that is, the population gets smaller if there are fewer births than deaths; it remains the same if the numbers remain the same; and gets larger if there are more births than deaths.

You should now appreciate the importance of accurately recording information on births and deaths in your community. Next, you will look at special surveys.

Special Surveys

Surveys are studies that are carried out over a short period of time in a given population to generate baseline data that is then used for describing specific situations and planning intervention measures.

Often, when you want to carry out a specific task in a specific area, the information from the census or civil registration is not enough. To obtain more information, you have to make more inquiries using a survey. A good example is the Kenya Demographic and Health Survey (KDHS) carried out every five years. In practice surveys require money, skilled people and extra equipment and supplies. For this reason, surveys are carried out for specific circumstances.

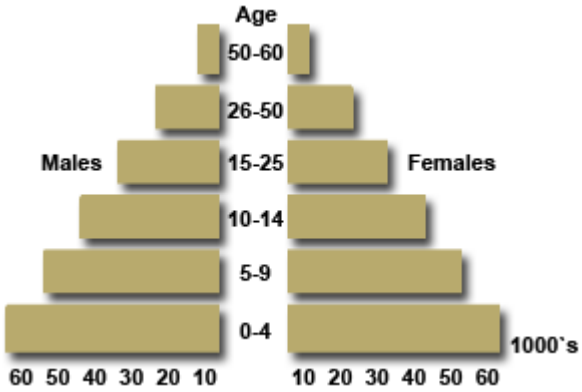
In unit five, you will look at a common type of survey method used in community health known as Community Diagnosis.

Having looked at the various methods used to collect demographic information, you will now look at some specific measurements of the population and how they help you in planning for your health care services.

Population Distribution and Density

In order to plan effectively, you need to know how the population in your area is distributed. One effective method of presenting this type of information is called a population pyramid. You construct a population pyramid by making a horizontal bar for each age group, according to sex.

As you can see from the graphic opposite, the length of each bar in a population pyramid represents the number of people of that age and sex. The longer the bar, the more people there are in that group. The shorter the bar, the fewer people there are in that group. The population pyramid for Kenya is broader at the base because there are many young children. This in turn is because there is a high birth rate. However, the death rate among very young children is also high; so not all the children at the base of the pyramid survive to reach a higher age group. That is the reason that the bars get shorter as you go towards the top of the pyramid.



The second factor you need to consider when looking at the population is the population density. This means how many people live in a given area of land.

To calculate the population density, you divide the number of people by the available land area (in square kilometres). In some towns, where there are a lot of people occupying little land, the population density is high. In some villages, where there are fewer people and a lot of land, population density is low.

The population of a community does not always stay the same. This is because there are always people moving in or out. One way in which the population of a place can change is by migration, that is, people moving from one place to another. When people move out of a place, the population of that place gets smaller. The place is said to be losing population due to migration (emigration). When people move into a place, the population of that place gets bigger. That place is said to be gaining population by migration (immigration).

The tendency in many developing countries such as ours is towards urban migration, that is, for people to migrate from villages to towns and big cities.

As you saw earlier, the number of people who are born and the number who die have an important effect on the total population. In order to study what will happen to the population in the future (say in the next 5-15 years) you need information on the birth rate and the death rate. In the next sub-section you will learn how to measure the crude birth rate and the crude death rate.

Crude Birth Rate and Crude Death Rate

Crude Birth Rate

The Crude Birth Rate (CBR) measures the number of births per 1000 population in a specified period.

Suppose for example that in a population of 15,000,000 (15 million) there were 750,000 births in one year. The CBR would be calculated as illustrated.

Crude Birth Rate Formula

$$CBR = \frac{\text{Total births in one year}}{\text{Total population}} \times 1000$$

$$= \frac{750{,}000}{15{,}000{,}000} \times 1000$$

$$= \frac{1}{20} \times 1000$$

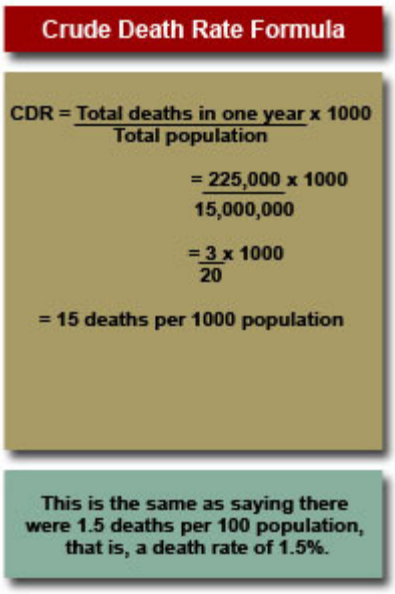
= 50 births per 1000 population

This is the same as saying there were 5 births per 100 population, that is a birth rate of 5%.

Crude Death Rate

You calculate the Crude Death Rate (CDR) in the same way.

Again, suppose the total population is 15,000,000 (15 million). If there were 225,000 deaths in one year, you would calculate the crude death rate as illustrated.



Growth Rate

Once you know the crude birth rate and the crude death rate, you can calculate the population Growth Rate (GR). The GR is the percentage increase in population. It tells you by how much the population got bigger or smaller. To calculate GR, you subtract the death rate (in percent) from the birth rate (in percent).

Growth Rate = Crude Birth Rate (%) - Crude Death Rate (%)

In this example, the crude birth rate was 5% and the crude death rate was 1.5%, so the growth rate would be: 5% - 1.5% = 3.5%.

According to the 1999 census estimates, Kenya's population growth rate has fallen from 3.8% in 1978 to 2.5% in 1998.

Besides births and deaths, there are other things to consider while studying the growth of a population. These things include:

- Rate of migration in and out of the country
- The number of women who can bear children (women of reproductive age from 15-49 years)
- The occurrence of birth and death events
- The rate of family planning acceptance and practice
- The occurrence of major natural or man-made disasters such as war, epidemics, floods, famine, volcanic eruptions etc

As you can see, the demographic information you collect can assist you a great deal in planning your health services effectively. It can tell you, for example, if the majority of your community members are made up of children under ten years; if this number will get even larger because of the high birth rates; and whether there are more deaths in this age group, therefore pointing to the critical need for medical services for this group.

Besides numbers, you also need to look at what health problems are most important in an area. You will now explore how to measure disease in the community.

Measuring Diseases in a Population

Measuring diseases in a population helps you to determine what health problems are important in your community so that you can plan accordingly. It also helps you to determine what resources and how much you need to promote health, prevent illnesses and treat diseases.

As stated earlier, one of the most important sources of information on health and disease are the records you keep in the routine work at health centres, clinics and hospitals. Outpatient cards, inpatient notes, daily registers, monthly and annual reports, clinic records and health visiting books are examples of such records.

If records are carelessly or incompletely entered they will not provide you with accurate or reliable information for measuring disease. It is therefore your responsibility to endeavour to keep accurate records.

When you measure disease, you should observe the following three important aspects:

- Measuring disease by incidence and prevalence
- Expressing diseases by rates (with specification of time and population)
- Accuracy in measurements

Consider each of these aspects in turn over the next few pages.

Remember:

You must keep accurate records at all times.

Incidence and Prevalence of Disease

What do you understand by the terms incidence and prevalence?

Incidence

Incidence measures new cases during a period of time among those at risk of acquiring the disease at the beginning of the duration in a given population.

For instance, if there were 12 new cases of malaria in your area which has 1,200 people in January, then the incidence of malaria in

January would be (12/1200 = 0.01) 1 case per 100 people in the population.

Incidence measures new cases during a period of time among those at risk of accruing the disease at the beginning of the duration in a given population.

Prevalence

Prevalence gives information about the total number of cases of a disease or condition at a particular time - whether new or old cases. Prevalence helps you to know how big a problem is. For example, if on the 1 January you did a survey of your area, containing 1,000 people and found that the total number of cases of malaria was 41, you would say that the prevalence of malaria on 1 January was 41 cases per 1,000 people in that area. This knowledge would help you to plan your drugs, surgical and equipments supplies among other things.

Prevalence measures all cases during a period of time in a specified population.

Expressing Diseases by Rates

Read the following paragraph carefully and try to answer the questions about it.

Pretend for a minute that you are the District Medical Officer (DMO). You have a stock of mosquito spray that is sufficient for one village only. You want to send your spraying team to one village. The clinical officers from each of the two villages have reported that malaria is very common in their areas. Their reports are shown in the table opposite.

Consider the following two questions:

- In which village is malaria more common?
- To which village should you send the spraying team?

Reports from two clinical officers on the occurrence of malaria in their villages

	Village A	Village B
Area	500 sq km	500 sq km
Population	2,000	6,000
Malaria Cases	100	150

Expressing Diseases by Rates

It is clear from the questions that the total number of cases is not very useful when you want to make comparisons. For comparisons, Case Rates are the most accurate guide. In the example above, the malaria case rates are:

Area A: 100/2,000 x 1,000 = 50 per 1,000 population

Area B: 150/6,000 x 1,000 = 25 per 1,000 population

Thus malaria is more common in village A even though the total number of cases (prevalence) reported in village A are less than in village B.

Measuring a disease by rates can also help you to compare two diseases in the same village, when you want to know not only which disease is more common but also which disease is more serious.

To decide how serious a disease is, you use Case Fatality Rates (CFRs).

Case Fatality Rates measure how many people who have a certain disease die from that disease. Suppose that you have received the information shown below from one of the villages in your catchment area, how would you calculate the case fatality rate?

Case Fatality Rates		
Maleria	1,000	10
Cholera	100	8

Finally, there are two more rates that are useful to know about. These are: Infant Mortality Rate (IMR) and the Child Mortality Rate (CMR). These are two important indicators used to express the health of children. A country is considered healthy when the children of that country are healthy. Deaths among children are an important indicator of the health status of a community/country.

All deaths occurring in children from the date of birth to the age of one year are grouped under Infant Mortality Rate or infant deaths. All deaths occurring in children after one year to the age of five years are grouped under Child Mortality Rate or child death.

Expressing Diseases by Rates

Common Formulae for Calculating Health Rates	
Vital Health Rate	**Formula**
Incidence rate	Number of **new** cases of a disease / Population at risk from that disease x 100
Prevalence rate	Number of **all existing (old and new)** cases of a disease / Population at risk from that disease group x 100
Case fatality rate	Number of deaths from specified disease / Number of persons with the disease (old and new) x 100
Cause specific death rate	Number of deaths from specified cause / Total population in the year who died from different causes x 100
Age specific death rate	Number of deaths in a specified age group / Estimated midyear population of that age group x 1000 (%)
Crude birth rate	Total number of live births / Estimated midyear population x 1000 (%)
Crude death rate	Total number of deaths during a given year / Estimated midyear population x 1000 (%)
Fertility rate	Number of live births / Estimated number of females aged 15-49 at midyear x 1000 (%)

Expressing Diseases by Rates

Common Formulae for Calculating Health Rates	
Vital Health Rate	**Formula**
Foetal death rate (Still birth rate)	No. of foetal deaths at 20 weeks or more gestation / (No. of live births plus foetal deaths of 20 weeks or more gestation) x 1000 (%)
Infant mortality rate	No. of deaths under one year of age (in defined population) / Number of live births x 1000 (%)
Maternal mortality rate	No. of deaths from puerperal causes (pregnancy, labour, etc) / No. of live births during that year x 1000 (%)
Neonatal mortality rate	Number of deaths under 28 days of age / Number of live births x 1000 (%)
Perinatal mortality rate	No. of foetal deaths 28 weeks or more and infant death under 7 days of age / No. of live births and foetal deaths 28 weeks or more during the same year x 1000 0/00
Postnatal mortality rate	No. of deaths at age 28 days 1 year / No. of live births minus neonatal death x 1000 0/00
Sex specific death rate	No. of deaths of males or females / Estimated male or female population at midyear x 1000 0/00
Dependency ratio	Total number of persons less than 15 yrs and those over 60 yrs (65) of age / Total number of people aged 15-60 (15-65) yrs in the same population)

Practise calculating these formulae using the data in your health facility. The more you practise, the easier it will become for you to use them in your community health work. The last aspect of measurement is accuracy
of measurements

Accuracy of Measurements

Why would you want the temperature of a patient
recorded accurately?

- To see whether the patient has fever
- To check the effect of a treatment you have given

- To make a graph that can provide a clue to diagnosis/effectiveness of medication

Most errors are made by the people taking the measurements and not by the instruments used or by the patients. This type of inaccuracy is called observer error. There may also be problems with the instruments such as weighing scales, particularly if the zero reading is not checked regularly. Other errors may occur when writing down the figures on the record card. In measuring the effects of a disease or treatment, you need to take your measurements and record them accurately.

To reduce inaccuracies, there are three important things that medical staff can do:

- All staff should follow agreed standard methods; for example, how long the thermometer should be left in the mouth; and how to ask the questions in the questionnaire.
- All staff should undergo thorough training and be supportively supervised to see that they are following agreed procedures.
- Staff should initial case histories, physical examinations or laboratory tests which they perform so that it is clear who did them. This also helps when checking records for missing information.

Having learnt how to measure diseases, you now need to be able to predict which people are at high risk of getting them and work to prevent that from happening. You will learn that in the next
sub-section which covers epidemiology.

Epidemiology is the branch of medicine that studies the patterns of disease occurrence in human population and the factors that influence these patterns.

It studies the disease distribution and determinants in the populations.

Before you go further, consider the following definition of disease.

Disease is the inability of the individual to function, physically, mentally, socially at a level that is both individually satisfying and appropriate to the stage of growth and development of the individual - Hardley (1974).

Simply put, you can say that any condition that causes health to decline is called a disease. The detailed study of diseases (distribution and determinants) and their effects on the health of the people is known as epidemiology.

In epidemiology you look at three components of a disease.

Disease Frequency

Disease frequency is the measurement of how often a disease occurs and the disability or death caused. This information is summarised in the form of rates and ratios, that is, prevalence rate, incidence rate, death rate etc.

Distribution of Disease

Distribution of disease is concerned with describing how widespread a disease is in terms of person, place and time. In measuring the distribution of a disease you ask the following questions:

- Who are the people affected?
- Where do they come from?
- When are they affected (during dry season or rainy season)?
- **Determinants of Disease**
- Determination of disease involves interpretation of the distribution of disease in terms of its possible causal factors. Disease determinant factors are the agent, the host and the environment.

In epidemiology you use data on the frequency and distribution of disease in order to help you understand whether the disease is an epidemic, endemic
or sporadic.

An epidemic disease is one that occurs unexpectedly and may give rise to many new cases in a short period of time. An endemic disease is one that is present all the time in a community.

A sporadic disease is one that occurs only occasionally and without a regular pattern.

An endemic disease is that which occurs at a constant rate over a long duration of time (several years or decades) in a given population.

In some parts of Kenya, malaria is an endemic disease as it is present in the population all the time, as indicated by the pink areas on the map on the right.

An epidemic disease is that which occurs in a higher rate than it normally does in a given population over a given duration of time (weeks or months).

It is also referred to as an outbreak.

A good example of an epidemic is cholera.
When you say that a disease is epidemic, you use the information about both frequency and distribution.
For example, the chart below could be used to describe a cholera epidemic.

There are very frequent cases of diarrhoea and vomiting in the community	Frequency
Both children and adults are affected (WHO)	
People living in conditions of bad sanitation are affected (WHERE)	Distribution
The disease comes in the rainy season (WHEN)	

Epidemiological studies aim to:

- Describe the distribution and extent of a disease problem in human population.
- Identify aetiological factors in the pathogenesis of disease.
- Provide the data essential to the planning, implementation and evaluation of services for the prevention, control and treatment of disease and to set up priorities among these services.

The community health nurse has an important role to play in the prevention and control of communicable diseases. This includes participating in the early diagnosis and treatment, sending notification of notifiable diseases, tracing the contacts and keeping them under surveillance, identifying sources of disease and educating the members of the community.
So far you have looked at the definition of epidemiology, its components and aims.

Areas Studied in Epidemiology

- Whole populations in their living and working environment.
- Factors that determine state of health and disease.
- Patterns of health as well as patterns of disease.
- Mass phenomenon and effects of disease or conditions on groups or individuals.
- Distribution and causes of human health problems.
- Multiple causation factors of disease.
- Measures used to prevent and control disease.
- Variations in occurrence and distribution of communicable diseases in the community.
- The presence, nature and distribution of community disorders through morbidity and mortality rates along with identifying high-risk population, with a view to establishing a community diagnosis.
- Causes of communicable disease by defining various geographic, demographic, genetic, environmental, disease agent and social factors.
- Estimates of individual risks and chances toward disease occurrence in general or specified segments of population.
- Clinical and sub-clinical forms of disorders in communities for early diagnosis through screening mechanisms.
- Knowledge, attitude, beliefs and practices of communities toward communicable problems and develop intervention programmes.
- Epidemic problems and their appropriate intervention programmes.
- The natural history of disease affecting the general population.
- Develops strategies for planning, organising, implementing, integrating and evaluating services in communities.

In order to study the things listed effectively, epidemiology uses a number of methods and tools which you will now learn.

Epidemiological Methods and Tools

Epidemiological studies are classified into two groups according to their purpose.

Descriptive Studies

These studies focus on the amount and distribution of disease or health status within a population by person, place and time. The studies involve determining the incidence, prevalence and mortality rate for disease in large population groups, according to characteristics such as sex, age, race and geographical area. These are studies of factors associated with distribution of health and disease in human population

Analytical Studies
These types of epidemiological studies focus on disease determinants, that is agents of disease causation, host related factors, vectors (where applicable) and environmental factors.
Analytical epidemiology studies the underlying causes of health problems.
It seeks to uncover the source and mode of spread of disease; looking at multiple factors that bring about the disease in different population groups. Analytical epidemiology looks for reasons behind the relatively high or low frequency of disease in specific human groups (cause-effect relationships).
There are three main types of descriptive studies

Case Series
In case series, clinicians describe the experience of a single patient or group of patients with similar diagnosis. This is common among clinicians whereby they use the unusual features of a unique disease among patients to make a diagnosis. It is through case series studies that clinicians are able to diagnose new or emerging diseases, such as ebola and chloroquine resistant malaria.

Cross-sectional Studies
Cross-sectional studies provide information about the frequency and characteristics of a disease by studying the disease status in a population at a specific time period in a given year. Data is gathered over a large geographical area from a large sample over a short duration of time for, example a few months.

Correlation Studies
Correlation studies use data of the entire population to compare disease frequencies between different groups of people during the same period of time. These types of studies are concerned with how a certain independent variable is related with one or several dependent variable(s).
Analytical studies are divided into two types; observational and experimental studies. The bulk of analytical studies are observational. This is because they are less invasive and less likely to raise ethical issues.

Observational Studies
In observational studies you observe events in the community as they occur. They may occur in seasons or be triggered by certain events such as floods that may lead to waterborne diseases or an outbreak of malaria. Another example is the increased incidence of fractures among children during the fruit picking season. As an epidemiologist, you need to put measures in place to prevent these problems. There are two main categories under these type of studies, that is cohort studies and case control studies.

Cohort studies look at certain exposures over a period of time (prospectively) and how they are related to certain outcomes. Subjects are followed up over a period of time.

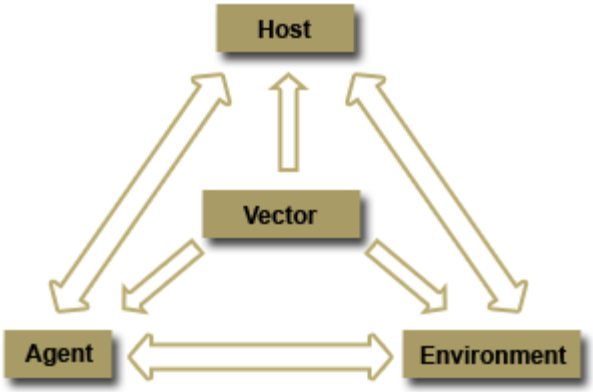
Case control studies look at certain outcomes and try to establish what might have caused them in the past.
For example people suffering from a skin disease may be asked to recall where they have worked or lived previously so as to understand what they had been exposed to and that might have caused the disease. They are also referred to as retrospective studies.

Experimental Studies
In experimental studies, you set up experiments with controls in order to see the cause and effect. For example, you can decide to give malaria prophylaxis or mosquito nets to one community during the rainy season and deny the same to another similar community.
You then observe the two to see if they have the same incidence of malaria or if they have different incidence of malaria.

The Epidemiological Triad
The triad describes the relationship between various factors that cause disease and how they interact to determine disease occurrence.
The factors, namely agent and host, interact in the environment to cause disease in humans. The natural progression of a disease is influenced by the following factors:

- The causative agent(s)
- The susceptible host
- The environment
- The vector(s) in some diseases

This is illustrated in the graphic opposite.



The agent is the harmful aetiological factor that causes health problems.
The aetiological factor (agent) may cause disease either by its presence or by its absence.
The causative agent may be a substance, living or non-living, excessively present or lacking, tangible or non-tangible.

Physical Agents
These include mechanical forces such as friction, extreme heat, cold, humidity, pressure, sound, radiation, electricity, etc.

Biological Agents
Living organisms, such as bacteria, fungi, chlamydia, rickettsiae, protozoa, viruses, mycoplasma, helminthes.

Chemical Agents
Endogenous chemical agents are those which are made by the body as a result of abnormal metabolism, for example urea (uraemia), serum bilirubin (jaundice), ketones (ketosis, keto-acidosis), uric acid (gout), calcium carbonate(renal stones), etc.
Exogenous chemical agents arise from outside the body, for example allergens, meals, fumes, gases, insecticides, etc. Exogenous chemical agents may enter into the body tissues through inhalation, ingestion or inoculation.

Genetic Agents
Transmitted from parent to child through genes.

Nutrient Agents
Excessive or deficient intake of nutrients. This results in malnutrition related diseases such as the most common Protein Energy Malnutrition (PEM), for example kwashiorkor and marusmus.
Other examples include iron deficiency anaemia.

Excessive or Relative Lack
Endocrine disorders, for example diabetes mellitus (lack of insulin), thyrotoxicosis (excess thyroid hormone).
Immunodeficiency (HIV infection, some drugs).
The human or animal that comes into contact with and is affected by the agent is the host. Some factors within the host determine its interaction with the agent.

Age
Some diseases are more common in certain age groups:

- Childhood: measles, whooping cough, chickenpox.
- Adulthood: diabetes mellitus, cardiovascular diseases.
- Old age: pneumonia, cancers and arteriosclerosis.

Sex

- Females: disorders associated with pregnancy and childbirth.
- Males: prostate hypertrophy.

Race
Only the black race suffers from sickle cell disease.

Lifestyle
Lifestyle choices such as: dietary habits, smoking, alcohol consumption, substance abuse, casual sexual intercourse.

Nutrition
Nutritional status is a major factor where food is either of inadequate quantity, quality or both.

Tradition
Tradition (culture, custom): food beliefs, child-rearing practices, rituals (for example female genital mutilation).

Mobility
International and local travel, which may expose an individual to new diseases.

Immune Status
Lack of previous exposure to a disease, lack of vaccination, or poor natural immunity (immune deficiency). All these are referred to as intrinsic factors.

Social and Economic Status
A person's social and economic status has an effect on both their exposure to disease agents and also their access to appropriate health care.
The environment includes all the external conditions and influences that affect the life and development of an individual and their community. The environment may enhance or inhibit the interaction between the host and the agent.

Physical
The physical environment is made of the non-living things and physical factors such as water, air, soil, light, heat, radiation, noise, housing, climate and geographic location. Changes in the environment due to various factors may, for example, lead to pollution of water, air, soil and noise. This in turn cause disease in the members of the community.

Biological
This includes all the living things in and around where humans live. The living things include animals, plants and micro-organisms.

Social and Economic
This is the human society in which every human being lives. Men and women live among others in groups in which there are shared values, customs, habits, beliefs, attitude and culture. Conflicts among human beings lead to tension which may cause mental and behavioural disorders.
Examples of social economic factors include; Housing, water, lighting, sanitation, area of residence, food, education, occupation, working environment and health care among others.

Levels of Disease Prevention

Diseases evolve over time and the pathological changes become less reversible as the disease process continues. There are three stages in the development of a disease, namely, healthy, sub-clinical or pre-symptomatic, and clinical. It is obvious that the best sort of prevention is that applied before the person becomes ill.
A three-level model for intervention, based on the stages of the disease, was developed by Leavel and Clark (1965). The three levels of the model are:

- Primary prevention of disease
- Secondary prevention of disease
- Tertiary prevention of disease

Primary Prevention
This is the actual prevention of a disease. Primary prevention is carried out before the disease or dysfunction has occurred in the body. It is directed at decreasing the risks of acquiring the disease.
Primary prevention methods applied to people and the environment include: health education; environmental sanitation; supply of clean safe water; adequate nutrition; rest; sleep; recreation; personal hygiene; good working conditions; good housing; regular medical checkups; screening for disease; genetic screening and counselling; immunisation against specific disease; avoidance of home, traffic, and industrial accidents.

Remember:
Prevention is better than cure.

Secondary Prevention
Secondary prevention aims at diagnosing a disease early and treating it even before the symptoms have appeared. This is the second stage of disease which is called sub-clinical or pre-symptomatic. The main goal is to cure the disease completely in its early stages or slow down its progression, in order to prevent the development of complication and disability. This kind of prevention often requires screening, to find the people who have the illness but don't know they have it.

Activities of Secondary Prevention

- Screening tests to detect early the pre-symptomatic physiological and anatomical indicators of disease, for example pap smear, random blood sugar test, etc.
- Case finding and case-tracing.
- Screening surveys and examinations.
- Mass treatment and campaigns.
- Adequate treatment of disease.
- Follow-up of treated patients at special clinics and at their homes.

Remember:
Secondary prevention detects disease early by screening and starts treatment promptly

Tertiary Prevention
This means diagnosing and treating people who are already sick with a disease, in order to reduce suffering, cure the disease, and prevent disability.
If a permanent disability such as blindness or

paralysis remains, then special rehabilitation services may be necessary. Most of the curative work that goes on in the outpatient and inpatient departments occurs at this stage of disease.

Remember:
Tertiary prevention diagnoses, treats and rehabilitates.

SECTION 4: ORGANISATION OF HEALTH SERVICES

Introduction

As a health worker, you do not function in isolation. You are part and parcel of a well designed and thought out system that is working towards improving the health of the nation. Therefore, in this section you shall learn about this system, its activities and different levels of operation, so that you know where you fit in and what role you are expected to fulfil in your routine work.
You shall also look at the health sector reforms that the government has initiated to improve health care delivery. Move on to look at the objectives for this section.

Objectives

By the end of this section you will be able to:

- Describe the organisational structure of the
  Ministry of Health
- Describe the health institution's management
- Describe the composition of the District Health
  Management Team
- Describe the functions of District Health Management
  Team members
- Describe Kenya's health sector reforms

Organisational Structure of the Ministry of Health

The development of a country or nation is done by its people. People can only contribute and participate in the development of their country if they are healthy. Thus one of the important activities of the government is to look after the health of the people. The government carries out this activity through the Ministry of Health.
The Ministry of Health is the main provider of health services to all the citizens of this country.

Functions of the Ministry of Health

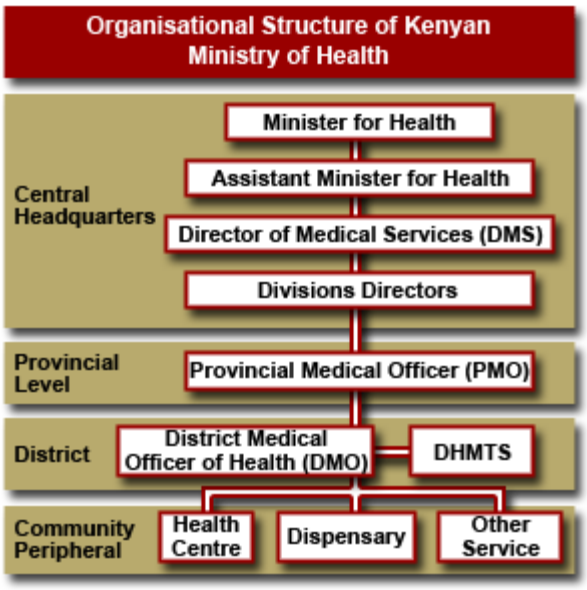
- Planning (for the delivery of health care services)
- Maintaining effective health information systems
- Manpower training, recruitment and development
- Promotive and preventive services
- Curative services
- Health care financing
- Registration and licensing of health facilities
- Health care policy development
- Health care quality assurance

The Ministry of Health operates at four main levels, which are based on our country's administrative setup. The four levels are:

- National (Central)
- Provincial
- District
- Community (Peripheral)

As you are well aware, the country is divided into administrative units called provinces. Each province is further divided into smaller units called districts, which are in turn divided into locations and sub-locations.
How many provinces are there in this country?
Currently there are seven provinces in this country.
Now move on to look at how health care delivery is organised at the different administrative levels that have been mentioned.

National (Central Level)
The national (central) level is the headquarters where political, professional and administrative matters are coordinated and policy decisions made. It is headed by a minister, assistant minister and a permanent secretary, in that order of seniority. These leaders are politically appointed and need not be health professionals.
Next in this hierarchy comes the technical leader of health services, that is, the Director of Medical Services (DMS). The Director of Medical Services supervises all matters pertaining to preventive, promotive and curative health services. They are assisted by Deputy Directors, who are responsible for the various divisions which deal with the different responsibilities, such as mental health, communicable diseases and health planning, among others.
The administrative setup of the Ministry of Health is illustrated opposite.



Provincial Level

The Ministry of Health is represented at the provincial level by the Provincial Medical Officer, who is a senior medical officer in charge of organisation and administration of health services within the province.

The Provincial Medical Officer is answerable to the Director of Medical Services at the Ministry of Health headquarters. At the provincial level, they are assisted by other health officers responsible for various provincial health care departments, for example, provincial matron. At the provincial level, there is usually a provincial hospital.

District Level

The district is the basic organisational unit of the government health services. It is a key level in the health sector administrative setup because the government decentralised almost all of its activities and made the district the focus for rural development. The government delivers health care to the district population through:

- A district or sub-district hospital
- Health centres
- Dispensaries
- Mobile (outreach) units

The district health service is headed by a District Medical Officer of Health (DMOH) also refered to as Medical Officer of Health (MOH). The administrative headquarters of the district health services are usually at the district or sub-district hospital, where the DMOH is in most cases also the medical superintendent of the hospital.

The district hospital provides limited specialised medical services and also logistic and technical support to the health centres and dispensaries in the periphery. It is a crucial link in the administrative support and referral chain of health services being provided to the population in
the communities.

What duties does the MOH carry out in your district?

The duties of the MOH include:

- Administration of the district health services
- Hospital work and other clinical duties
- Training of staff in the district
- Planning and coordinating all health activities in the district
- Supervision of health care delivery in the district

The MOH does not work in isolation. They head a team of health professionals who form the District Health Management Team (DHMT).

The DHMT is charged with the responsibility of monitoring and supervising all health care services in the district. Most of the members of the DHMT are found at the district hospital. The other key members of the DHMT are found at the
district administrative headquarters

The members of the DHMT include:

- The District Medical Officer of Health (Chairman)
- The District Public Health Nurse
- The District Hospital Matron
- The District Public Health Officer
- The District Public Health Education Officer
- The District Health Administrative Officer
- The District Health Information Officer
- The District Pharmacist

The DHMT has other co-opted members who include:

- District HIV/AIDS/STD Coordinator
- District Physiotherapist
- District Clinical Officer
- District Nutritionist
- District Laboratory Technologist
- District Orthopaedician

Important functions of the DHMT include:

- Formulating relevant health objectives for the district in keeping with the provincial and national health policies.

- Identifying health problems and needs in the district.
- Training and deployment of staff to health facilities.
- Planning and coordinating health activities for optimal utilisation of district resources.
- Supervising all health care activities and services within the district.
- Collecting and analysing data on community health needs and assessing health coverage.
- Monitoring and supporting the rural health staff and community health workers.
- Licensing health facilities/clinics.

Remember:
All health services and activities within the district are monitored and supervised by the DHMT.

Since all community health nurses are supervised by the district public health nurse, it is important that you understand their duties and responsibilities.

The District Public Health Nurse
The District Public Health Nurse (DPHN), also known as the District Community Health Nurse, is an important member of the DHMT and is responsible to the DMOH (is supervised by the DMOH).
The main duties and responsibilities of the DPHN are:

- Planning, organising and supervising all community health activities in the district.
- Deploying nursing staff to community/rural health facilities.
- Conducting staff update courses.
- Collecting health information and compiling reports about community health services.
- Planning and coordinating health campaigns.
- Procurement, storage and distribution of EPI vaccines.
- Implementing health development projects for the district development committee.

Community/Peripheral Level
The last level in this hierarchy is the community/peripheral level. This is really at the community level where there are divisions, locations and sub-locations. Here health centres, dispensaries and in some places, community based health workers provide basic curative, promotive and preventive services. They may be augmented by the activities of special programmes, such as KEPI, or various mobile services. These health services together form the backbone of rural health service where about 80% of the population live.
As you well know, not everyone gets all their medical care from government facilities. People are also treated by other health institutions supported by private and religious organisations. Now move on to briefly look at these groups.

Private Institutions Offering Health Care Services
Through supplementing the government health services, private institutions play a significant role in health care delivery. Many patients, who might not otherwise receive health care, are treated in private clinics. Some of the drugs and services not available in government units can be obtained in private clinics.
Religious Groups

- Roman Catholic Church
- Presbyterian Church of East Africa
- Seventh Day Adventists
- Anglican Church in Kenya
- Quakers (Friends Kaimosi)
- African Inland Church

Non-Governmental Organisations (NGOs)

- Africa Medical and Research Foundation (AMREF)
- Kenya Red Cross Society
- Aga Khan Foundation
- Plan International

Private Health Care Institutions

- The Nairobi Hospital
- MP Shah Hospital
- The Aga Khan Hospital(s)
- Mombasa Hospital
- Gertrude Garden Children Hospital

United Nations Special Bodies

- United Nations International Children Emergency Fund (UNICEF)
- World Health Organisation (WHO)
- United Nations Population Fund UNFPA

Health Sector Reforms

Many Kenyans have for a long time lacked access to basic health care, safe drinking water, proper sanitation and adequate nutrition. Kenyans suffer from preventable or easily treatable diseases.
Old diseases which had earlier been contained, such as tuberculosis, have come back, while new diseases and viruses like HIV/AIDS have emerged.
The deteriorating situation in health caused the government of Kenya to develop a Health Policy Framework Paper in 1999 outlining the strategies for the development and management of the health services in the country. To implement this paper, a Health Sector Reform Secretariat was established to spearhead the reform process.
The effects and institutional arrangements put in place to implement the Kenya's Health Policy Framework Paper (KHPFP) were slow. The downward trend in the poor health of Kenyans continued to raise concern to both the Ministry of Health and other key stakeholders in the health sector.
Many consultative meetings and workshops were held under the guidance of the Ministry of Health to explore ways in which the KHPFP policy objectives could be translated into actions to reverse the deteriorating health situation in the country.
From these meetings, the National Health Sector Strategic Plan 1999-2004 (NHSSP) was established to address the constraints in the health sector. This was a five year strategic plan which started in 1999. It had the following objectives:

- To ensure the equitable allocation of government resources to reduce disparities in health resources distribution.
- To increase the cost effectiveness and the cost efficiency of resource allocation and use.
- To continue to manage population growth.
- To enhance the regulatory role of the government in all aspects of the health care provision.
- To create an enabling environment for increased private sector and community involvement in health service provision and financing.
- To increase and diversify per capita financial flows in the health sector.

The achievement of these objectives required a lot of effort and resources at a time when the government was faced with donor embargos and other problems. The government of Kenya, through the Ministry of Health, came up with a strategy called the National Priority Health Package. This package ranks the health problems in Kenya according to the associated morbidity and mortality.

High Priority Health Packages

- Malaria prevention and treatment package.
- Reproductive health package.
- HIV/AIDS/TB prevention and management package.
- Integrated Management of Childhood Illnesses (IMCI).
- Expanded program on immunisation.
- Control and prevention of major environmental health related communicable diseases such as cholera, typhoid, dysentery and food safety.

Medium Priority Health Packages

- Non-communicable diseases (diabetes mellitus, cardiovascular diseases, rheumatic fever).
- Reproductive cancers (cancer of cervix, breast, prostate).
- Mental health, drug/substance abuse.

- Injuries and accidents.
- Control of other vector-borne diseases.

Low Priority Health Packages

- Eye infections.
- Skin diseases.
- Ear infections.
- Worm infestations

SECTION 5: INFORMATION, EDUCATION AND COMMUNICATION

Introduction

You are now in the last section of this unit. In the previous section you looked at how our health services are organised and the health sector reform programme initiated by the Ministry of Health.

In this section you shall look at the Information, Education and Communication (IEC) skills you need to positively influence the attitudes, practices and behaviour of people in your community to adopt healthy living.

Objectives

By the end of this section you will be able to:

- Describe the concepts of IEC
- Describe the principles of IEC
- Describe factors influencing adult learning
- Describe the process of mobilising IEC materials
- Describe how to conduct effective health talks

Concepts and Principles of IEC

What is IEC?

IEC is a systematic attempt to influence positively the attitudes, practices and behaviour of individuals, families and the community, to adopt healthy living.

Information, Education and Communication is a process that empowers individuals, family and communities to make decisions concerning their health. It encourages people to change their behaviours and social conditions.

IEC combines strategies, approaches and methods that enable communities, groups and organisations to play active roles in preventing diseases, thereby promoting and sustaining good health.

With IEC, activities are developed based upon the assessed needs, sound planned educational principles and continuous monitoring and reviewing of the objectives and planned activities.

In order to increase access to knowledge by different people on various issues, products and behaviour, health information must be communicated through various channels. These include:

- Face-to-face or interpersonal communication such as individual discussions, counselling sessions, group discussions and community meetings or events
- Mass media such as newspapers, radio and television

The main reason of using a variety of media is because it has been found that people are influenced differently by different media. Take the youth for example, they get more information through music and so radio is a powerful tool for them. Adult learners on the other hand prefer discussions and interpersonal communication.

What is the purpose of IEC?

Some of the main purposes of IEC are to:

- Inform the people about health and health related issues relevant to them
- Dispel rumours, fears and misconceptions about certain health issues and to reassure them
- Motivate the patients and members of communities to seek health care when sick and promote healthful living by keeping good habits and behaviour
- Empower the individuals, families and the community to participate in the implementation of programmes that promote healthful living

IEC therefore is not only health education but it is a comprehensive approach. It builds the capacity of communities, families and individuals

by giving them relevant information communicated in a way that they can understand, internalise and take appropriate action. The information may not necessary be directly health information as long as it will impact on people's life. For example you can give people information on the cash crops they should grow even if it means getting the Agriculture Officer to show them. Cash crops can help in alleviating poverty which as you know has a negative impact on people's health.
Now move on to briefly look at factors that influence adult learning. You will learn adult education in more detail when you come to the unit on Teaching Methodology in module four.

Factors that Influence Adult Learning

From your own experience, you may have realised that various conditions and reasons influence adult learning. You are now going to look at these conditions and reasons that promote learning in the adults.
What are some of the factors that influence adult learning?
As you may have indicated adults learn faster and better when:

- They make the decision to learn on their own
- The information or skills acquired are of immediate use to them
- Information or skills given/shared relate to their immediate or future activity
- They know what to expect or what is expected of them
- Learning takes place in an atmosphere of trust, acceptance and encouragement
- There are no distractions during the learning session
- The information to be learnt is clear and relevant to their needs
- They are involved in what is being taught and are actively involved in the learning activities
- The material being learnt is based or related to what they already know
- They receive immediate feedback from the teacher about their performance

Most of the teaching that you are going to carry out as a community health nurse will be focused on adults. You are going to be talking to the youth, parents, family planning patients, household heads, community members and community leaders.

Since learning is a process of acquiring knowledge, skills and attitudes, which results in modification or change in thinking and behaviour, you should always bear in mind that the people you are teaching have some knowledge no matter how inaccurate it may be. You should therefore start with what they know and what they would like to hear. Once you have their confidence, it is easy to then carry them with you. Always avoid offending people even when tackling the harmful cultural habits, you have to be very tactful and make them diagnose the problem themselves. Use problem-based learning which makes the learners discuss their problems more openly and search for solutions. You will learn about this in greater detail in the Teaching Methodology unit in module four.

Mobilising IEC Materials

As mentioned earlier, when you are sharing information you should not assume what the learner's level of knowledge is. It is therefore very important for you to prepare yourself and put together all the necessary resources you will need. This is what is known as mobilising the IEC materials.

What are some of the materials you may require during IEC?
The materials you need to mobilise depend on the message you want to communicate. For example, if you are talking to a group of mothers about a weaning diet, it may be necessary that you put together nutritious foods which are locally available and culturally acceptable to give an infant. If you are talking about family planning, you will need to have all the contraceptives methods as you may even have to demonstrate, for example wearing a condom.
In some health talks, you might not get a chance to have the actual items on display but a poster showing the same will do. A good example is the poster shown above. Before you use a poster, you should ensure that it is developed and pre-tested on the target audience in order to ensure that the community understands the message you want to communicate.

Mobilising materials may also mean, checking the channels/media of communication so that the individuals, families and indeed entire communities can get the message as and when planned. The media may be print, radio, television or face-to-face. Some of the materials

may be the actual items such as food, while others may be in form of handouts or posters. There are many posters, charts, calendars and even pamphlets that have been developed for different messages which you may have seen in your health facility. These are some of the resources that you may have to assemble before you start your talk.
Organising resources does not only include the media that you want to use but also may mean organising the space you are going to use or even seeking permission to organise such a meeting.
The animation opposite shows some ideas for handouts, posters, pamphlets, etc.

What is meant by organising space or seeking permission?
Whether you are talking to an individual, family or community, you need a place where you can all assemble. You should check the place to ensure that it has a conducive environment for a talk. For example, you do not want to be in a noisy place or in an open space when it is either raining or very sunny. Once you select the place you will need to check on the seating arrangements if you want people to be seated and make the necessary arrangements.
As for seeking permission to hold a meeting, it is important to operate within the law as this could affect your programme. If you need permission to hold a Baraza, it is important for you to seek it from the relevant authorities. In fact it may be helpful to involve the authorities concerned, such as the chiefs and other respected members of that community. This means you would have to brief them well in advance and give them detailed plans.

Organising Health Education Talks

This is a method of teaching/learning in which relevant health messages are shared with individuals or groups to enable them to meet identified health needs and make informed decisions about their lives.
Before organising a health talk, it is very important, you understand the health problems and needs of the individual, family or the particular group that you are going to talk to.

Why is it important for you to understand the health problems of your target group?

Knowing the problems affecting the target audience of your talk and what they need to solve the particular problem is important because it:

- Enables you to determine the desires, concerns and interest of the client/community and identify what information will be presented
- Helps you to ensure that the health talk is aimed at the current needs of the client/community and what materials and resources are needed
- Enables you to set specific objectives thereby assisting the learners to know what is covered in the discussion
- Enables you to evaluate the outcome of learning

Whether the aim of your health talk is to educate, dispel rumours/misconceptions about health problems or to provide instructions and/or demonstrations on health actions and practices, you must organise it well so as to effect any change.
You should bear in mind:

- The individuals or community's health needs and problems
- The need for clear, simple culturally relevant health messages
- The use of appropriate teaching/learning materials (posters, charts or models)
- The need to respect and work with Community's Own Resource Persons (CORPS)
- The need to empower and work with others (volunteers, field health workers, staff, community based health workers etc.) in promoting IEC
- The need to use counselling skills in health talks

During health talks, you should give the client/audience the right information through direct or face-to-face communication. The process of communication in teaching is covered in detail in the Teaching Methodology unit in module four.

UNIT TWO: PRIMARY HEALTH CARE

In this unit you will cover the concept, principles and elements of Primary Health Care (PHC). You will look at the implementation of each element in the seven levels of health care intervention in Kenya, giving emphasis to the importance of all the components of community participation.

This unit is composed of four sections:
Section One: Concept and Principles of PHC.
Section Two: Implementation of PHC Elements.
Section Three: Responsibilities of the Key Implementers of PHC.
Section Four: PHC Achievements, Challenges and the Way Forward.

Unit Objectives

By the end of this unit you will be able to:

- State the principles and concept of PHC
- Describe the implementation of each element in the seven levels of health care intervention
- Explain the responsibility of each key player in the implementation of PHC activities
- Describe the achievements, challenges met and the way forward for PHC in Kenya

SECTION 1: CONCEPT AND PRINCIPLES OF PHC

Introduction

In this section you will look at the historical background of PHC and its concept, paying special attention to its definition, fundamentals, elements and principles.

Objectives

By the end of this section, you will be able to:

- Describe the concept and principles of PHC
- List the PHC elements according to WHO
- List the PHC elements according to country added elements
- Explain each PHC element

Background of PHC

In the 1977, World Health Assembly, the government of Kenya along with other member states of WHO, endorsed the worldwide social objective of 'The attainment by all people of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life' (WHO, 1977).
However, many countries in the developing world recognised the fact that it was not possible in the foreseeable future for them to achieve this worldwide social objective. This was because many lacked the resources needed to develop and run health services. They needed to adopt a strategy that allowed them to use the available resources to give some benefit to everyone and provide special attention to those at high risk. The member governments endorsed the PHC strategy for the provision of health services for all.
The strategy for the implementation of PHC was adopted by the Kenya government to provide health services to its population, the majority (80%) of whom live in the rural areas.

Definition of PHC

In 1978, the Alma Ata international conference on PHC defined primary health care as:

'Essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation, and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination.

In addition, it forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family and the community with the national health system, bringing health care as close as possible to where people live and work'.

PHC is not only:

- Primary medical care
- First contact medical or health care
- Health services for all

PHC is and does the following:

- It is intended to reach everybody, particularly those in greatest need
- It is intended to reach the home and family level, and not to be limited to health facilities
- It is intended to involve a continuing relationship with persons and families

Preventive and Promotive Health Care (PHC) includes the basic clinical, preventive, and promotive health services that should be readily accessible to all members of the population.
Emphasis is on improving family health, with particular focus on mothers and children; increasing coverage and accessibility of essential health services; improving the quality of services; and pursuing an integrated inter-sectoral and multi-disciplinary approach with community participation in the planning, delivery, and monitoring of health services.
From the definition, you need to note the following key statements which identify PHC as essential health care. These are:

- PHC is universally accessible to individuals and families in the community.
- PHC is socially acceptable to all, meaning that the health care is appropriate and adequate in quality to satisfy the health needs of people, and is provided by methods acceptable to them within their social cultural norms.
- PHC is affordable, that is, whatever methods of payment used, the services should be at a price the community can afford.
- PHC promotes full participation of individual, families and communities.
- PHC is appropriate technology that is, the use of methods and technology which use locally available supplies and equipments.

The Concept of PHC

Write down your definition of the term 'concept'.
A concept is an idea about an issue, event or practice.
Write down your definition of the term 'concept'.
The concept of PHC can be described as ideas about the implementation of health care for all. It is easily identified using the five 'A's as follows:

Accessible
That is, the services are geographically, financially and culturally within easy reach to the whole community.

Acceptable
The quality of health services offered are appropriate, adequate, and able to satisfy the health needs of people; and are provided by methods which are within their social cultural norms.

Affordable
That the services are provided at a cost that the community
can afford.

Available
The health structures and services are easily available to the community members and they also help them to assume responsibility in promoting their own health.

Appropriate Technology

Utilising existing methods, techniques, and resources within the community.

Primary Health Care should be available to everyone.

The Seven Pillars of PHC

Aspect	Definition	Comment
Health System	Primary Health Care.	The first elements of a continuing health care process, [redacted] leading to the progressive improvement of the comprehensive health care for all, and giving priority to those in most need.
Priority	Essential health problems.	Addresses main health care problems in the community providing promotive, preventive, curative and rehabilitative services.
Science	Practical, scientifically sound.	Based on application of the relevant results of social, biomedical and health services research.
Culture	Socially acceptable methods and technology.	Reflects and evolves from the economic conditions and socio-cultural and political characteristics of the country and communities.
Equity	Made universally accessible to individuals and families.	The attainment of health care for all people of the world by the year 2000 and beyond, of the level of health that would permit them to lead socially and economically productive lives. The existing gross inequality in the health status of the people particularly between developing countries, as well as within countries is politically, socially and economically unacceptable.
Participatory	Through their full participation.	The people have the right and duty to participate individually and collectively, in the planning and implementation of health care.
Sustainability	At a cost that the community can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination.	To exercise political will to mobilise the country's resources and to use available external resources rationally.

PHC is a strategy of health care delivery which creates a partnership between the consumer of the health services and health care professionals. They both actively participate in the achievement of the common goal of improved health.

Who do you think are the key players in the implementation of the primary health care programme?

Key players include the government, non-governmental organisations, Primary Health Care workers and community members, amongst others.

Fundamentals of PHC

Fundamentals of PHC are basic rules or beliefs that are essential to the existence, development or success of Primary Health Care.

Fundamentals 1 - 3

1. PHC reflects and evolves from the economic conditions and socio-cultural and political characteristics of the country and the communities, and is based on the application of the relevant results of social, biomedical and health services research and public health experience.
2. PHC addresses the main health problems in the community, providing promotive, preventive, curative and rehabilitative services accordingly.
3. PHC includes, at least: education concerning prevailing health problems and the methods of preventing and controlling them; an adequate supply of safe water and basic sanitation; maternal and child care including family planning; immunisation against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries and provision of essential drugs
4. PHC involves, in addition to the health sector, other sectors such asagriculture, animal husbandry, food industry, education, housing, public works, communication and other sectors. It demands the coordinated efforts of all these sectors.
5. PHC requires and promotes maximum community and individual self-relianceand participation in the planning, organisation, operation and control of health services, making fullest use of local, national and other available resources.

   Through appropriate education the communities themselves are empoweredto participate
6. PHC should be sustained by integral, functional and mutually supportivereferral systems leading to the progressive improvement of comprehensive health care for all, and giving priority to those most in need.
7. At local and referral levels, PHC relies on health workers, including physicians, nurses, midwives, auxiliaries and community workers, as well as traditional practitioners who are suitably trained both socially and technically, to work as a health team and to respond to the expressed health needs of the community.

PHC is a universal strategy for achieving health for all globally.

Elements of PHC

In the Alma Ata conference of 1978, eight essential elements of PHC were identified. However, individual countries were given the liberty to add any other elements they felt were relevant to their own country. Kenya has added other elements.

List the eight essential PHC elements defined at the Alma Ata conference.

The PHC elements listed at the Alma Ata Declaration were as follows:

1. Education concerning prevailing health problems and the methods of preventing and controlling them
2. Local disease control
3. Expanded programme of immunisation
4. Maternal and child health care and family planning
5. Essential drug supply
6. Nutrition and adequate food supply
7. Treatment and prevention of common diseases and injuries
8. Safe water supply and good sanitation

Use the acronym 'ELEMENTS' to help you remember these eight elements.

The Kenyan government has added additional PHC elements to the ones identified at the Alma Ata conference These are:

- Mental health
- Dental health
- Community based rehabilitation
- Malaria control
- STI and HIV/AIDS prevention and control

You will now look at each element and what it entails.

Health Education

Health education is education that is intended to have a positive impact on health. It is a process of dialogue with community members to find out appropriate responses to health problems, as well as to empower them with the knowledge and insight they need, to understand how their behaviour affects their health.

Health education today has extended its scope beyond disease prevention and control to health promotion. It gives individuals and communities the incentive to promote the conditions that maintain good health.

You can see that health education is an integral part of all health services, all health personnel including yourself have an important role to play in organising appropriate health educational programmes at all levels in the community.

Promotion of Food Supply and Proper Nutrition

Nutritional deficiency states are particularly noticeable among pregnant and lactating mothers, infants and children. This may be due to the prevailing cultural or economic factors in the community.

As a community health nurse, it is your responsibility to take suitable measures to prevent and treat diarrhoea diseases, intestinal parasites and other diseases, which lead to nutritional deficiency states. It is also your responsibility to support health promotional measures such as child spacing, nutrition education, kitchen garden and food hygiene. In coordination with other sectors, you should also encourage community members to grow more foods, prevent post harvest spoilage through construction of simple food stores, and to keep poultry and dairy cattle.

Water Supply and Basic Sanitation

Safe water and sanitation is not available to a major section of our population, yet, it is essential for life. Many water borne diseases which are prevalent in the community can be prevented if communities gain access to safe water and adopt proper refuse and faecal disposal.

So under this element, effort is being made to bring together the different factors from related sectors to survey and identify sources of safe water and carry out proper analysis of the water. At the same time, community health workers should educate community members on how to protect wells and springs from contamination, how to construct latrines, compositing facilities and soakage pits.

Maternal and Child Health and Family Planning

Children make up one-half of the community and their mothers another fifth. On numbers alone, health care for mothers and children forms the greater part of community health. Mothers and children also run a great risk of injury and disease because their lives are concerned with beginnings and growth. MCH/FP services are therefore aimed at promoting the health of mothers and children, by reducing the maternal and child mortality rates, and enabling women of childbearing age to have the desired number of pregnancies and at the right interval. MCH/FP care has the following four main functions:

- Antenatal care / Prenatal care
- Perinatal care
- Postnatal care
- Family planning
- Since 1980, the issue of family planning has gained momentum and highlighted an issue that was formally regarded as unimportant. In response, our government established the National Council for Population and Development to coordinate all population and family planning activities. It also set up the service component of the family planning program within the Ministry of Health. Also, NGOs such as FPAK, CHAK, and the Catholic Secretariat play an important role in both motivation and service provision.
- The practice of family planning is an old African tradition. What is new is the variety of methods which have been introduced to prevent or delay pregnancy.

Immunisation
Kenya has for some time now implemented immunisation activities through the Kenya Expanded Programme on Immunisation (KEPI).
Immunisation is a very effective means of primary prevention against certain endemic and epidemic diseases. Kenya has a long history of immunisation programmes.
Health workers have been trained on how to motivate and encourage mothers to bring their children for immunisation, as well as how to identify suspected cases of immunisable diseases such as, measles, poliomyelitis and neonatal tetanus, using standardised case definition (disease surveillance).

Local Disease Control
There are many endemic diseases in this country, some of which are confined to particular areas. Can you remember what an endemic disease is?

Write down the definition of an 'endemic disease' and give some examples of these in Kenya
An endemic disease is a disease which is present in a community all the time.
Examples of endemic diseases in Kenya include the following:

- Malaria
- Schistosomiasis
- Filariasis
- Hookworm
- Trachoma
- Onchocerciasis

As you can see, these are mainly communicable diseases. You will learn more about them in unit four of this module.

Malaria Control
Each district in Kenya is required to determine malaria endemicity and plan and implement an appropriate control strategy. The other factor to be considered is the objective of control activities.
Four levels of control are possible as described below.

Level 1
The objective is to prevent malaria mortality and hence the control strategy is to make chemotherapy available as close as possible to every family.

Level 2
The objective is to control mortality and morbidity due to malaria. The control strategy here involves chemotherapy as close to each family as possible and chemoprophylaxis with simple anti-mosquito measures.

Level 3
The objective is to control malaria mortality, morbidity and prevalence. This requires chemotherapy and chemoprophylaxis with effective mosquito control.

Level 4
The objective here is to eradicate malaria completely.
Given the economic situation in Kenya, the health infrastructure and the complexity of the logistical demand of the methods of control mentioned above, the first priority of malaria control for you has to be that of mortality and morbidity particularly in areas of unstable malaria.

Treatment and Prevention of Common Diseases and Injuries
Curative care is important in its own right as it provides a powerful mechanism for teaching preventive and promotive care.

List four of the most common conditions in your catchment area.
Check your list against the following:

- Diarrhoea diseases
- Skin diseases
- Worm infestation
- Common accidents requiring first aid; burns; wounds; bites and stings; allergic shock
- Eye conditions
- Acute respiratory infections

You can arrive at an accurate list of the common diseases in your area by reviewing the clinic or health centre records over a period of time.

Supply of Essential Drugs
Essential drugs are basic drugs used to treat minor ailments or conditions at the dispensary and health centre levels.

Kenya has been a pioneer in the establishment of an effective drug kits system which regularly delivers drugs to health units.
Community pharmacies have also been established in remote rural areas to improve access to drugs in the community.
As a community health nurse you have a major responsibility in ensuring that patients have access to essential drugs and know how to manage their drug regimens for optimal effect.

Mental Health
The WHO defined health as 'a state of complete physical, psychological, spiritual and social well-being and not merely absence of disease or infirmity'.
Mental health services should not be viewed in isolation but as an integral part of the other services that are needed to achieve the complete health of individuals, families and communities.
Health workers should therefore:

- Be oriented to look at mental health as part and parcel of PHC
- Promote good mental health practices through health education of the family and community in order to create awareness
- Provide facilities in all health institutions and service delivery points for education, detection, treatment or referral of mental health problems

Dental Health
Dental health is a strategy of care focusing on the promotive and preventive care of teeth and the oral cavity. From your experience you are aware that dental diseases are one of the most widespread diseases in our communities, and yet they are largely preventable. The Ministry of Health has established fully fledged dental care units in all health facilities.

Community Based Rehabilitation
Many developing countries such asKenya included this element in order to give special attention to the management and prevention of disabilities arising from congenital defects, chronic non-communicable diseases such as cancers, and accidental injuries. Rehabilitation services are now being integrated at all levels of health care delivery including at the family and community level.

HIV/AIDS Prevention
The Kenyan government has set out technical and
ethical approaches aimed at meeting the challenges
presented by the HIV/AIDS pandemic. These include:

- Adequate and equitable provision of health
  care to the growing numbers of HIV infected
  people falling sick
- Treatment of other sexual transmitted diseases that increase peoples biological
  vulnerability to HIV infection
- Reduction of women's vulnerability to HIV
  infection by improving their health, education,
  legal status and economic prospects
- A supportive socio-economic environment for HIV/AIDS prevention

The PHC approach emphasises the need to involve individuals, family members, and community members in the prevention and control of HIV/AIDS.
You now know the fundamentals of PHC as well as all the elements adopted by our country. Next you will look at the principles of Primary Health Care.

Principles of PHC

To implement the Primary Health Care elements a number of principles are involved. Although the details vary from country to country each principle must be considered during the implementation of PHC.

Write down the definition of the term 'principle'.
A principle is a rule or basic belief that has a major influence on the way in which something is done. Therefore principles of PHC are rules or guidelines that govern the implementation of PHC activities.
There are five basic principles which govern the implementation of PHC. These are:

- Equity
- Manpower development
- Community participation
- Appropriate technology
- Multi-sectoral approach

Equitable Distribution
Equity is the fair and reasonable distribution of available resources to all individuals and families so that they can meet their fundamental and basic needs. Services should be physically, socially and financially accessible to everyone. People with similar needs should have equal access to similar health services. To ensure equal access, the distribution of resources and coverage of Primary Health Care services should be greatest in those areas with the greatest need.
This principle should be taken into account when deciding on the location of new health facilities, outreach services points, or during introduction of new health programmes, especially those that require payment for services.

Manpower Development
Primary Health Care aims at mobilising the human potential of the entire community by making use of available resources. This principle facilitates the identification and deployment of the necessary health personnel as well as the training and development of new categories of health workers to serve the community. Comprehensive PHC requires health workers to identify solutions that involve the community, as follows:

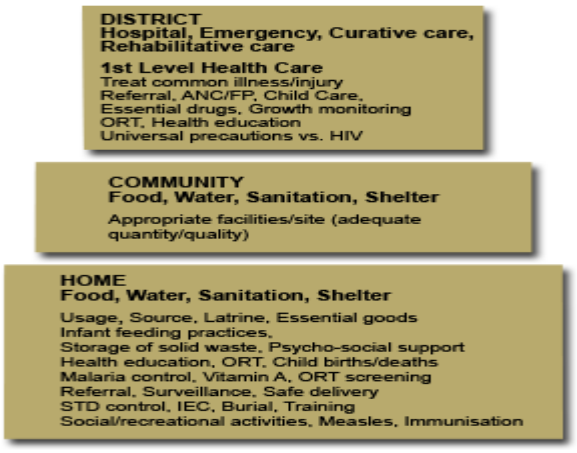
1. It is not enough to provide oral rehydration solution and medical treatment to a sick child with diarrhoea. Maintaining the health of the child also requires providing family education on child care and environmental hygiene, as well as improving access to food.
2. In addition to counselling on breast feeding, growth monitoring, nutrition rehabilitation, and child care, a nutrition program should promote weaning foods that are available locally.
3. PHC services for healthy people (prenatal care, immunisation, health education) should be established as soon as possible through community based health interventions.

Community Participation
As you learnt in unit one of this module, community participation is the process by which individuals, families and communities assume responsibility in promoting their own health and welfare. The PHC strategy underlines the importance of full community participation, especially in health decision making. Community members and health providers need to work together in partnership to seek solutions to the complex health problems facing communities today. In addition to the health sector, families and communities need to get actively involved in taking care of their own health. Communities should participate in the following:

- Creating and preserving a healthy environment
- Maintaining preventive and promotive health activities
- Sharing information about their needs and wants with higher authorities
- Implementing health care priorities and managing clinics and hospitals

Appropriate Technology
What do you think is appropriate technology?
Appropriate technology is the kind of technology that is scientifically or technically sound and adaptable to local needs, and which the community can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It includes issues of costs and affordability of services, type of equipment and their pattern of distribution throughout the community. An increasing complexity in health care methods should be observed upward in the PHC pyramid (see graphic). Care givers should be trained to deliver services using the most appropriate and cost effective methods and equipment for their level of care.

Appropriate technology does not necessarily mean low technology.



Multi-Sectoral or Intersectoral Approach
PHC requires a coordinated effort with other health related sectors whose activities impact on

health. For example, agriculture, water and sanitation, transportation, education, etc. This is necessary to achieve social and economic development of a population. The health sector should lead this effort.
The commitment of all sectors may increase if the purpose for joint action and the role of each sector is made clear to all concerned. Lessons drawn from past experience clearly indicate that the health sector cannot achieve much in isolation. It must work in close collaboration with other sectors in the community in order to succeed in promoting the community's health and self-reliance.

Try to name four sectors which you need to work with in order to improve the health of the community where you work.
Often, the health sector works in collaboration with
the following sectors:

- Agriculture
- Water and sanitation
- Animal husbandry
- Education
- Housing
- Public works
- Transport and communication
- Roads and housing
- Reclamation, development of arid and semi arid wastelands

These sectors need to coordinate their plans and activities in order to contribute towards the health of the community and avoid conflicts or duplication of efforts.

Summary
To summarise, this is what you need to remember about the principles of PHC.

- Every individual has a right to a high quality of life.
- The community must be allowed to take charge of the resources available from both within and outside their environment. This empowers them to be more responsible and accountable for their quality of life.
- There should be equitable distribution of resources among the community members so that they can meet their fundamental and basic needs.

Health Promotion and Prevention - PHC requires a comprehensive approach that is based on the following interventions:

- Promotive - addresses basic causes of ill health at the level of society. Preventive - reduces the incidence of disease by addressing the immediate and underlying causes at the individual level
- Curative - reduces the prevalence of disease by stopping the progression of disease among the sick
- Rehabilitative - reduces the long term effects or complications of a health problem

Comprehensive PHC combines facility based health services (curative and rehabilitative) with multi-sectoral public health interventions (promotive and preventive).
Because this approach is more effective in sustaining the overall wellbeing of a population, it should be supported by the community.

SECTION 2: IMPLEMENTATION OF PHC ELEMENTS

Introduction

In this section, you will start by reviewing how the government implemented health care before adopting the PHC strategy and then look at the major health policies which are currently guiding health development in Kenya.
Lastly you will look at how the PHC elements should be implemented at the four different levels of health care provision in Kenya.

Objectives

By the end of this section you will be able to:

- Give an overview of health services in Kenya before PHC
- Look at the major health policies which are guiding the current health development plan
- Describe how PHC elements have been implemented
  at the following levels of health provision in our health system: Family level; Community level; District;
  Provincial/National level

Health Services in Kenya Before Implementation of PHC

Since Kenya became independent in 1963, the government has all along demonstrated its commitment towards the provision of quality health services for its people. In its various manifestos and development plans, it has identified health as one of the basic needs and an essential precondition for the overall economic development and social progress of this country.

The major milestones achieved by the government in health care development are captured in the following chronology of events.

In 1965 the government introduced free medical treatment in government medical facilities in line with the policy guidelines of the KANU manifesto.

In 1967 the national family planning programme was started.

In 1970 the central government took over the running of health services from local councils.

In 1971 - 1972, a joint GOK/WHO mission formulated the proposal for the improvement of rural health services in the country and established six Rural Health Training Centres (RHTCs). This was done in order to provide adequate health coverage to the rural population.

Try to name at least four rural health demonstration centres in Kenya.

Did you name some of the following centres?

- Karurumo rural training centre
- Chuluaimbo rural training centre
- Mbale rural training centre
- Maragua rural training centre
- Mosoriot rural training centre
- Tiwi rural training centre

In 1984 a community based health care unit was set up within the integrated rural health and family planning project.

Indeed, the concept of community participation in development activities is not new in Kenya. You might remember the introduction of the Harambee (self-help) movement which encouraged people to contribute their resources and participate in the development of healthcare and education. People's efforts were directed towards construction of physical facilities like classrooms and wards with the hope that the government would take over their management.

Similarly, community participation is an important cornerstone of the PHC strategy. The PHC strategy relies on the abounding spirit of self-help among community members and endeavours to empower them to improve their health.

Having seen where health services in Kenya have come from, next you will look at the direction that health care delivery services are taking. This can be accomplished by looking at some of the key health policies that have influenced health development.

Major Health Policies Guiding Current Health Development Plan

The steady development of PHC has necessitated a continuous review of existing policies in the health sector.

Name at least one policy which has guided the development of PHC in Kenya.

Did you name one of the following policies?

- The district focus for rural development strategy
- Increasing coverage and accessibility of health services in rural areas
- Consolidating urban and rural curative, preventive and promotive services
- Intersectoral collaboration

You will now look at each of these policies and their effect on health services development.

The District Focus for Rural Development Strategy

This policy was introduced by the government in July 1985, to decentralise decision making to the grass roots, and turn the district into a centre for the planning and implementation of government projects.

As a result of this strategy, the management capabilities of health personnel at the district level were strengthened, thus reducing many challenges which they experienced before.

Name three problems that were resolved by the introduction of the district focus strategy?

Problems that were resolved by the introduction of the district focus strategy were:

- Facilities management
- Drug supplies
- Transport
- Maintenance of equipment

The role of the District Health Management Teams (DHMT) was strengthened in line with the district focus for rural development strategy.

Increasing Coverage and Accessibility of Health Services in Rural Areas

It was realised that development of the rural health infrastructure had lagged behind because of financial constraints. Yet experience had shown that preventive and promotive health programmes were more cost effective if adequately supported. So the government made a deliberate effort to redirect capital from major capital projects to small scale projects at the district and sub-district levels.

Efforts were also made to support preventive and promotive health programmes, and further investment in the rural health infrastructure, by improving service delivery methods, and increasing the number and quality of trained health manpower.

Consolidating Urban/Rural, Curative, Preventive and Promotive Services

Here emphasis was put on training all health cadres in preventive and promotive methods. Personnel located at hospitals and other static facilities were encouraged to include health education as a routine component of PHC.

Intersectoral Collaboration

Intersectoral collaboration means working together with other sectors whose activities have a direct influence on health. Health is too important to be the responsibility of the health sector alone.

Other sectors whose activities have a direct influence on health include ministries of agriculture, water, housing, culture and social services,

and so on.

The current development plan has set out the following policies to guide health development:

- Increasing emphasis on MCH/FP services in order to reduce morbidity, mortality and fertility rates
- Strengthening Ministry of Health management capabilities with an emphasis on the district level
- Increasing inter-ministerial coordination
- Increasing alternative financing mechanism for health care

These major policy guidelines show the explicit direction in which health care delivery services in Kenya have taken. For instance, there has been a clear shift from the earlier policy which provided free medical services, to one which has introduced cost sharing.

The development of the Community Based Health Care (CBHC) approach as a basic component of PHC is another important milestone. This approach emphasises community participation in environmental health activities, prevention of diseases, establishment of community health funds, and income generating activities.

The introduction of community based health care as a strategy for achieving the goals of PHC was a major policy step in Kenya.

The Alma Ata conference set as its target 'Health for All by the Year 2000'. Since then the Ministry of Health has reviewed and revised its strategies to follow the Primary Health Care guidelines.

Through the implementation of the policies you have just covered, it has organised a number of healthcare activities within communities according to their needs and conditions.

What kind of development activities has the community in your catchment area undertaken?

Some example activities are:

- Water project
- Kitchen gardens
- Construction of schools
- Construction of VIP toilets

While these efforts have led to an improvement in accessibility, availability, affordability and acceptability of health services, there are still considerable constraints and a lot more needs to be done to completely integrate PHC.

The year 2000, which was set as the target for the achievement of health for all, came and passed. Even five years later, health for all has not been achieved. For this target to be met, a number of things need to change that continue to get in the way. These are:

- A change in the attitude of health personnel and the community
- A change in the motivation of both health workers and the community
- Greater intersectoral collaboration
- Political will
- Equitable redistribution of the available resources

- More appropriate and affordable health technology

There are certain rational steps which can be adopted in order to effect the necessary changes at the community and location level.

1. Training and retraining of health personnel, the community and community leaders, using appropriate methodology and exposure of health personnel to the communities.
2. Strengthening intersectoral collaboration at the community level.
3. Good governance and greater commitment of our political leadership to the concepts of Primary Health Care.
4. Intensification of community involvement and existing community initiatives, for health and development through increased awareness.
5. Extension of the existing health services infrastructure, in support of PHC, to remote areas through outreach programmes or creation of new health units.

As these steps are adopted, it is important to ensure that priority is given to the underserved areas. This can be achieved through proper coordination of funding agencies, making effective use of committees at all levels, and improvement of monitoring and evaluation.

Having seen the policies which the government has put in place to guide health development before and after PHC, you will now briefly look at the organisation of health services in Kenya and the functions of the Primary Health Care committee, then you will see how the PHC elements have been integrated in the seven levels of our health care system

Organisation of Health Services in Kenya

Headquarters Level

At headquarter level, the Ministry of Health (MOH) is responsible for setting policy, coordinating activities of government and non-governmental organisations, managing the implementation of policy changes regarding government services, such as user charges, monitoring and evaluating the impact of policy changes.

Provincial Level

At the provincial level, the roles of the Provincial Medical Officer of Health (PMOH) and members of the Provincial Health Management Team (PHMT), are to act as a strong intermediary between the central ministry and districts, and to oversee the implementation of health policy (maintenance of standards of quality, performance, coordination, regulation and control of all health services in the public and private sectors in their areas of jurisdiction).

The role of the PMOH and PHMT with regard to the cost sharing programme, is to issue Authority to Incur Expenditure (AIEs), guide, monitor and supervise the District Medical Officers of Health (DMOHs) and facility managers in the province, in the management of cost sharing activities.

PMOs are ex-officio members of the District Health Management Boards (DHMBs) in their provinces. They receive copies of all minutes of DHMB meetings and all long term plans for the district approved by the board. The boards should inform them of any suspected irregularities in the running of district health services.

District Level

At the district level, the DHMBs oversee all health sector activities, their functions are not limited to the management of cost sharing funds. The government established DHMBs with representatives of consumers and other interested groups, to ensure prudent use of such funds.

The Primary Health Care Committee

This is one of the committees under the District Health Management Team (DHMT). The Primary Health Care committee oversees all Preventive and Primary Health Care (P/PHC) activities in the district or hospital.

The Primary Health Care Committee

This is one of the committees under the District Health Management Team (DHMT). The Primary Health Care committee oversees all Preventive and Primary Health Care (P/PHC) activities in the district or hospital.

Specific responsibilities 1

- Participate with the Primary Health Care (PHC) core team in developing annual PHC plans. This involves a review of services, assessment of needs and setting of priorities for P/PHC activities in the district/hospital.
- Ensure that the DHMT is submitting plans for the expenditure of 25% of cost sharing revenue and is spending the funds as planned.
- Receive reports on preventive, promotive, community based and Primary Health Care activities in the district (GOK and NGO) or hospital.
- Obtain annual reports of health statistics with epidemiological data and preventive measures being taken to address the major problems.
- Promote intersectoral collaboration on issues of sanitation, water, nutrition and health education.
- If applicable, review reports on Bamako Initiative activities.
- Receive periodic reports from the PHC coordinator on activities being carried out in each of the eight components of PHC, and insist on setting targets for expanding coverage of these services, and thereafter, monitor the achievement of these targets.
- Look into urban sanitation problems, for example, inadequate refuse collection, unsafe water points, etc. and promote clean up and safe water supply operations where needed. Also receive complaints and recommend solutions.
- Work with the DHMT/HMT to establish contingency plans for epidemics and provide the necessary support during such epidemics.

Implementation of PHC Elements at Different Levels of Health Care Provision

List the seven levels of health care provision in the health care system.

The seven levels of health care provision are:

1. Family level
2. Community level
3. Locational level
4. Divisional level
5. District level
6. Provincial level
7. National level

In this section, you will cover the activities that are relevant to the implementation of PHC elements at these levels of health care provision

Family Level

In unit one of this module the family was defined as the 'basic unit of social organisation in a community'.

Being the basic unit in a community, the family is therefore the nucleus and main focus of each essential element of PHC.

You will now briefly look at how each element is implemented at the family level.

Education

The family does not only provide its members with food, clothing and shelter, it also gives its members basic education in language, beliefs and customs. Families have a strong influence on what each member does, thus when educating families on how to promote their health and prevent disease it impacts positively on the health of the entire community. Education for the promotion of health and the prevention of disease, is most effective in the home environment because it creates an ideal atmosphere for effective teaching. Demonstrations can be done in the home setting with the active participation of all family members.

Nutrition and Food Supply

Good nutrition is a basic component of the healthy growth and development of each family member. In order to strengthen food and nutrition activities at the family level, you need to teach the members about good food and nutrition practices including appropriate methods of growing and storing food.

Water and Sanitation

You should motivate the family to start the 'three pots' system where applicable. They should also

be trained on how to protect springs and wells; how to construct and use latrines; simple personal hygiene measures such as hand washing and the use of rain roof catchments to harvest water.

Maternal, Child Health and Family Planning
As you well know, certain traditional practices in the family towards pregnancy, labour and puerperium can impact positively or negatively on the health of a mother and child. It is your responsibility to encourage good practices and discourage harmful ones. Families need to be educated on the importance of antenatal care, immunisation and family planning. This can be done through community health workers and opinion leaders such as teachers, religious leaders, social workers. Model families in the community can also be used to reinforce our teachings.

Immunisation
It is the responsibility of families to take children for immunisation. Your role as a health worker is to educate them on how to read the road to health card, the need for immunisation and how it works. With the assistance of TBAs and CHWs, you should also assess and refer children in the homes for immunisation.

Control of Endemic Disease (Malaria)
The main objective is to control mortality particularly in stable malaria areas. The role of the family here is to identify the nearest source of anti malarial treatment; determine the dosage for the treatment of various age groups in the family; manage fever by tepid sponging and know when to take the patient to the nearest health facility; continue feeding the sick person as normally as possible; determine where and when to seek help; recognise and use simple protection methods such as mosquito treated nets; ensure family members at risk of dying from malaria receive chemoprophylaxis; and clear bushes and stagnant water around the dwelling.
If the family implemented these simple measures, they would considerably reduce mortality due to malaria.

Treatment of Common Conditions
List down some of the common conditions that you have come across in your catchment area.
Common conditions are diseases which tend to occur very often in the family. They include:

- Malnutrition
- Anaemia
- Malaria
- Diarrhoeal diseases
- Acute respiratory infection
- Worm infestation
- Schistosomiasis
- Scabies
- Conjunctivitis
- Otitis media

Treatment of Common Conditions
The role of the family here is to recognise the signs and symptoms of these conditions, and seek help from the nearest health facility.
In addition it is their responsibility to ensure the prescribed treatment is taken correctly and to fully support the patient until they fully recover.
They should also understand the causes of these diseases, and take the necessary measures to prevent them.

Mental Health
The role of the family in the implementation of the mental health element is as follows:

- Recognising and accepting that mental health problems are like any other disease
- Seeking help as soon as abnormal behaviour is detected among any of the family members
- Adopting practices that promote good mental health, such as breast feeding and family support in times of crisis
- Avoiding behaviour and practices that contribute to poor mental health such as over permissiveness and rejection of their young ones

Dental Care
The family plays a very important role in the implementation of dental health care element. This is because the family is able to reinforce habits that lead to healthy teeth and gums, such as the use of local tooth sticks; eating of indigenous foods, regular dental checkups and avoiding consumption of large amounts of refined sugar.

Community Based Rehabilitation (CBR)
Family members should be educated and sensitised by CHWs on how they can reduce disability in the community. They should take their children for immunisation to prevent diseases like polio; attend antenatal clinics for

early detection and management of those with complicated pregnancies; participate in the care of members with rehabilitative needs and seek support from organisations whenever necessary.

HIV/AIDS/TB Prevention
Since families have a very strong influence on what each member does, they can achieve a lot in HIV/AIDS/TB prevention by encouraging single sex partners; talking openly to their children about the importance preventing HIV/AIDS; nursing their members with HIV/AIDS at home and referring appropriately for medical care; advocating the use of condoms; accepting family members with HIV/AIDS; and helping them to socialise and interact in the community.

Location and Divisional Level

These two levels have been consolidated and shall be referred to as the community level.

Education
Individuals and communities can protect themselves against diseases and improve their health if they are well informed. Thus the role of the community here is to seek information and education from health care providers on how they can improve their health, and also accept to change negative habits and customs which are harmful to their health.

Nutrition and Food Supply
The activities at this level include: supervision of the CHWs by health committees; identification of high risk individuals and groups; providing relevant information to the District Development Committees (DDCs); and providing food security, promoting better food production, storage and marketing.

Water and Sanitation
The role of the community in the implementation of this element is to work closely with the public health technician to protect and improve sources of clean water. They should also promote the construction and use of VIP latrines in the community, and identify leaders to represent them in village health committees, where issues of water sanitation are discussed.

Maternal, Child Health and Family Planning (MCH/FP)
Since health workers are members of the local communities,
they should train, support and supervise traditional birth attendants, who manage pregnancy and labour in most rural communities.
They should ensure availability of contraceptives and create awareness on the need to fully utilise the MCH/FP services available in the community.

Immunisation
The role of the community in the implementation of this element is to ensure that they take all the children for immunisation.
Health workers at the community level should ensure that there is a constant supply of vaccines and that the cold chain is well maintained.
Immunisation should be provided on a daily basis at all health service delivery points and should be integrated with other MCH/FP services.
Health workers should also train and supervise CHWs and provide outreach and mobile services where there are no static facilities.

Control of Endemic Disease (Malaria)
The role of the dispensary and health centre is to support the malaria control activities at the community level. The type of support given depends on the local situation and the objectives of the malaria control strategy.

What activities are undertaken to control endemic diseases in the community?
The following are the activities undertaken to control endemic diseases at the community level:

- Training supervision and follow up of CHWs and any other field staff
- Ensuring constant supply of drugs and other supplies required by the community
- Keeping records of clinical cases, parasitological cases, treatments and results of treatment given at this level
- Compiling reports from CHWs/TBAs and providing them with feedback
- Passing on information to the next level on frequency of malaria diagnosis and clinical results of treatment

- House alternative drugs for those who need it
- Setting out the criterion for referral and how to deal with emergencies due to malaria

Treatment of Common Conditions

The role of the CHWs should be strengthened so that they can diagnose these conditions and refer or treat them early before complications set in.

The health centre or dispensary should train and monitor CHWs; maintain records and reports of activities as well as forward them to higher levels. They should also ensure that field staff, including shop keepers, are well informed and equipped with necessary supplies such as ORS.

Essential Drugs

At the community level, the health centres are responsible for technical supervision of the use of drugs by CHW. They should train the community on rational use of drugs.

Dental Health

At this level the role of health workers is providing health education to the other community members on good dental health practices. Dispensary and health centre staff together with CHWs may need training on simple procedures for treating dental diseases.

Community Based Rehabilitation (CBR)

At the community level health workers have been trained to cater for CBR services within PHC. Their role here is to mobilise the community to adopt measures that promote good physical health, and accept people with disabilities. They should also train CHWs on how to identify and prevent disabilities; basic techniques of disability rehabilitation at the community level; referral methods and integration techniques of the disabled.

HIV/AIDS, TB/STI Control

At the community level health workers should facilitate health promotion activities; carry out outreach services including immunisation and distribution of condoms; provide the correct treatment using national guidelines; promote early diagnosis and treatment; support home based care givers; and implement the HIV/AIDS and TB package.

District Level

The district focus for rural development strategy was an important policy shift in support of PHC. It provided new grounds for practical collaboration between the government sectors and NGOs based at the district level.

Who is the coordinator of PHC at the district level?

The District Health Management Team (DHMT) coordinates PHC at the district level. The main members of this team were covered in unit one of this module. From time to time this team co-opts other members depending on the need at hand to bring in special expertise.

The District Level Health System

A health system where the central authorities within the Ministry of Health (MOH) are responsible for running the health services for the entire nation, is known as a centralised health system.

Primary Health Care is best implemented in a decentralised system, which transfers the authority and responsibility for planning, managing resources and/or decision making from the central MOH to the district and local levels.

Transferring management functions closer to the local health authorities gives the local communities a louder voice in determining how clinics and hospitals can improve the quality of health care being provided.

Defining the District Level Health System

A district health system is based on Primary Health Care.

It serves a well defined population living within a clearly delineated administrative and geographical area. It includes all relevant health care agencies, in an area (government, private, professional or traditional) which cooperate to create a district system and work together within it.

The district health system contains a variety of inter-related elements that contribute to health in homes, schools, work and communities, and is multi-sectoral in orientation. It includes self-care and care provided through health care workers and facilities, including the hospital, with supportive services (laboratory, logistical, etc.). It needs to be managed by an individual with public health and curative responsibilities in order to combine the elements and institutions

into providing a fully comprehensive range of promotive, preventive, curative and rehabilitative health activities and to monitor progress.

A district health system is based on Primary Health Care.

It serves a well defined population living within a clearly delineated administrative and geographical area. It includes all relevant health care agencies, in an area (government, private, professional or traditional) which cooperate to create a district system and work together within it.

The district health system contains a variety of inter-related elements that contribute to health in homes, schools, work and communities, and is multi-sectoral in orientation. It includes self-care and care provided through health care workers and facilities, including the hospital, with supportive services (laboratory, logistical, etc.). It needs to be managed by an individual with public health and curative responsibilities in order to combine the elements and institutions into providing a fully comprehensive range of promotive, preventive, curative and rehabilitative health activities and to monitor progress.

Expected benefits of a well functioning district health system include:

- A rational and unified health system that meets the basic health needs
- Flexible management of health services, with minimum logistical and administrative delays
- More equitable health services to the entire population
- Improved management of resources
- Coordination and integration of health care with activities of other sectors
- A means for facilitating community participation and accountability to the community
- Better performance through an efficient and motivated workforce

As health centres are often the first contact the community has with the formal health system, and most of the district level health workers are based there, health centres should be equipped to function as the focal point for comprehensive PHC.

Resources should be readily available at this level to maintain adequate and stable levels of staffing and supplies.

Health centres should function in the following ways to reflect their important role:

- The centre for community participation
- The base for preparing community health programs (for example, health education, immunisations, sanitation)
- The focal point of intersectoral teamwork within the district level health system

Key Issues of a District Level Health System

The following key issues should be addressed to ensure a well functioning district health system:

Coordination

The highest authority in the district level health system should be made responsible for organising and coordinating comprehensive PHC services for the entire population. However, coordination depends on adequate logistical financial support and training from the central authorities.

Health Management Teams

In a district level health system, decision making is shared among the central MOH, the district health offices, the health facilities and the community. This can only be achieved through formation of health management teams at every level of health care, for example:

- District health management teams should include the medical superintendent, the senior nursing officer (matron), the hospital secretary, and elected community leaders.
- At the health centre level, the management team may include the clinical officer or the nurse in charge, other staff, and members of the community.
- At the community level, a health committee may include the health auxiliary, the community health worker and the village elders.

Local authorities from other health related sectors, representatives from NGOs and other interested groups may be included in these health management teams. Each team should be given advisory roles and regulatory powers for managing the PHC services (immunisation, maternal health/prenatal care, water and

sanitation, treatment of tuberculosis/leprosy, clinical services).

Community Participation

Community participation may be interpreted in various ways. It may range from district authorities informing community leaders about what the health sector has planned, to community leaders being actively involved in making decisions (for example, determining health priorities or strategies).
The level of participation may greatly depend on the community leaders in local health committees, how they were selected, their capacity to mobilise community action and to demand accountability and the amount of social and political support they can rally. The community should be encouraged to join forces with other sectors, organisations and groups when planning comprehensive PHC programs.

Resources for PHC
Implementing PHC requires resources to be readily available, particularly at the health centre level.
Adequate and stable levels of staffing and essential supplies need to be maintained. In addition, district health authorities should encourage all levels to make maximum use of resources available locally.
Sometimes these resources are not available because of logistical, financial or managerial problems. In such situations, appeals for funding may be sent to donors that are interested in strengthening the district health system infrastructure. Otherwise, local NGOs and existing community groups may be supported to extend services to outlying areas.

Health Information

Indicators for monitoring the PHC program should be defined for all essential PHC services. Information from monitoring these indicators can be used for making decisions and setting policy.

Health Education
At this level the DHMT is in charge. Their job is to coordinate and integrate the various health education programmes in the district as well as produce and distribute simple learning materials to health facilities at the community level.

Nutrition and Food Supply
The role of the DHMT is to ensure food security for the district, establish an early warning system and analyse district nutrition surveillance data.

Water and Sanitation
The DHMT works closely with the District Development Committee (DDC) to evaluate coverage of safe water supply. The DHMT also organises training for public health technicians in water systems, maintenance and latrine construction; procures the necessary materials and ensures coordination of water and sanitation activities with other sectors and NGOs.

Maternal and Child Health and Family Planning
The role of the DHMT in the implementation of this element is mainly training and continuing education of health workers. They also monitor and evaluate MCH/FP activities in the district and share their findings at the DDC meeting. The DDC also plays an important role through its sub committee on family planning and population. The DDC selects priority areas and allocates resources to ensure adequate coverage. It also vets and clears all PHC activity sites within the district.

Immunisation
The DHMT is responsible for the distribution of supplies, evaluation of district immunisation coverage, and assisting the community level to maintain and repair their cold chain equipment.

Control of Endemic Diseases (especially Malaria)
The role of the district level is to keep records and recognise outbreaks of endemic diseases and take the appropriate action. They should also provide adequate and appropriate malaria diagnostic and management referral backup, as well as coordinate tests which measure the sensitivity of malaria parasites to the drugs being used.

Treatment of Common Conditions
The DHMT is responsible for the monitoring and training of health workers in the field; recognising outbreaks and epidemics and taking appropriate action; production and upgrading of operational manuals for use in the communities; distribution of supplies and the management of referrals.

Essential Drugs
The district level ensures delivery of drug kits to all health units and is responsible for continuing education and monitoring.

Mental Health
It is the responsibility of the district level to ensure that the mental health policy is implemented in the district. In addition, they provide training and continuing education of health workers in mental health; provide transport for mobile community based mental health activities; maintain a register of mental health activities at inpatient and outpatient levels and regularly evaluate mental health activities in the district.

Dental Health
It is a government policy to have a dental unit and qualified dentist in every district hospital. Therefore the district level acts as a major referral centre for the management of dental conditions beyond the scope of the community health facilities. The district level also refers dental patients to the provincial hospital where better equipment for dental x-ray and laboratory services for dentures are found.

Community Based Rehabilitation
The responsibility of the district level is to integrate community based rehabilitation services with other health services in the district.

Provincial /National Level

The provincial/national level is the highest level in the hierarchy of PHC implementation. The responsibility here is shared between the provincial teams and national programme managers. This is where policies are translated into strategies for implementation in the other levels. It is also where the major referral hospitals are found.
As such, the activities that they undertake in the implementation of each PHC element tend to be similar. To avoid repetition, they will be listed together, instead of grouping them under each element.
Roles
The role of the provincial/national level in the implementation of PHC elements includes the following:

- Provision of training and continuing education programmes for all health personnel
- Development of mass media, using materials and language relevant to specific provinces and districts
- Preparation of health education material, (posters
  and pamphlets)
- Formulation of policy guidelines on food and nutrition, immunisation, family planning and the management and control of diseases
- Collaboration with other relevant ministries and NGOs
- Monitoring and evaluation of activities at the district level
- National and provincial disease surveillance and monitoring of drug resistance
- Participation in planning national immunisation activities
- Provision of logistical support (financial, transport, material, and manpower)
  - Ensuring a steady supply of contraceptives, essential drugs, and other supplies
  - Coordination of donor assistance and technical expertise
  - Making provision for renovations and modernisation of hospitals as referral and teaching hospitals as well as introduction of psychiatric and dental units in provincial and district levels
  - Implementing strategies for promotion and propagation of good mental health practices
  - Ensuring implementation of HIV/AIDS policies, creating awareness and undertaking advocacy in respective sectors

Responsibilities for P/PHC Planning
Responsibilities for planning, approval and implementation of expenditures of the 25% P/PHC funds are as follows:

- PHC core team prepares annual plan and quarterly AIE requests for use of cost sharing revenue on P/PHC, in consultation with all relevant district health staff, including the family planning coordinator, AIDS coordinator, KEPI coordinator and others
- DHMT confirms cost sharing annual P/PHC plan and prepares quarterly AIE requests

- DHMB reviews and approves (or returns to DHMT for revision) annual plan and AIE requests
- District accountant certifies availability of uncommitted funds in bank
- PMO issues AIEs on behalf of the accounting officer in accordance with current cost sharing expenditure rules

The specific functions of the DHMB on 25% of cost sharing revenue are:

- Providing public education on P/PHC
- Reviewing, advising on and endorsing district annual cost sharing plan and budget for P/PHC
- Reviewing, advising on and endorsing district AIE requests on a quarterly basis
- Reviewing and commenting on the quarterly report of P/PHC activities and expenditures prepared by the P/PHC coordinator (P/PHC integrated planning and activity report)

The last function is particularly important. The quarterly P/PHC integrated planning and activity report gives the DHMB a concise picture of activities planned, achievements made, funding sources (including GOK inputs and donor/NGO contributions), expenditures planned, expenditures made and reasons for any differences.

Steps for P/PHC Priority Setting and Budgeting

How can a district organise and use the diverse information required to set priorities among such widely different activities as AIDS prevention, provision of clean water, family planning services,
immunisation, and control of high impact diseases
such as malaria, diarrhoea and Acute Respiratory
Infections (ARI)?
How can districts plan to achieve the greatest health
impact with the available resources?
To assist in making such decisions, the ministry has developed guidelines on district P/PHC priority setting (22 June, 1994). The district planning and budget process are tools to assist DHMTs and DHMBs to identify the major P/PHC problems in the district, set P/PHC programme priorities and prepare district P/PHC plans.
The intent of the Ministry is to allow the DHMTs, DHMBs and District P/PHC Core Teams maximum flexibility in the use of cost sharing revenue, subject only to the constraints and accountability requirements of the government.
The steps in the district P/PHC priority setting process are listed below.

Provincial/National Level

Prepare the District Health Profile

The district medical records/Health Management Information System (HMIS) office prepares a District Health Profile (DHP) to summarise all key health indicators.
The district HMIS office should always be able to prepare the DHP from information routinely available from the HMIS reporting system, the District Health Management Information System (DHMIS), KEPI, family planning reports, district statistics office, district population officer and other local sources.

Identify the Major Health Problems

From the DHP it should be possible to identify the major health problems in the district.
For instance, is maternal mortality unusually high? Is measles coverage below the national target? Is family planning coverage low in particular divisions? Is the incidence of malaria high in other divisions? Is the HIV positivity in antenatal clinics increasing significantly?

Choose Cost Effective PHC Interventions

For each major health problem, there are several possible P/PHC activities.
Malaria control may include distribution of impregnated bed nets, chemical spraying, improved diagnostic services, better drug supply, and so on.
Choices must be made based on the most cost effective measures, that is which measures give the best value for money?

Set One Year Targets

For each major health problem, a one year target is set.

For example, if measles immunisation coverage is only 50%, the one year target might be to increase it to 60%.

Prepare the District PHC Plan

After the major problems have been identified, interventions have been selected and targets have been set, the P/PHC core team prepares the district P/PHC plan.

This plan should take the form of the P/PHC integrated planning and activity report described in the facility improvement fund supervision manual.

Agree on Cost Saving Measures and Prepare a Budget

Limited district funds for P/PHC can be stretched to have a greater impact through two main cost saving measures: community participation and cost recovery.

Community participation can come in the form of community contributions of labour, locally available materials, or other in kind donations for activities such as TBA training, spring protection, VIP latrines, and malaria control.

Cost recovery usually means user charges for such things as bed nets, laboratory tests and the treatment fee charged for drugs and other treatments provided at health centres and hospitals. Once P/PHC activities and cost saving measures have been agreed, a budget should be prepared.

Finalise Plan and Obtain Approvals

The district P/PHC plan and budget should first be approved by the district P/PHC core team, then the DMOH and DHMT and finally the DHMB.

Once the plan has been thoroughly discussed and approved by the DHMB, it is forwarded to the PMO who issues the AIE.

Monitor Implementation of PHC Plans

Finally, the DHMT and DHMB are responsible for monitoring the implementation of P/PHC activities, to ensure that funds are spent according to the plans, and that the community is benefiting as intended.

This means reviewing progress on the plans and submitting a quarterly P/PHC integrated planning and activity report, which should list the achievements for each planned activity, the funding source, and the actual expenditure.

Choosing Among P/PHC Programmes

If the district P/PHC core team is active the demand for P/PHC funds will inevitably outstretch the funds available. How can the DHMB decide which proposals to approve? There are at least five important questions that the DHMB should ask:

How important is the problem?

Based on the District Health Profile, the problem being addressed should be a major one for the district

Are other funds available?

Check whether funds have been allocated, and whether donors are active in the area.

Is the programme cost effective?

Assess the relative cost effectiveness for common P/PHC interventions.

Are cost sharing measures being taken?

Ways should be sought to reduce costs by encouraging greater community participation or through cost recovery initiatives.

Are non-core activities taking a larger share of the available resources?

Care should be taken to limit the percentage of funds being applied to non-core activities such as purchase of non-essential motor vehicles, decoration of offices, holding of numerous seminars and meetings, etc.

Primary Health Care in Relief Programs

Goal of PHC in Emergencies

Primary health care in emergency relief programs aims to do the following:

- Reduce morbidity and mortality rates of the displaced population to regional norms
- Build on existing knowledge and skills of the displaced community to improve overall health
- Link emergency relief to rehabilitation, reconstruction and development by building the capacity of the affected population. This will make it possible to sustain resources.

Lessons in PHC Planning

Planning and implementing PHC into reality in relief programs can be a slow and challenging process. Reasons for this include centralised decision making, administrative delays, lack of supervision and insecure professional health workers. The following lessons have been learned over the years about how a PHC program should be planned:

1. PHC can be adapted to all types of situations, including complex

emergencies, provided the long term goals are clear.
2. Factors that may influence planning PHC in emergencies include the political support of the host country, the historical experience of the health care system, the capability of the affected community and the presence of NGOs and donors.
3. Decentralised planning helps to make relief programs more relevant to the needs of the displaced population, rather than responding to the wants of the leadership.
4. When setting priorities, encourage active support and communication with the displaced community. This will lead to a consensus. The methods used will depend on the existing political structure.

Establishing an Emergency PHC Program

The type of emergency health services set up depends on several factors, including:

- The health system of the host country
- The available resources
- The context of the disaster
- The health needs of the affected population

Providing hospital based care alone is appropriate only where a displaced population is concentrated within a limited space and the facility is accessible to all (located near a road or at the centre of the camp). Setting up a field hospital is only justified when access to a referral hospital for surgical and obstetric emergencies is difficult or delayed.

To ensure a more cost effective and sustainable program, relief agencies should establish an emergency PHC program within the framework of a district level health system. This program should be:

- Based on the policies, standards and treatment protocols of the host country and integrated within the national health system
- Functioning in a decentralised manner that reflects the community's identified health needs and priorities
- Comprehensive, involving all components of the health and other health related sectors
- Having clearly defined decision making authority and responsibility for each level
- Balanced in terms of the distribution of resources between curative, preventive, and promotive health programs
- Sharing health information and promoting cooperation between all levels of the health system and with other sectors and the community

Relief agencies should aim at strengthening the existing public health infrastructure (basic health facilities, community health network, the local referral system and water supply, disease control, etc.) and at limiting dependence on external resources.

To establish emergency PHC services, first set up the health centre to function as the focal point for all PHC services in the area and establish a network of CHWs to extend services into the community.

Community participation and inter-sectoral teamwork should be promoted from the beginning. Peripheral health units or dispensaries may be set up later if necessary.

All levels of the PHC system, from the home and community level to the district hospital, should be provided with essential resources (for example, staff, equipment, drugs) and logistical support. This will ensure PHC services are equitable and increase access to care. The map on the next page shows the health centre functioning as a focal point of the district level health system.

Emergency PHC services should be coordinated within a functioning referral system so that the lowest skilled workers with minimum training provide the appropriate care at lower levels of the PHC system.

At the same time, these workers must screen for conditions that require referral to higher levels of the system for care by more skilled PHC workers. Supervision should be arranged for all levels, carried by supervisors from the next higher level of the health system. For example:

- One auxiliary nurse/midwife based at a peripheral maternity unit may supervise

ten traditional birth attendants within the community
- A nurse/midwife at the health centre can supervise the auxiliaries at peripheral health units
- Senior health workers based at the first referral hospital may supervise health centre staff

This approach to supervision will ensure that a larger number of people receive quality health care more efficiently than when all patients are required to see only the most highly trained health workers.
Each level of health care should also form a health committee in order to be accountable to the communities they serve. In addition, training community health worker teams to report their findings to different levels of referral system, can greatly promote the effectiveness of PHC services at the peripheral health units.

Division of Responsibilities
Implementing PHC for emergency situations requires the community and other sectors to be involved in decision making, and on the job training and supportive supervision to be organised for all levels of the emergency PHC system. A unified approach for making referrals to other sectors or levels within the PHC system can be developed in the following way:
- All field workers understand the PHC system, their responsibilities, functions of neighbouring levels, and the procedures for cooperation
- Each sector sets its own targets for services in terms of quality and coverage to make the system more effective
- Collaboration within the referral system is promoted to maximise the use of resources and labour and to provide the appropriate level of care

Specific responsibilities for each level.

Central Level

For PHC to be effective, the central Ministry of Health must be committed to its role of coordinating the emergency health system, mobilising resources and encouraging district-level decision-making. The main functions at this level should include the following:
- Making policies on emergency PHC operations and drawing formal agreements or memoranda with relief organisations and other providers
- Regulatory authority for monitoring the level and quality of emergency PHC services and supplies
- Promote inter-sectoral cooperation and inter-agency collaboration within the defined geographical area
- Restrict relief organisations from setting up emergency PHC programs without considering the overall health needs of the affected community, in order to avoid duplication of services
- Give formal support in the training of emergency PHC service providers

District Level

The function of the district level should include:
- Coordinating health services in all PHC facilities in the district (including the referral hospital), based on the local budget and available resources
- Encouraging all sectors to work well together
- Initiating dialogue in the community and promoting active community participation in planning the district level health system
- Ensuring that community health workers have enough support and supervision
- Collecting, compiling, and regularly forwarding health information to the central government

If the administrative capacity of the district level health authorities is weak, relief organisations may strengthen it by providing on the job training in PHC principles, district level management, information systems, supervision and health related support. Training should target all senior managers from the district health office, the implementing agency and other health related sectors who need to broaden their skills.

Relief Program Level

Every relief sector (for example, food and nutrition, water and sanitation, basic health care, etc.) should organise on the job training for its staff in the following:
- Comprehensive PHC using problem solving techniques that emphasise integrating preventive and promotive health interventions with the hospital

based curative and rehabilitative care.
- Developing and reinforcing standard ways of delivering services in order to improve the quality of the service. Standard methods should be adapted to the local situation and regularly reviewed.
- The planning process, so all staff members will understand the program goals and objectives, their roles and duties, and the available resources.

Relief Worker Level

In any emergency operation field workers are recruited in order to implement the PHC program, however, they must change from being the major 'providers' of PHC services to becoming 'enablers'. Many field workers may be unwilling to take over new responsibilities since they, like many health workers, are only trained to deliver services to the beneficiaries rather than to make decisions about the program. Therefore, field workers need training in the following:

- How to increase the community's awareness of the association between poor health and poor living conditions or unhealthy behaviour. This will help strengthen active community support for multi-sectoral actions.
- How to meet regularly with the community to build support for the PHC program and to strengthen community participation.
- How to involve community representatives in determining priorities and in planning, implementing, and monitoring relief programs.

It is important to recruit staff from among the displaced community. Recruiting an adequate number of female CHWs will increase access to individuals and households with the greatest need.

Community Level

A partnership should be forged involving everyone who can improve the wellbeing of the community. This includes social groups, community groups, and traditional practitioners. Getting communities to actively participate in decision making on the emergency PHC program takes time and effort. They need to learn how to identify health priorities and the importance of cooperating and participating in PHC activities to improve their overall health. The most important role of the community is to give regular feedback to the relief agency about the delivery of PHC services in terms of the following:

- Equity in how services are provided
- Access to care
- Relevance between the services offered and the needs of the affected population

In some situations the local power structure may have to be readjusted to ensure satisfactory community participation. This can be achieved by including members from different social groups, such as women, youth, traditional healers and school teachers in the health committees. This will ensure that the interests of the displaced population will be represented.

Components of Primary Health Care Emergency Health Care Priorities

- Promoting good nutrition, provision of food rations and selective feeding programs
- Access to safe water and basic sanitation, access to potable water and waste disposal systems
- Protection against cold (shelter, blanket, clothes)
- Improving maternal and child health care, including family planning
- Maternal and child clinics, later reproductive health programs with family planning
- Immunising against major infectious diseases
- Immunisation against measles, sometimes meningitis
- Preventing and controlling locally endemic diseases
- Control of communicable disease outbreaks including control of vectors and surveillance

- Fostering education on common health problems, their prevention, and control measures
- Health education based on a community health workers program
- Treating common diseases and injuries
- First level health services and a referral system
- Access to essential drugs, provision of essential drugs

Emergency health care is built on the principles of PHC. As resources for health care are always limited, both strategies reflect the basic needs approach toward addressing the priority health problems of a population.
As a result, benefits of both strategies become clear when a large fraction of the total population has access to comprehensive health services on a regular basis (curative, preventive and promotive), and when those most in need are cared for.

SECTION 3: RESPONSIBILITIES OF THE KEY IMPLEMENTERS OF PHC

Introduction

In this section you will learn the responsibilities of the key players in the implementation of PHC.

Objectives

By the end of this section you will be able to:

Describe the responsibilities of the following key players in PHC implementation:

- Community health workers
- The community
- The government
- Other government ministries
- Non-governmental organisations

Key Implementers of PHC

List down the key implementers of PHC in Kenya?

The following are key implementers of PHC in Kenya:

- Community health workers
- The community
- The government
- Non-governmental organisations

You will now look at the responsibilities of each implementer of PHC.

Community Health Workers

Community Health Workers (CHWs), are individuals who are selected by their communities for training on how to deal with village health problems and treat common diseases. Once they are trained they work part-time as volunteers.

How are Community Health Workers selected?

The selection process of CHWs is usually carried out by the community after its members have been fully sensitised on the role and advantages of CHWs, as well as their obligations towards the CHWs. Often, several candidates are selected and interviewed by the trainers and members of the community health committee. Those selected are required to possess the following qualities:

- Be a permanent resident in the community

- Be a mature responsible individual
- Be acceptable and respected by the whole community
- Be self supporting and ready to volunteer
- Be able to relate to others and a good communicator
- Be physically fit
- Be of a gender acceptable to the local culture for the kind of health activities to be undertaken
- Be intelligent with education/literacy that suits the community
- Be ready to learn
- Be of an age suitable for training and for continued work in the community

Roles

- A motivator through education and communication
- An example and model of good health behaviour
- A link with the health system and other sectors
- A technician with certain skills of community importance e.g. latrine construction or basic treatment of common ailments
- An observer and recorder who is capable of thinking, reacting and assessing progress
- An organiser and mobiliser for community activities
- A leader and manager
- A person who is receptive to new ideasso as to form a channel through which new health information can reach the community
- An advisor and a counsellor

Often the people who are selected as CHWs command some respect within their communities. They include traditional birth attendants, traditional healers, or leaders of women groups.

Often the people who are selected as CHWs command some respect within their communities. They include traditional birth attendants, traditional healers, or leaders of women groups.
Supervision is particularly crucial in PHC because many of the workers are volunteers. The CHWs are supervised by the community through leaders of village health committees. They are also supervised by health workers from the nearest health facility to make sure they are doing the right thing. Community participation in the supervision of CHWs is one of the key determinants of success for PHC activities. It is well documented that regular supportive and frequent supervisory visits are essential for effective PHC activities.

ways in which supervision is carried out.

Motivation

This is achieved by showing appreciation, giving rewards, and providing more education to the CHWs.

Support

The CHWs are supported by providing them with the necessary equipment and supplies as well as technical back up.

Recognition

This is done by establishing the credibility of the CHW in the eyes of the community.

Planning

Helping them to plan their objectives and logistics.

Problem Solving

Assisting the CHWs to solve the problems they encounter in the community.

Training

On going education and skill development for the CHW.

Performance Measurements

This is the only 'controlling' activity. It includes collection of basic performance measurements and evaluating them against laid down objectives.

Area Covered

The area covered by Community Health Workers is determined by the following factors:

- Primary health care workers
- The population of community
- The government
- Non-governmental organisations

Apart from the geographical coverage, the number of families served by each CHW also matters.
The standard number of families should range between 25 and 125.
You now understand the role of CHWs in the implementation of PHC. Next we shall look at the responsibilities of the community.

The Community

You already know, the community is the centre of focus in the implementation of primary health care. Therefore, its responsibilities include the following:

- To recognise priority problems relating to health
- Decide on what needs to be done to overcome the problems
- Decide on what the community itself can do to solve the problems
- To organise and implement whatever they themselves can do either on their own or with the support of governmental or non-governmental agencies
- To monitor and evaluate their activities as necessary

The community meets these responsibilities through the following activities:

- Community participation
- Community awareness
- Community involvement

Community Participation

Community participation is defined as the process by which a community mobilises its resources, initiates and takes responsibility for its own development activities, and shares in decision making and implementation of all other development programmes. The expected outcome of community participation is the overall improvement of the community's health status.

The emphasis on community participation represents an enormous shift from former healthcare approaches, which viewed the community as passive recipients of services planned and provided by others.

Community Awareness

The community is made aware of its problems and the available resources, such as, manpower, money, materials, ideas and time. Community awareness can be achieved through participation and involvement of the community in community diagnosis (self diagnosis), and through exposure of the community to another with successful development programmes and by creating demand. Creating awareness is done through meetings, various groups and development committees.
At the division level, this is done through barazas or small groups, community elders, TBAs, churches, and women groups. In addition, health workers brief the Division Development Committee who in turn involve NGOs and the local Member of Parliament.
At location level, PHC awareness is created by the Location Development Committee, NGO's, politicians, and opinion leaders. This can be done through barazas, mobile clinics, church gatherings, and women groups.

Community Involvement

Community involvement entails active and willing participation of the community in planning, management and evaluation of programmes which contribute to their well being. It can lead to the creation of partnership between the establishment (government), other development agencies and the community. It also contributes to the attainment of community responsibility and accountability over all development programmes. Participation and involvement leads to development of self reliance and helps a community to develop social control over its own infrastructure. The level at which any community participates in its own development process varies from place to place. A number of factors could influence the degree of community involvement. These are:

- A favourable political atmosphere
- The educational status of the community (literacy may influence the speed at which full participation and involvement is achieved)
- The community infrastructure (such as the communication network)
- Economic factors

- The level of intersectoral coordination at the community level

The community should be involved in the following areas of PHC implementation:

Setting of Priorities

Through self diagnosis, a community can identify its priorities and identify the methods to solve them.

Supervision

The community can play an important role in the supervision of CHWs through the local health committees.

Income Generating Projects

The community can engage in income generating projects, in order to raise funds to initiate projects.

Health Services

This is only practical in the following areas where the community can be involved, Liaising with health workers to help in problem solving. Helping to improve environmental sanitation and water supply for the health unit and visiting the hospital to assess what assistance they can provide, helping with the construction of shelter for the patient's waiting bay.

Development Committees

List down the committees found in the community where you serve.

The following are common committees found in the community:

- Village health committee
- Sub-location development committee
- Location development committee
- Divisional development committee
- District development committee

Development committees found at grassroots level such as village development committee are usually concerned with planning, financing, implementing and evaluating projects. They are evidence of community participation in PHC.

The Government

The political and economic stability of the government has significantly contributed to the successful development of PHC in Kenya. It has provided an enabling environment for re-orientation and change towards greater community involvement and self reliance in health and health related matters.

As you learned in section two of this unit, the Kenyan government has also continuously reviewed and revised its strategies in order to integrate the PHC strategy in our health care system. Existing policies have been reviewed and new ones added in order to guide health development in this country.

In keeping with the government broad health policies, the following objectives have guided the allocation of resources and programme development during the years:

1. Strengthening in real terms the elements of PHC and their implementation
2. Encouraging widespread community participation and the mutual social responsibility of all Kenyans in health and development through PHC
3. Increasing provision of preventive and promotive services and improving methods of early detection and treatment of communicable and vector borne diseases with an emphasis on high risk groups
4. Increasing the number of health workers trained in preventive and promotive health methods (such as, environmental, nutrition, maternal child health and family planning, communicable and vector borne disease control etc.
5. Pursuing an intersectoral and multidisciplinary approach to health care at all levels with particular emphasis on increasing inter-ministerial coordination in water, sanitation, education and nutrition activities
6. Improving manpower development policies in order to increase the number of skilled manpower in hospitals, health centres and dispensaries
7. Designing development projects which favour construction of smaller but more cost effective facilities aimed at increasing coverage and accessibility of health services, i.e. health centres and dispensaries
8. Selectively increasing the number of district and sub-district hospitals
9. Increasing basic and post-basic opportunities for all health workers

10. Strengthening the overall management (planning, implementation and evaluation) capability of the Ministry of Health in the provinces and districts
11. Developing and strengthening logistics and the drug supply system
12. Improving and consolidating various components of the national health information system (including data gathering, processing, analysis reporting and dissemination methods)
13. Improving the facilities, management of out patient services and the quality of care for in-patient services
14. Standardising treatment and operational procedures in hospitals, health centres and dispensaries
15. Consolidating existing facilities with an emphasis on maintenance and rehabilitation

List the seven levels of our health care system.

The seven levels of our health care system are:

- Family level
- Community level
- Location level
- Divisional level
- District level
- Provincial level
- National level

Responsibilities of Government at National Level

The responsibilities of the government at the national level are to:

- Ensure a consistent policy and strategy base for Primary Health Care (PHC) activities throughout the country
- Recommend activities that should be undertaken to overcome these problems
- Avail resources to address these problems from other sectors, NGOs, and international sources
- Ensure collaboration among the different government sectors in planning activities that have a bearing on health. The health sector must come out of its relative isolation and collaborate with other sectors. Health goals and criteria need to be incorporated into policies and programmes of other sectors
- Ensure the co-ordination of inputs from both bilateral and multilateral sources in accordance with the national plan for PHC development
- The health sector needs to assist other sectors in monitoring and evaluating the health impact of development projects. This way, negative health effects are anticipated and countered
- High priority should be given in development policies and plans to the special needs of vulnerable population groups. Such groups are at greatest risk of ill health. The health sector needs to identify the vulnerable groups and the conditions of risk in which they live
  A primary health care unit was established in the office of the Director of Medical Services (DMS). The unit has a full-time coordinator with a team of professionals and support staff.
- Provide overall coordination of PHC activities in the country
- Review and evaluate PHC activities with a view to identify areas in need of strengthening
- Provide technical and financial support for PHC activities
- Promote intersectoral collaboration in PHC at all levels
- Establish and maintain relevant guidelines for implementation of PHC
- Establish training guidelines in collaboration with relevant institutions and NGOs
- Liaise with WHO, UNICEF and other agencies on matters relating to PHC
- Maintain a data base on PHC development and provide quarterly and annual reports of progress

The various heads of departments in the Ministry of Health have been given specific responsibilities in the implementation of PHC elements. They meet regularly under the chairmanship of the Director of Medical Services to discuss progress and problems relating to each of the elements.

Provincial Level

The responsibility of the government is to provide technical support in the planning and management of PHC at the district level. The provincial health management team is responsible for all PHC activities.

District Level

At the district level, the government's responsibilities include:

- Identifying the existing health problems in the district
- Identifying what action needs to be taken to reduce these problems
- Identifying the resources available within the community, from other Government sectors and NGOs, to deal with the identified problems
- Preparing plans to use the resources available in a coordinated manner to improve health
- Providing technical support to PHC activities in the community
- Monitoring the implementation of the district plan both in terms of activities carried out by each of the actors in the plan and their effect on the health

The government has set up the District Development Committee (DDC), which is responsible for the planning and coordination of all development work in the district, including PHC activities.
The DDC is usually chaired by the District Commissioner and typically includes representatives from all government ministries and departments in the district plus representatives of NGOs working in the district. It operates through sub-committees charged with advising on various sectoral activities.

What sub-committee of the DDC is responsible for PHC implementation?

District Health Committee is the sub-committee of the DDC responsible for PHC implementation.

District Health Management Committee

This committee's responsibility is to:

- Provide a forum for joint training
- Discuss and plan PHC activities
- Advice DDC on the development and implementation of PHC activities
- Receive technical guidance from the DHMT through the medical officer of health (MOH)

The other district team that is responsible for PHC implementation is the District Health Management Team (DHMT). It was actually established to strengthen the implementation of PHC activities in the district. The DHMT is responsible for the planning and implementation of all health services in the district. It is a member of the DDC and provides technical advice to the DDC on health matters. In order to ensure the full coordination of health services in the district, the DHMT works closely through joint memberships.
It delegates its responsibility of day-to-day management of PHC development activities to the PHC CORE TEAM, which is made up of members of the health sector staff. This team plays an important part in the implementation of PHC in the district, especially in the area of training.

Divisional Level

At the division level, the Government implements PHC activities through the Division Development Committee. This committee usually finds it useful to delegate this responsibility to a PHC coordinating team. The team may be headed by a member of the health team in the division or any of the divisional heads. The main responsibilities of the team are to plan PHC activities such as training; support the community health workers; and maintain contact with village health development committees.
In addition, the team monitors the PHC activities carried out by other sectors in the division and provide information to the Divisional Development Committee.
The Divisional Development Committee is made up of the following people:

- The District Officer
- Divisional heads
- Chiefs
- Political leaders
- Religious leaders
- Self-help group leaders.

Community Level

In keeping with its policy of decentralisation and support for community based health care approaches, the government has assisted communities to set up village health development committee. This committee is selected by the members of the villages according to their own set up. The committee may have a membership of six to twelve members, which is normally drawn from community groups or from people with good organisational skills or a high educational level.

List down some of the responsibilities of the village health development committees.

The main responsibilities of the village health development committee are to:

- Assist with the identification of health problems in the community and setting of priorities
- Assist with the identification of community resources and coordinating them in planned activities aimed at overcoming specific health problems
- Assist the community to select community health workers (CHWs) and to provide administrative supervision of their work
- Provide a channel of communication between the community and the health and development committees at the division level
- Assist with the monitoring of the health of the community
- Initiate and participate in communal income generating activities

Households

The government recognised households as key community units in health care delivery. Efforts were geared towards developing their capacity to recognise ill health in time and treat minor ailments. Under the NHSSP, this was to be achieved by providing households with appropriate information and assisting them in decision making, obtaining and administration of simple, safe and effective medication.

Non-Governmental Organisations

Non-Governmental Organisations (NGOs) have been actively involved in developing Community Based Health Care (CBHC) projects since the mid 1970's.
Although collaboration between the Ministry of Health and NGO's has so far been good, it could be improved even more by creation of joint coordinating committees. Indeed, it was through such joint efforts with assistance from WHO and UNICEF that National Guidelines for the implementation of PHC in Kenya were formulated
Many NGOs have on-going CBHC schemes. Some of the NGOs actively involved in CBHC programmes include the following:

- African Medical and Research Foundation (AMREF)
- Aga Khan Health services
- Christian Health Association of Kenya (CHAK)
- Kenya Red Cross society
- Action Aid - Kenya
- Catholic Relief Services - Kenya
- Family Planning Association of Kenya
- Institute of Cultural Affairs
- National Christian Churches of Kenya (NCCK)
- The Undugu Society
- World Vision

SECTION 4: PHC ACHIEVEMENTS, CHALLENGES AND WAY FORWARD

Introduction

In this section you will look at the achievements made in the implementation of PHC, the challenges faced and the way forward.

Objectives

At the end of this section you will be able to:

- Give an overview of the achievements made in the implementation PHC
- Explain the challenges met during the implementation of PHC
- State the way forward for PHC in Kenya

Achievements of PHC

When Kenya adopted the Alma Ata declaration of 'Health for All' by the year 2000 and beyond, she became committed to the integration of all health programmes necessary to bring everyone to a level of health that would permit them to lead a socially and economically productive life.

It has been observed that it is difficult to attribute all the achievements in the health sector to PHC interventions alone. Indeed, no attempt has been made to directly link PHC with the changes that have been observed, because PHC is considered to be part and parcel of the overall health care systems, and general socio-economic development of this country.

However, there has been a number of notable achievements. For example, the shift in emphasis from curative to preventive programmes has led to a reduction in mortality and morbidity.

Five preventive programmes were introduced through the PHC strategy, these are:

- Kenya Expanded Programme of Immunisation (KEPI)
- Environmental health
- Nutrition
- Maternal child health and family planning
- Control of communicable and vector borne diseases.

PHC has won widespread acceptance among government ministries, NGOs and international agencies. Formal commitment has been made to 'Health for All' (HFA) by most countries, including Kenya.

PHC has had considerable influence in promoting a more equitable distribution of health resources and in the development of new types of health workers in the country. There has been extensive expansion of coverage of several PHC elements.

Epidemiologically, childhood diseases such as poliomyelitis, measles, tetanus and pertussis have decreased owing to the rapid expansion of immunisation coverage. This decrease has contributed significantly to the overall decline in infant and child mortality rates.

PHC has led to encouraging achievements in the global targets for eradication and control of selected communicable diseases.

PHC has made an important contribution to greater social justice and equity by reducing the gap between those who have access to an appropriate level of health care and those who do not.

There are also other features of Primary Health Care which are increasingly being adopted.

Focus on the Community

- Emphasis on health care at the village or community level
- Use of local community workers at the first level of health care, drawn from and supported by the community
- Involvement of the community in the planning and running of their own health services
- Use of traditional methods and resources, e.g. the traditional birth attendant

Hygiene and Prevention of Disease

- Promotion of mother and child health services including immunisation and nutrition
- Environmental and public health given equal stress as curative care
- Emphasis on health education

Planning for Services

- Identification of major health problems and adoption of specific programs that are relevant to the local needs
- Regular evaluation to ensure continual improvement of health programme
- Strategies for improving coverage and for developing low-cost technology e.g.

limited drug formularies, low cost waste, disposal systems, etc.
- Integration of health with other aspects of development e.g. agriculture, education and community development.

Organisation of Services
- Provision of basic health care facilities within walking distance for the majority of the population to improve the utilisation and quality of care
- A hierarchy of levels of health care comprising three key elements: local community; health centre/sub-centre complex; district hospital
- Different levels of district health facilities becoming supportive of each other and of community-based health activities

Training
- Health workers at each level of care trained in preventive and environmental health based on locally assessed needs as well as to diagnose and treat common illnesses, less common diseases not included in their basic training are referred to the next level of care
- Continuing professional development to improve skills at all level of care is becoming mandatory for all health workers in Kenya

Challenges Faced in PHC Implementation

Considerable progress has been made in the implementation of PHC. The Kenyan government has continued to face a number of challenges. Large gaps may be found in the planning and implementation of PHC

major challenges

Morbidity and Mortality

The major causes of morbidity and mortality in Kenya still remains diseases and conditions that can be easily prevented through immunisation, improved personal hygiene and environmental manipulation. For example, it has been documented that 36% of the under five population die before their fifth birthday due to preventable diseases and conditions. Diarrhoea alone accounts for 12.8% of under five deaths in Kenya, while 12.2% are due to malaria.
According to Kenya demographic and health surveys of 2003, one out of every nine children born in Kenya dies before attaining their first birthday, while 40% of infant deaths occur during the first month of life.

Curative Services

Curative services remain an expensive aspect of Kenya's health care delivery accounting for about 70% of health budget. Most of these funds are held up in tertiary and secondary level facilities, which are mainly located in urban areas. This situation has tended to impact negatively on the allocation of resources thereby undermining the principle of equity in health delivery.

Disease Burden

The burden of diseases due to emerging and re-emerging diseases, as well as natural and human disasters. AIDS related illnesses such as pneumonia and TB have a national prevalence of nearly 10% and account for 14.2% of the burden of disease measured in terms of life years lost.

Safe Water and Sanitation

Studies have shown that 55% of Kenyans lack access to safe water and sanitation, a situation that puts the population at risk of contracting diarrhoea and other communicable diseases.
Air pollution, poor waste management and poor food control measures have also been on the increase.

Malaria and Respiratory Diseases

Malaria and respiratory diseases combined account for almost 50% of all reported diagnosis in public health facilities with diarrhoea increasing this to almost 60%.

Guidelines
Despite the seven tier system in health care delivery, there are no clear guidelines on the referral procedures from one level to the other.

Sustainability
Maintenance of the present level of coverage achieved by many PHC programmes, such as KEPI, has remained highly dependent on continued support from donors, thus raising concern about their sustainability.

Integration
Improper translation of PHC as primary level of care (first level health care in the pyramid), which ignores the overall integrated nature of PHC.

Others
- The community may not be willing to take responsibility for the health care system
- Drugs may not be available at lower levels of the PHC system. Therefore, patients will go directly to hospitals
- Prolonged delays in health worker salaries may result in hostile attitudes towards patients
- Lack of supervision and training may result in poor quality of services
- Different sectors may not be used to working together

These challenges have raised a lot of concern not only within the Ministry of Health, but also among other key stakeholders in the health sector. To address these concerns, the Ministry of Health held a series of consultative meetings and workshops to try and reverse the deteriorating health situation in the country. A major outcome of this consultative process was the National Health Sector Strategic Plan (NHSSP).
This plan was developed to address the constraints in the health sector and to adopt a sector wide approach in their resolution. It was in response to the daunting challenge of operationalising the 1994 Health Policy Framework Paper, that the Ministry of Health with her development partners developed the National Health Sector Strategic Plan NHSSP (1999 - 2004), and set up the Health Sector Reform Secretariat to spearhead the reform process.
The NHSSP seeks to implement appropriate structural, financial and organisational reforms within a sector wide approach to resolve the inherent constraints in the health sector. It specifically provides a well articulated vision for health care financing as well as the requisite support systems, and governance structures.
Through the NHSSP, the ministry commits itself to decentralisation by providing increased authority for decision making, resource allocation and management of health care to the district and facility levels. This is in part to allow greater participation of the community in the management of health funds and implementation of the essential clinical and public health package at the lower levels.

In building commitment to the process of change, these guidelines have been developed to support the ongoing decentralisation efforts, aimed at strengthening the implementation of activities at the district level, fostering closer coordination and collaboration amongst the line ministries, donors, organisations and other stakeholders.
The guidelines focus on appropriate health systems and improved coordination necessary for the delivery of efficient and effective health services at the district level.
Emphasis on improvement in district level planning, budgeting and, financial management and control systems. Commitment is made to transfer financial management through the release of block grants.
Enhancing the capacity of the local DHMBs and DHMTs and extending 'guided autonomy' to a few hospitals. In the efforts, the DHMTs and DHMBs would gradually assume responsibilities for running of the facilities under their jurisdiction through a single line grant, effective annual work plans and procurement plans.
Meanwhile, centre support would be restricted to technical, logistic, financial and administrative issues.
Interventions to be given priorities should be based on the available data on the burden of disease, cost effectiveness of the interventions, impacts of the interventions and health outcomes in relation to health expenditure used.
From the national perspective however, the public health and clinical priority package includes: Malaria prevention and treatment, Reproductive Health, HIV/AIDS/TB prevention and management, IMCI and the control and prevention of major environmental health related communicable diseases such as cholera, typhoid, dysentery and food safety.

In the prioritisation, expenditures should favour lower level facilities that have lower per capita costs to enhance efficiency and functioning of the referral system.
If services are not available at the right level of facilities, people delay seeking treatment or get admitted to hospitals for conditions that could have been prevented much earlier.
Underfunding of the rural health facilities that essentially provide PHC, coupled by the impression that the quality of care is better at the higher level hospitals, has led to many patients bypassing the primary facilities in preference for the costly district, provincial and national hospitals.
The coordination of cross-sectoral planning has been the responsibility of the District Development Committee (DDC), with health sector plans produced and submitted to the DDC by the DHMB. The District Local health planning has therefore, no reference to a realistic resource framework without 'budget ceilings' provided by the Ministry of Health. The district plans are rarely taken into consideration in national planning and budgeting, and the central level does not usually provide any feedback to districts. Local planning and self-help efforts do not take into account national policy goals since they are usually concerned with capital development planning and 'projects'. There is thus, little relationship between plans, available funds and actual implementation.
In order to implement the reform agenda, a ministerial reform committee known as the Health Sector Reform Committee was established.
It was charged with the responsibility of implementing the reforms and marketing the respective policies. The committee established guidelines and responsibilities of all the levels of health provision in this country in the marketing and implementation of the reform policies

the roles and responsibilities given to each level in the implementation of these reforms.

MOH Headquarters

The role of the headquarters was restricted to policy formulation and development, strategic planning, setting standards and regulating mechanisms. In addition, it was charged with the responsibility of regulating and coordinating health training, coordinating donor activities, overseeing the implementation of the reform process, and ensuring the equitable allocation of national health resources.

The Provincial Level

The role of this level was strengthened to supervise district projects, implement, enforce and maintain health standards for services and infrastructure. The Provincial Health Management Teams were to be equipped with the necessary tools and management skills and empowered to perform these activities. They were also supposed to assist the districts in developing their respective plans and training activities.

The District Level

At this level the District Health Management Teams complemented by the District Health Management Boards were to play a central role in implementing health reforms at district level. The specific roles of this tier were to include:

- Preparing work plans
- Implementation and maintenance of district plans
- Provision of curative, rehabilitative, preventive and PHC services
- Coordination and supervision of other health providers
- Enforcement of health standards
- Prioritisation of health problems
- Collaboration with other sectors, donor agencies, NGOs and other partners in health and health related activities
- The management of district based HMIS and the implementation of district specific health reforms

Local Institutions

Local institutions such as the Bamako initiative, Village Health Committee, Community Health Workers, Traditional practitioners and Community leaders existed in communities. The government's intention here was to strengthen these structures in order to enhance their participation in health and health related activities at the local level. To this end, local

health campaigns were planned in order to control endemic diseases. In addition, the structures would further be empowered to manage local health initiatives and funds.

Way Forward

The government is committed to improving the country's health status. It has introduced policies and constantly reviewed and revised its strategies in order to implement PHC. However, there are a number of things you can do at your level to improve the implementation of PHC. These are:

- Rational and effective use of resources such as drugs, time, and funds which are allocated to your health facility. One way of ensuring the rational use of drugs is for example, by making the correct clinical diagnosis and prescribing appropriately.
- Continuously updating our knowledge, skills, and attitudes to ensure that we are current in terms of new diseases, treatment regimes, and government policies.
  For example, the management of malaria is continuously changing as the parasites become resistant to drugs. You need to keep updating yourself on this through continuing professional development.
- Advocating for policy change and good governance at all levels.
- Effective disease surveillance and reporting so that measures can be taken in good time.
- Implementing the primary health care elements at your level.

UNIT THREE: ENVIRONMENTAL HEALTH

This unit focuses on the components of environment and their effect on humans, water and sanitation, appropriate methods of handling food, and the effects of housing on health. The final section will focus on how the community nurse should mobilise the community in the control of vectors and pests in their environment. Environmental health is one of the most important aspects of primary prevention of diseases. The community health nurse and all the other health workers have a responsibility to assist their communities to improve their environment.

This unit is composed of five sections:

Section One: Health and the Environment
Section Two: Water and Sanitation
Section Three: Appropriate Methods of Handling Food
Section Four: Housing
Section Five: Control of Vectors and Pests

Unit Objectives

By the end of this unit you will be able to:

- Explain the importance of environment to community health
- Describe water and sanitation in relation to health
- Outline appropriate methods of handling food
- Describe the effects of housing on health
- Mobilise the community in the control of vectors and pests

SECTION 1: HEALTH AND THE ENVIRONMENT

Introduction

Welcome to section one of the Environmental Health unit. Since the environment comprises all things that make up your surroundings, environmental health, therefore, describes the aspects of health related to or emanating from your interaction with the environment.

Objectives

- Define the environment
- Explain the components of the environment
- Describe the effects of environmental factors on health

Environmental Components and their Effect on your Health

The following factors can have an effect on your health:

- Biological environment
- Physical environment
- Socio-cultural environment
- Economic and political components of the environment

Biological Environment

The biological component of the environment is made up of living things, which include plants, people and animals. The adjacent figure shows some examples of biological components.

Plants

Vegetation prevents soil erosion and also protects our water sources. Trees act as windbreakers, provide firewood, charcoal, timber and paper among others. They also influence weather patterns. Flowers are a natural beauty and are often used for decoration. Plants provide vegetables, fruits, tubers and seeds as food.

A number of plants are used as herbal medicine for the treatment of various diseases, for example, the Neem tree locally known as muarobaine, is used for the treatment of malaria, among many other diseases. Garlic is used to treat hypertension. The aloe vera plant is used for prevention of cancer of the stomach and healing of wounds. On the other hand, some plants may adversely affect health. Occasionally, people react to pollen from blooming plants and may develop hay fever or asthma. Ingesting or touching some poisonous plants may have devastating effects.

People

Human beings and their activities can be a big source of infection. For example, overcrowding and slum settlements brought about by urbanisation, can promote the transmission of diseases, especially those diseases that are spread through droplets and contact.

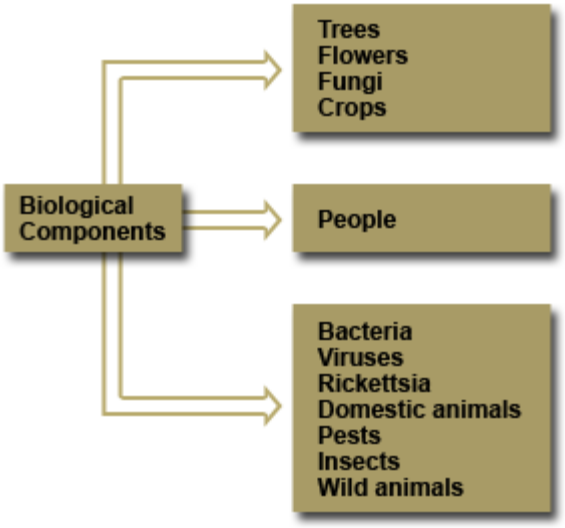
Explosions from quarries produce a lot of dust, which causes respiratory and eye problems. When it rains, these quarries collect water and become breeding sites for mosquitoes and risky places for children.

The felling of trees provides firewood and charcoal but, at the same time, it destroys the water sources. Cultivating along riverbanks may contaminate the water supply through seepage of the fertilizers and pesticides used on the crops. Overgrazing causes soil erosion, destroys vegetation and contaminates water sources.

Animals

Domestic animals such as cattle, sheep, goats and poultry provide meat, milk and eggs for consumption. Some of them supply hides and wool for commercial purposes. They also provide manure, which is used to increase food produce. Wildlife is often a tourist attraction and acts as a source of income for our country. Cats and dogs are kept as pets, but they can also transmit diseases such as cat scratch fever and rabies, respectively.

Other hazards include snakebites, which can be fatal and insect bites, which may act as vectors of various diseases. For example, mosquitoes are vectors of malaria, yellow fever and filariasis. Houseflies are vectors of dysentery and other diarrhoeal diseases. Bacteria, rickettsia and fungi are also part of the biological environment and are disease-causing organisms in man.



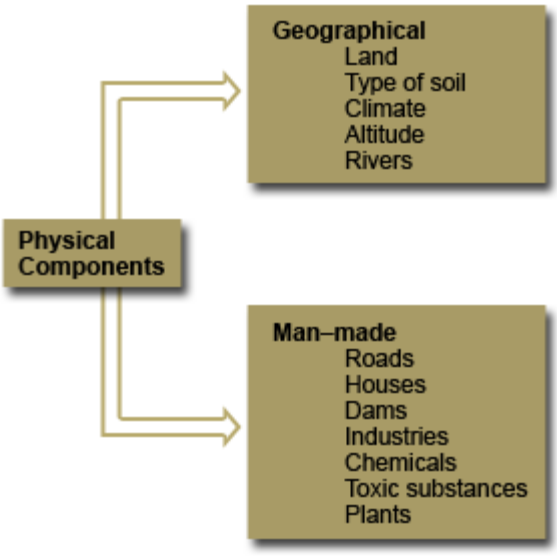
Physical Environment

The physical components of the environment are divided into geographical and man-made components. Land is used for settlements. When the land is fertile and well used, it provides enough food for consumption. On the other hand, when the land is infertile, the food supply will be inadequate, resulting into nutritional problems.

The type of soil, climate and altitude determine the type of crops that can be grown in a specific area. Some crops will do well in a hot climate, others will not.

For example, tea, peas and pyrethrum thrive in cool climates. However, cold climates encourage respiratory diseases and joint problems such as arthritis. In hot climates, most legumes and fruits such as oranges and mangoes do well. Diseases associated with hot climates include malaria.

Snakes are also common in hot areas and their bites can be fatal. Some disease outbreaks occur during the rainy season, for example, cholera, typhoid and malaria. Similarly, during dry seasons there may be a shortage of food leading to malnutrition. Persistent crop failure will lead to food insecurity and famine.



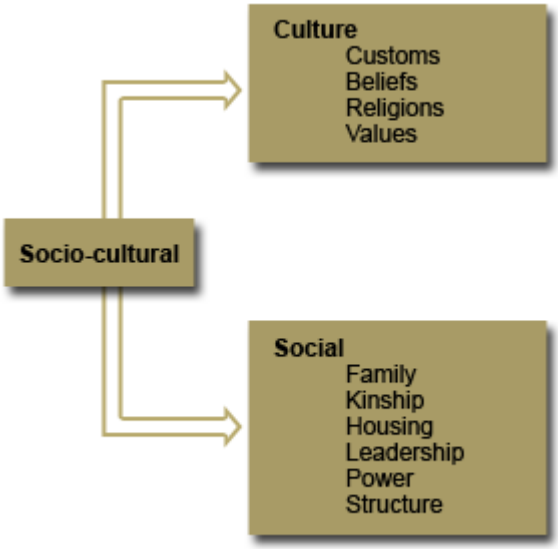
Each type of climate has its own pattern of vegetation and animals to control. Man has to adjust to the animals and the vegetation since they affect health. Additionally, to adjust to the different temperatures man has to use appropriate clothing.

Remember:
Most micro-organisms that cause disease are transmitted through air, water and food.
Therefore, constructing houses too close to a dam or where animals are kept facilitates the transmission of vector borne diseases. Industrial wastes that consist of chemicals and toxic substances, may also pollute the water, air and food.
Moreover, dampness in houses favours the transmission of airborne diseases.
It is your responsibility as a health worker to identify ways of helping the community to improve their environment. You have to be a role model in your homes, health facilities and also in assisting various community development projects.

How would you define pollution? In what ways do natural resources get polluted?
Pollution is the term used to describe the spoiling of natural resources such as air, food and water by harmful substances. Industrial waste such as smoke can pollute the air and water. Other industrial wastes can pollute the soil and vegetation. In the rural areas, where people are involved in agricultural activities, pollution may result from the use of insecticides, pesticides and industrial waste.

Environmental health problems however are usually more prevalent in towns and slums than in rural areas. As a health worker you can make a difference in the community by assisting individuals, families and the community to make their environment healthy.

Socio-Cultural Environment
The figure on your right illustrates some of the socio-cultural factors that may affect health and health practices.



Some of the health issues affected by these factors are food habits and cooking practices. Different communities have different food habits and cooking practices. For example, the Kikuyu community have maize and beans (Githeri) as their staple food whereas the Luo community have a cooked preparation of maize flour (Ugali) as their staple food.

Food taboos also vary from one community to the other. Examples of food taboos include prohibiting pregnant mothers from taking some types of meat, believed to affect the foetus.
Wife inheritance and polygamy practices encouraged by some communities provide an

opportunity for spreading sexually transmitted diseases and HIV/AIDS. Tattoos performed for beautification and circumcision are other practices where the procedures may be carried out using unsafe instruments and can easily transmit diseases like HIV/AIDS among others.

Female genital mutilation can lead to difficult deliveries. Some people discourage breast-feeding practice considering it to be primitive. This denies the child all the benefits of breast-feeding. Other people do not make use of the available prenatal and delivery services. This affects the growth of the baby and the health of the mother.

Customs and beliefs have an effect on human health. Identify those beliefs that you think you need to discuss with the community to change and those to uphold. It is important to listen to the community's reasons for their beliefs and practices. This will facilitate the choice of the health measures and suitable solutions after discussion.

Economic and Political Components of the Environment

These components include work, money and government. The economic factor relates to both rural and urban economies as well as local community organisation. Rural and urban economics will determine to a great extent the quality of environmental health. People can change their environment either positively or negatively. Some of these changes are described as development.

Some development projects may make the environment healthier, while others make it a suitable habitat for diseases. An example is that of irrigation schemes for growing rice, which is a cash crop. This improves the peoples' income, but at the same time, rice fields are breeding sites of mosquitoes and snails, which are vectors of malaria and schistosomiasis respectively.

Other examples of the relation between health and economic status abound. People of low economic status may resort to drinking as a way of relieving their stress. This is usually at the expense of the family budget for basic needs and may lead to health problems. The rich also may suffer from diseases of life style such as obesity, gout, and hypertension among others. The government involves political influences into development policies.

Think of leadership in the catchment area of your health facility. List three examples of health activities that have been affected by leadership at their implementation stage.

From your experience, relate how leadership influences the implementation of health activities. Your answer should include health activities such as home visiting, school health services, outreach services and local development projects. This gives you insight into the role leadership plays in health care delivery services

The government develops policies, which enforce environmental health. It also plays a great part in influencing the implementation of health activities. Political instability causes unrest, insecurity and psychological problems. Management of disease outbreaks may be lacking as health facilities may be destroyed.

You have now understood the influence the economic and political component of the environment can have on health. You need to identify yourself with local community organisations in your area and work in cooperation with the government officials at various levels. This will facilitate the implementation of various health activities successfully.

SECTION 2: WATER AND SANITATION

Introduction

The section is divided into three sub-sections. In the first one, you will look at water, identifying various water related diseases as well as sources of water, water contamination and the purification of water. In the second sub-section you will examine types of waste and finally, in the last sub-section, you will study methods of waste disposal.

Objectives

By the end of this section you will be able to:

- Describe the importance of water in relation to health
- Explain different types of waste
- Describe various methods of waste disposal

Water

Water is essential for life. It is found in every cell in our body and is necessary for most basic functions, like respiration, digestion and other chemical processes. More than 50% of human body weight is made up of water. Water is thus vital to health and survival but it may itself become the source of diseases, therefore, it should be properly treated and made safe for domestic use.

What role does water play in the transmission of the following diseases?

- Scabies
- Cholera
- Schistosomiasis

Role Played by Water on the Transmission of Diseases

Water may contribute to the spread of diseases in several ways. When there is not enough water, and people cannot observe basic personal hygiene, diseases like scabies, non-specific diarrhoeas, dysentery and trachoma spread. Such diseases whose spread is promoted by lack of adequate water are called water-washed (water scarce) diseases. Simply improving the quantity of water can prevent them.

Water can also contribute to the spread of diseases when it carries a specific disease-causing organism. Examples are typhoid, cholera, amoebiasis, hepatitis A, or poliomyelitis. Such diseases caused by contaminated water are called water-borne diseases, and the only way to prevent them is to improve the quality that is, the cleanliness of the water.

Finally, water can contribute to the spread of disease when it is necessary in the life cycle of a disease vector, for example malaria and schitosomomiasis. These diseases are called water-related diseases. Other water related diseases include: onchocerciasis (river blindness) and dracunculosis (guinea worm).

Summary of Water-Associated Diseases

Type of Disease	Cause	Example
Water-washed	Due to lack of adequate water: a) For washing hands, utensils and vegetables. b) For washing face, eyes and body.	1. Dysentery 2. Diarrhoea 1. Skin diseases 2. Eye diseases
Water-borne	Due to water containing disease-causing organisms.	1. Typhoid 2. Cholera 3. Amoebiasis 4. Hepatitis A
Water-related	The vector needs water for its life cycle.	1. Malaria 2. Schistosomiasis 3. Onchocerciasis

Uses of Water

Water is used in various ways. These include:

- Human consumption for body needs
- Animal watering
- Industrial use for manufacturing
- For recreational activities such as swimming
- To produce electricity
- Sustaining of aquatic life, for example, fish for consumption and export
- Household purposes like washing and cooking

Simple improvements at the community level are required to ensure adequate quality and quantity of water.

Sources of Water

Water does not stay in one place for very long - it goes round in a cycle. It evaporates from seas and lakes and falls back to the earth as rain. After rainfall, some of the water evaporates and the rest is drained into streams, rivers, lakes and ponds.

The most important water for a community is the water that is held in the soil, by the roots of the trees in the forest. This is a community's long-term underground water store. This is why it is important for you to educate the community on the need to preserve their forests.

There are four main sources of water namely rain water, surface water, underground water and sea water.

Rain Water

This water is relatively pure and clean. Its state of cleanliness depends on levels of atmospheric pollution and how it is collected. The cleanest natural water available is that which is collected from iron sheets into gutters and led by pipes into clean closed tanks. When the first rainwater falls, the last part of the gutters leading to the tank should be removed for some time to ensure that dirt on the roof does not enter the tank. One disadvantage of this water source is that it is difficult to collect from thatched roofs.
The community health nurse can assist the community members to ensure collection of clean water.

Surface Water

This type of water includes shallow springs and shallow wells, streams, rivers, dams, ponds and lakes.
A spring is a natural issue of underground water. When the rainwater falls on the surface it sinks into the ground until it reaches the impermeable layer of rock, which it cannot go through.
All the water above this layer is called surface water. If it finds a point of issue it is called a shallow spring. If a well is dug into it, it is called a shallow well, despite its depth. The quantity of water yielded by shallow springs or wells varies according to the season. They may dry up during droughts and are liable to contamination by latrines.
A river is a large mass of flowing water. During the rainy season, its waters become turbid, while in the dry season they are clear.
River water has a lot of impurities obtained from human and animal waste, washing, sewage, agricultural waste and industrial waste.
Other sources of water are dams, ponds and lakes. All these sources provide fresh water.

Remember you have fresh water lakes in this country, which includes Lake Victoria, Lake Baringo, Lake Turkana and Lake Naivasha. However, the water from these sources is often unclean and not safe for drinking. It is therefore important to identify suitable ways of rendering it safe.
The quality of water depends on the location of its sources. If the water source is from the forest, hills and valleys, it is clean and suitable for household use with little or no prior treatment. This is because there is no human settlement, which might be a source of potential pollutants, at or around the water source.
On the other hand, streams, rivers and lakes around or within towns and villages are likely to be contaminated by human and animal waste. It is, therefore, important to protect water sources from human settlement or animal grazing.

Sea Water

This water is salty and requires expensive purification processes to make it suitable for drinking. In your country you have several salty lakes, which are Lake Magadi, Lake Bogoria and Lake Elementaita. There are also the salty waters of the Indian Ocean.

Underground Water
The water that gets under the impermeable layer of rock is called underground water. It is the water between two impermeable layers of rock, one above and the other one below. This water finds an outlet through a fissure or crack in the upper layer of the rock. Water from this issue is obtained as a deep spring, a well or a borehole.

Sources of Water Contamination

Water has the ability to absorb substances and gases, for example, oxygen and carbon dioxide as it falls as rain. It also absorbs minerals, for example, different salts from rocks or even dangerous chemicals from industrial wastes.
Collecting surfaces for rainwater may have leaves, insects, bird droppings and animal faeces on them. When water runs over the earth it may become contaminated with human or animal excreta, refuse, fertilizers or industrial wastes.
Excreta and refuse may contaminate shallow wells. Wells may also be contaminated by the use of dirty containers for drawing water or by oil from a pump. Bathing, urinating, defecating in water, washing clothes and animal watering may contaminate rivers, lakes or dams.
Even piped water may become contaminated from leaks in the pipes, especially when they pass near dirty drains or when it is collected in contaminated containers. Water may go bad if it

is uncovered or stored for too long in a pot or cistern. Finally, it is important to remember that water from any source may become contaminated if it is drunk from dirty or communal
drinking vessels.

Remember:

It is easier to prevent water from getting dirty than it is to clean it.

Protection of Water Sources

Water sources are precious and must be kept free from contamination.

Rain Water

The protection of rainwater sources is done by the use of gutters led by pipes into a small waste drain tank and into a clean closed tank. As you have seen earlier, the first rainwater cleans the roof and the last part of the gutter should be disconnected to render the water clean.

You can identify the need to discuss with the community simple methods of water protection during home visits.

Surface Water

To protect surface water, people should not settle around springs, streams and rivers. People and animals should be kept away from water catchments areas, normally in the forest or up the hills.

Springs

- Clear the bush or long grass around the site of the spring.
- Put up a fence around the spring to prevent animals from grazing and children from playing around it.
- Dig a drain about 15 metres from the spring to divert surface water.
- Build a strong retaining wall around the 'eyes' point from which water flows out from underground. This wall holds water from the 'eyes' of the spring.
- Fix the delivery pipe at a height close to the level of the 'eye' but high enough to allow the water containers to stand below the pipe.
- Build steps to the spring as well as a platform on which to place the containers when collecting waters. The area behind the retaining wall should prevent contamination without interfering with the water flow.
- Design an area for washing and for watering the animals.
- Select a caretaker to maintain the protected springs.

With this knowledge, you will be able to work with the public health technician or officer in protecting water sources in the catchment area of your health facility.

Wells

- The site should be selected at least 100 metres from a pit latrine or other likely source of contamination.
- The sides of the well should be built with stones, rocks, or cement culvert.
- The sides above the surrounding ground should be constructed with a sloping water-proof area to avoid dirt from getting into to the well.
- A strong well cover should be put in place.

Remember:

The well should be dug during the dry season to obtain adequate depth, filtration and constant water supply.

The community health nurse and community members should identify practical methods for protecting the water sources in the community. The public health technician or officer can offer technical knowledge on silting of springs and wells.

Purification of Water Sources

Chemicals can be used to purify water sources. Iodine is a disinfecting agent used as 2% tincture. Two drops are sufficient to disinfect one litre of water. Iodine tablets such as Globaline® and Potable Aqua® (trade names) are also used in the sterilisation of small amounts of water as directed by the manufacturer.

After the treatment of water, it is important to store the water safely to prevent recontamination. A safe storage container is a narrow mouthed container that has a lid. The drinking water should not be removed from its

container by dipping a potentially contaminated vessel. Instead, it should be poured out of the container or the container should be fitted with a tap.

The community should be educated on simple and practical ways of protecting their water such as the safe water system.

Safe Water System

The safe water system is a household-based water quality intervention in response to the need for inexpensive, alternative means of water treatment and storage in the short to medium terms. The intervention has three components:

- Water treatment in the home
- Safe storage
- Behaviour change techniques

The main goals of safe water systems are:

- To improve the microbial quality of water in the home by means of sustainable technology
- To reduce morbidity and mortality of diarrhoea diseases related to contaminated water
- To improve hygienic behaviour related to water use

Chlorination

Chlorine is added to water that has been filtered on a large-scale for supply in cities and towns. Chlorination is the final safeguard of the quality of water.

The amount of chlorine added to the water should be proportioned to the volume of flow and to the chlorine demand of water. Chlorine should be properly mixed and there should be a minimum contact period of 30 minutes, for it to be effective against pathogenic organisms in water.

For household use, 1% of chlorine is recommended. This is normally in the form of Jik®, Milton® or Water Guard® which are trade names. Chlorine should be properly mixed and there should be a minimum contact period of 30 minutes.

some of the ways in which you can sterilise water.

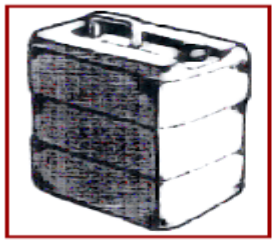
Klorin™/Waterguard™ and Clay Pot

Klorin Waterguard

Clay Pot

Two drops to a litre of water will adequately sterilise the water.

Jerry Cans and Modified Clay Pot



Jerry Can

Modified Clay Pot

Protect purified water by keeping it in suitable water vessels.

Remember:

To treat water using these chemicals read the manufacturer's instructions carefully.

Sanitation

Types of Waste

You are now going to turn your attention to different types of waste. Man produces waste wherever he is and it is necessary to manage this waste properly to prevent diseases.

What are some of the types of waste that you know of?

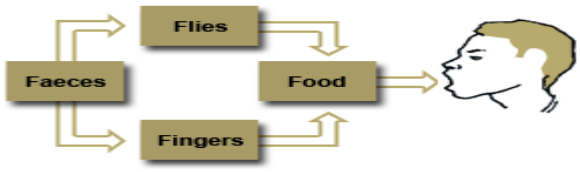
There are two types of waste: solid and liquid. Liquid waste includes excreta and wastewater. Solid waste is also known as refuse.

Liquid Waste

Human excreta are faeces and urine. They are a source of pathogenic organisms.
Excreta are offensive to both sight and smell and can also lead to the contamination of water and foods. Faecal organisms may infect people directly or indirectly through an intermediate host. Human excreta may spread the following diseases:

- Typhoid fever
- Cholera
- Intestinal worms
- Poliomyelitis
- Infective hepatitis A
- Bacillary and amoebic dysentery

Urine carries the infective ova of schistosoma heamatobium while faeces spread the schistosoma mansoni.
Faeces should not be accessible to fingers, feet, flies and food. The fingers and flies transfer the faeces to the food through the faecal-oral route transmission, known as the 4F connection, which is illustrated in the adjacent figure.
It is, therefore, necessary to help people understand the importance of proper excreta disposal by use of simple and cheap facilities.
As a nurse, you should be able to identify possible customs and beliefs, which hinder proper excreta disposal in the community and educate the people accordingly.



The 4 F Connection

Solid Waste

Solid waste or refuse is defined as any unwanted discarded material, the remains, residual or by-products of human activities which are no longer required for further use by the initial producer. This is normally in the process of:

- Preparation
- Manufacture
- Packing
- Other human related activities

If solid waste is not disposed of properly, it may create a number of problems:

- It may produce an offensive smell
- It attracts insects, vectors/pests particularly flies, cockroaches and rats
- Spreads diseases
- It can cause pollution of air, water or food
- It can cause accidents, for example, fires, cuts and falls

There are various sources of solid waste. These include domestic waste, street waste, industrial waste, hospital objectionable waste and garden/agricultural waste. Now look at each of these sources in more detail.

different types of waste.

Domestic Waste

This usually consists of all the garbage that emanates from inside a house, for example, food leftovers, potato and banana peelings, waste paper, worn out clothes, shoes, broken utensils, bottles and tins.

Street Waste

This type of refuse consists of paper, food and commercial refuse in public places such as markets and hotels.
Scrap metals may also be included in this category.

Industrial Waste

This varies with the type of industry. Modern industries produce chemical wastes, which are potentially hazardous to man and other living things. The wastes may be toxic, caustic, acidic or flammable. This means that they need special disposal. If the chemical waste is to be discharged into a stream it should be processed first. If it is solid, it should not be dumped on land as it may eventually seep underground and contaminate water sources.

Hospital Waste

This is the most familiar waste that nurses are aware of. It includes the following:

- Sharps, that is, needles and syringes
- Gauze and cotton wool swabs
- Vials and Lotions

- Drugs and vaccines
- Tubing, gloves and papers
- Foetuses

Health workers have the responsibility of maintaining infection prevention by proper decontamination and disposal of the above waste.

Garden/Agricultural Waste

Agricultural waste from coffee, sugarcane, sisal, pesticides and fertilizers may result in the pollution of natural resources such as air, food, and water.

Waste Disposal

You will now look at various methods of waste disposal, covering the disposal of both liquid and solid wastes.

Liquid Waste Disposal

The best method of excreta disposal in rural areas is a pit latrine, while toilets are suitable for urban areas. As a health worker, it is important for you to know how a pit latrine is constructed. There are some general guidelines that should be considered when choosing the site for a pit latrine to ensure that water sources among others are not contaminated.

Some of these guidelines are:

- Pit latrines and cesspools should be at least two to three metres respectively above the water table
- Latrines should be located at least six metres away from the buildings
- Wells should be located upstream to avoid contamination of the well by ground water passing through the pit latrine or cesspool

The excreta disposal system is divided into two categories. These are: water carriage system and non-water carriage system.

In the water carriage system, excreta are disposed by the use of a flush toilet, which is also called a water closet. The flush toilet is the most permanent and hygienic method of excreta disposal. This system is used where there is a permanent, continuous and adequate piped water supply system. This is mainly in cities and towns.

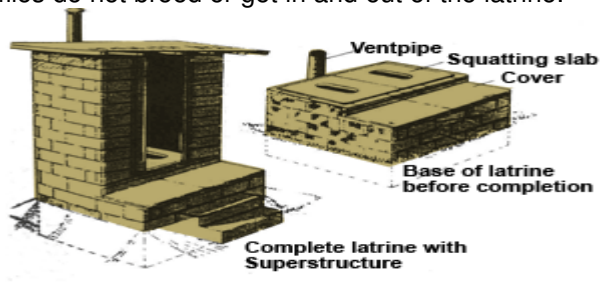
Water closets are reliable and convenient for any permanent building. The excreta are carried by water pressure into a septic tank or sewage pit. The clear fluid effluent needs further bacteriological treatment to become inactive. It is then led over stones and sand in underground drains for completion of biological decomposition. The solid part of the excreta (sludge) settles at the bottom. The sludge relies on natural decomposition. It is reduced in volume and is ultimately converted into inoffensive unstable product. However, the water carriage system is very expensive, technical and requires sewage treatment works.

Now look at the non-water carriage system.

In this method, excreta are disposed of by deposition in a pit latrine. The pit latrine is the most important waste disposal method in the rural areas. In its simplest form, the pit latrine consists of the following:

- A hole in the ground
- A squatting place for sitting or standing
- A hut or shelter for privacy

In this way the excreta is safe from fingers, feet, flies and food. Making a concrete slab, which is easier to wash and keep clean, should strengthen the squatting place. The hole should have a cover with a handle, which ensures that flies do not breed or get in and out of the latrine.



You need to consult your public health officer to give you more information on ventilated improved pit latrines, which are found in many villages.

These latrines feature vent pipes designed for controlling flies. You will have seen them in the community.

The main advantages of a pit latrine are:

- It does not require piped water supply
- It is cheap to construct as the materials are locally available
- The community does not need close supervision during the construction

As already mentioned, there are various other types of pit latrines. The borehole latrine is bored into the ground about six metres deep and four metres in diameter instead of digging a pit. It has a smaller volume and fills up faster than a pit. It is faster to install, and is appropriate

following disasters where there is urgent need to install many latrines.
The trench latrine is a latrine where a trench is dug and a number of holes with dividing partitions constructed over it. These types of latrines are used in temporary work camps.
Bucket latrines are also known as pail closets and are used where the water tables are high. A squatting slab or seat is placed above the bucket, which is filled within a few days. Some of the negative aspects of this type of latrine are the unpleasant job of emptying it and the spillage, which attracts flies.
Finally, the composting pit latrine is suitable where the water table is too high for a deep pit latrine to be dug.
From this description of liquid waste disposal, you should now be in a position to assist the community to construct and use hygienic disposal methods.

Solid Waste Disposal

The amount and type of refuse produced varies from one community to another, as does the means of disposal. Usually, solid refuse disposal is not a problem in the rural areas except around shops, markets or other places where people aggregate. However, in big cities such as Nairobi, Kisumu and Mombasa, there is indiscriminate dumping of domestic and industrial refuse.
Health facilities, especially, should set a good example by employing hygienic methods of refuse disposal.
Refuse in towns should be stored in proper containers. These containers should be:

- Watertight plastic or metal with a tight-fitting lid or polythene bags
- Rust resistant
- Easily filled, emptied and cleaned
- Have side handles
- Rest on a concrete slab to ensure cleanliness of adjacent ground

In towns collection should be regular, systematic and reliable. Specially constructed vehicles for this purpose can be found in big towns such as Nairobi, Kisumu, Nakuru and Mombasa.
In rural areas you should get the support of the village health committee and arrange for refuse to be collected and disposed of regularly, especially after market days. Simple methods of refuse collection should be encouraged in rural areas.

Advantages of Proper Waste Disposal

Proper solid waste disposal has several advantages. These include the prevention of:

- Breeding of pests and vectors
- Foul smells
- Contamination of water sources
- Accidents from sharp objects
- Overcrowding where space can be created for better utilisation

The health department and municipalities are responsible for refuse disposal in towns. The choice of disposal method is determined by its cost. In the rural areas the health worker and the village health committee are responsible for refuse disposal in individual houses, shops, hotels and markets.
How does your family and community store and collect their refuse and how can these methods be improved?

Dumping

This can be in the sea or river. In Kenya, this method is most often used in the towns along the coast. This becomes a health hazard and the littering of the shoreline is an unpleasant sight. Another commonly used method is open dumping, which should be discouraged. Open dumps provide breeding places for rats, mosquitoes and flies.

Burning

This may be done in a number of ways. These include:

- Simple open air burning
- Burning in a trench
- Using a simple mud-brick incinerator

The open burning of combustible refuse is frequently used but it is not very effective. This method often leaves tins and broken bottles littering the surrounding area. This can cause accidents, especially to children. The smoke and odour contribute to air pollution. There is a fire risk and the rubbish sprawls all over while awaiting burning. It may become a breeding place for rodents and insect vectors.

Incinerators are an improved way of burning combustible refuse. Incinerators can be simple and cheap, or complex and expensive. Among the cheap ones is the bin incinerator made out of a drum with fire bars across it and air holes underneath. A more expensive one is built out of

brick and fitted with chimneys. These incinerators allow more complete combustion and produce less smoke. Most hospitals use incinerators.

Composting

Composting is "a process in which, under suitable environmental conditions aerobic micro-organisms break down organic matter to fairly stable humus" (A. D. Luca and H.M. Gilles, 2003). The decomposition process occurs naturally on the ground when droppings from the trees and animals are converted by micro-organisms to humus. Aerobic composting is normally odour free.

This method is, cheap, convenient and recommended especially in rural areas. Wet and dry refuse is heaped in alternative layers on to a plot about 2.5 square metres to a depth of about 1.5 square metres. The refuse is then covered with grass and earth. Compost requires frequent turning after 30 days then after 60 days. This turning helps to distribute all parts of the heap to undergo the high temperature of the interior. After 90 days the refuse is ready to be used as manure.

Controlled Tipping

This method involves depositing refuse into depressions or large holes in the ground. These tips should be situated at least half a kilometre away from settlement, preferably out of sight and down wind. This is an effective method for hygienic disposal of refuse. It can be used where sufficient land is available. The method consists of three steps as illustrated in the diagram on your right.

Recycling

This is a method of re-using non-biodegradable refuse such as paper, bottles, plastics, metal cans and so on. Although it requires special processes to render the items suitable for reuse, it is a method that should be encouraged.

SECTION 3: APPROPRIATE METHODS OF HANDLING FOOD

Introduction

Welcome to section three of this unit. In this section you will cover food and principles of food hygiene. Food is essential for growth, development and in the provision of energy. However, food could also be responsible for the spread of some diseases. The aim of food hygiene is to prevent the contamination of food at any stage.

These stages are production, collection, storage, sale,
preparation and consumption.

Objectives

By the end of this section you will be able to:

- Describe the sources of food
- Describe methods of food storage
- Describe preparation and preservation of food

Sources of Food

Sources of food vary widely. They include rearing, feeding, marketing, crop production and slaughter of animals. Foods that are of animal origin should only be derived from animals that are legally allowed for human consumption, for example, some countries ban game meat. Meanwhile, crop production should follow rules in agricultural practice, which involve spraying crops against pests. Farmers are advised on safe use of pesticides.

During food processing certain standards of food hygiene are applied, for example, in milk treatment, drinks and tinned foods. The chemicals used as preservatives are also regulated for the safety of the consumers. The slaughter of animals is governed by several rules and acts, for example, the Meat Control Act, the Veterinary Act and the Public Health Act.

Food can be contaminated by excreta, dirty fingers, flies, poisonous insecticides or pesticides on vegetables or chemical preservation of food. It can also be contaminated if it is derived from infected

animals, for example, animals with tapeworms or brucellosis.
You will now look at the recommended conditions for storing different types of food.

Food Storage

Storage will depend on the type and packaging of the food.

Dry Foods

These include foods like maize, beans, and wheat (cereals). Such foods should be stored in dry, airy conditions in improved granaries.

Bagged Foods

These foods should be stored on raised shelves at least 18 inches above the floor or ground level. This enables the store to be swept and washed easily. It also allows for easy inspection for pest detection.

Perishable Foods

These are foods that go bad within a short time. Such foods include dairy products, meat and fish. They should be refrigerated to inhibit the multiplication of bacteria.

Food Preservation

This is defined as any method used to treat food for the purpose of prolonging its life without appreciable loss of its quality and appeal. Most human food is of biological origin and there is continuous metabolism to produce the end product. This applies to food of both animal and plant origin, for example, meat, milk, fish, leaves, tubers and seeds. When an animal or plant dies, they lose the mechanism of protection from bacteria, fungi and moulds.
Thus, you preserve food in order to:

- Increase its shelf-life, for example, canned foods
- Render the food safe for consumption, for example, highly perishable foods like milk
- Conserve the food for use during the periods of scarcity, for instance, dried cereals and vegetables
- Avail seasonal foods, like fruits, throughout the year

Principles of Food Preservation

There are two principles of food preservation.

Principle 1

Destroy organisms responsible for spoilage through heat treatment.

Principle 2

Inhibit the micro-organisms through cold treatment.

more information.

Moulds

Affect the surfaces of foods containing high sugar and salt. They also affect dry foods that may become damp due to poor storage.

Yeasts

Affect foods that have acid or sugar in high concentration, for example, dried fruits, and concentrated fruit juices.

Bacteria

Affect foods under various conditions apart from dry food.

Heat Treatment

The following are methods of destroying organisms through heat treatment.

Cooking

This is a heating process, which aims to produce more palatable food. Cooked food generally keeps longer than raw foods as long as re-contamination is minimised. Cooking destroys or reduces micro-organisms and potential toxins in food. Cooking also inactivates undesirable enzymes in food. It alters the colour, texture and flavour and improves the digestibility of food. On the other hand, cooking may cause degradation of food nutrients, for example, over cooking vegetables destroys vitamin C.

Blanching

This is the process where most vegetable foods are heat treated at 70 - 100℃ for 2 - 10 minutes. This is done by immersing food in boiling water

or exposing it to steam. Blanching is used before freezing, canning or drying. This process inactivates enzymes, drives out air bubbles trapped in food, enhances retention of green colours and reduces micro-organisms.

Pasteurisation

This is a relatively slow method of heat treatment. Pasteurisation is generally carried out at a temperature of below 100℃. This method is used to increase the life span of the product. This method reduces organisms that cause spoilage and eliminates pathogens.

Sterilisation

In this method heat is used to kill all micro-organisms and their spores at a temperature of above 100℃. The sterilised food must be stored in an airtight container to prevent the entry of and recontamination by micro-organisms.

Canning

In this method, the food is first heated at a temperature that kills all bacteria and it is then sealed up in sterile cans or bottles. This prevents bacteria from getting into it and enables it to remain safe for a long time at room temperature.

Cold Treatment and Other Methods

Freezing

This is the most satisfactory method currently available for long-term preservation of food. When properly done, freezing is effective for retaining the colour, texture, flavour and nutritive value. Food must be deep-frozen at 0-4℃ to remain palatable. This keeps food fresh for weeks or months.

Salting

This is the saturation of food with salt or sugar, for example, ham, jam and jelly. The added solute reduces microbial activity due to its dehydrating effect. The salt and sugar solutions are more concentrated than the cytoplasm inside the cell. Therefore, the water passes out of the cell into the concentrate, dehydrating the cell.

Smoking and Drying

Drying and smoking makes food unsuitable for the bacteria to grow and multiply. Fish or meat may be preserved by these methods. A wood rack is made and fish or meat is placed on it. A wood fire, which generates heat and thick smoke, is made under the rack. The heat will dry the fish or meat, and the smoke gets inside the food to act as a preservative. Green vegetables, cereals and legumes can be preserved by drying them in the sun. If food is preserved by drying, it must be stored in a dry place until it is used.

Food Safety

Preparation of Food

Adequate personal hygiene must be observed when preparing food in order to prevent disease.

Health

Individuals suffering from respiratory infections such as colds or sore throat should not work with food until they get well. This also applies to people with infected cuts, skin eruptions and diarrhoeal diseases like dysentery and typhoid.

Clothing

Individuals working with food should wear clean washable outer garments. Every worker in the kitchen or washing dishes should wear a clean uniform or apron. These clothes should be worn when the worker is in the premises where food preparation is taking place. This avoids cross-food contamination.

Head Covering

To avoid hair from getting into food, hair bands, caps or nets should be used to cover the head when handling food.

Personal Hygiene

A daily bath is necessary for every individual. Wash hands before handling the food, use clean utensils and avoid habits such as nose picking. Nails should be kept short and clean.

Food

Raw food should be separated from cooked food. All vegetables should be cleaned

thoroughly before preparation for cooking. Fruits should be washed before eating. The food should be hygienically prepared and cooked adequately. All food utensils should be cleaned properly after use and left to dry before being stored in a clean place

Environment

The environment pertaining to the preparation of food should be clean throughout. The area should be dust free. This includes the floors and all the surfaces used for food preparation. The facility itself should be clean and with adequate ventilation and lighting.

Common Food Borne Diseases and Their Causes

Disease	Cause
Illness affecting the mental function	Some naturally poisonous plants
Poisoning	Chemicals such as lead, arsenic
Ascariasis Taeniasis Amoebiasis	Parasites e.g. Askaris lumbricoides Taenia solium/sagnata Entamoeba histolytica
Typhoid fever Paratyphoid fever Food poisoning Bacillary dysentery Milliary Tuberculosis Brucellosis Cholera	Salmonella typhi Salmonella paratyphi Salmonella typhiniurium Shigella Bovine tuberculosis Brucella Vibrio cholera

Food Safety Regulations

The safety of food is so important that our government has passed laws to protect the public. These laws cover many aspects of food handling and health officers are generally responsible for enforcing these laws. Agricultural personnel assist them, where necessary.
You will look at some of the factors that should be considered when preparing or handling food and some of the food-borne diseases.

Remember:
The Public Health Act Cap 242 is an Act of Parliament to make provision for securing and maintaining health. This act is divided into 15 parts. Each part deals with a specific aspect of public health.

Part 10 of the Act deals 'with protection of foodstuffs'. This part regulates the construction of buildings used for storage of foodstuffs. Secondly, it prohibits residing or sleeping in kitchens or food stores.
Part (II) deals with 'milk, meat and other articles of food'. This part prohibits the sale of unwholesome foods. It gives powers to authorised officers to inspect and examine food, seize and recommend disposal at any time. These laws aim at protecting the public and the public health officers are responsible for enforcing them. As a community health nurse you need to work closely with public health officers to apply the food safety regulations.

The following are some of the areas that need close supervision.
Meat

Meat is one of the commonest foods that cause problems to the public. Therefore, it is important

that inspection of slaughterhouses, cows, sheep, goats and pigs be carried out. The same case applies to butcheries where meat is sold.

Milk

Milk is one of the foods that are easily contaminated and cause problems to the public. Inspection of shops where milk is sold is of paramount importance. The milk should be safe and clean. It should be obtained from healthy cows as it can transmit bovine tuberculosis among other diseases. The room for handling milk should be clean, dustless and separate from the barn. The pails, cans, bottles, coolers and other equipment, which comes into contact with the milk, should be thoroughly cleaned.

Homes

It is the responsibility of the community health nurse to share health messages with community members on food hygiene. These include maintenance of personal hygiene as covered earlier, that is cleaning the utensils, handling them with clean hands, and storing them in clean and dry cupboards or containers.

Farms

The community should follow the regulations on the use of insecticides and pesticides in form of sprays and fertilizers. This will help them to use each of them correctly depending on the age of the crop. Your role as a community health nurse is to encourage the community to adhere to the instructions from the agricultural field educators. Moreover, instructions are given on the respective containers of these pesticides. You should teach the community about regulations of food storage and preservation of different types of food. The harvest should be carried out when the crops are completely ripe or ready to facilitate longer preservation. The cereals and legumes should be dried properly before storage to avoid spoilage. All perishable foods should be consumed at the right time.

Markets

All types of foodstuffs are sold in markets. The markets should be designed in a manner that considers stations where similar types of food should be stored and sold, for example, vegetables of all kinds, dry foods like cereals, fruits and cooked foods. The market should be kept clean and proper refuse disposal maintained. The food sold should be clean and fit for human consumption. This, therefore, explains the importance of inspecting markets by public health officers. These officers have the power to close markets and condemn foods to prevent disease outbreaks.

Hotels

Hotels, restaurants and food shops should also be inspected under hygiene regulations. They require regular inspection by the public health officers. All the food handlers should be supervised and a regular medical examination is mandatory for them to prevent spread of diseases through food handling. Licenses should only be given to hotel owners who have met the requirements. Laboratory examinations may be necessary for food such as pre-cooked meat. The use of uniforms, aprons, head coverings, as described earlier, should be observed in the hotels. Proper personal and environmental hygiene in the hotel premises should be maintained.

The hotel should store, preserve, prepare, cook and serve the food according to public health regulations. The law also empowers closure of hotels which do not meet the regulations.

SECTION 4: HOUSING

Introduction

The provision of good housing is an essential aspect of environmental health. Good housing is a requirement for every human being because it provides shelter and protection from environmental hazards.

Think of some health problems that would be associated with the following poor housing conditions:

- Overcrowding and poor ventilation
- Unscreened windows
- Cooking fires on the floor
- Earth walls and dirty floors

Housing Condition	Health Risk
Overcrowding and poor ventilation	Airborne droplet infections
Unscreened windows	Malaria
Cooking fires on the floor	Accidents and burns in children
Earth walls and dirty floors	Breeding of flies and bedbugs

A combination of dampness, lack of light, poor ventilation and overcrowding will contribute to the spread of airborne and droplet infections.
Earth floors and walls permit the entry and breeding of flies and bedbugs, while unscreened windows permit entry of mosquitoes.
Cooking fires on the floor are hazards to small children. Inadequate space to talk and play, especially in town houses, is one of the reasons why fathers and children leave home thereby adding to social problems.
For these reasons it is important to improve the quality of housing. You can help your community live in safe houses, by making simple improvements using locally available materials.

Objectives

By the end of this section you will be able to:

- Describe the types of houses
- Describe the criteria for an adequate house
- Describe a suitable building site
- Describe the characteristics of poor housing
- Describe how you would involve the community in improving housing

Types of Housing

A house can be permanent, semi-permanent or temporary.
These structures will be considered in turn.

Permanent Houses

This type of house has a stone foundation, a cemented floor and plastered walls. The roof is covered with iron sheets, tiles or stones in the case of flats or maisonettes. This type of house has advantages in that it is easy to keep the floor and walls clean. However, the floor should be kept dry to avoid accidental falls. Permanent houses are not cheap to construct and it is necessary to budget for the activity.

Semi-Permanent Houses

This is a type of house whereby the floor is usually cemented but does not necessarily have a stone foundation. The walls are made of iron sheets or sometimes timber. The house is iron roofed. If you work in a rural community then you must have come across this type of a house. It is satisfactory and easy to keep clean. However, appropriate preservatives for timbers have to be used or else termites destroy it. In many places mud bricks are used and they are an appropriate method of improving houses. Since it is less expensive than a permanent house, you have the responsibility of encouraging members of the community to try and acquire at least this type of a house.

Temporary Houses

This type of house may be found in rural and slums areas. The floor is earthen, the walls are made of cardboard, polythene paper, grass or mud. The roof is thatched with the same

material as the walls. This type of a house does not provide for privacy and can easily catch fire. Temporary houses are a health hazard and do not meet the requirements for good housing. They should be discouraged as much as possible

Criteria for an Adequate House

A good house should meet biological, physical and social criteria.

Biological Criteria

Good housing minimises the risk of transmission of diseases. The spread of gastro-intestinal infections is minimised by some important factors. These include:

- Good water supply
- Good food storage, preservation and preparation
- Adequate facilities for washing utensils and well designed kitchens
- Adequate methods of refuse disposal

Physical Criteria

The house should be safe for every occupant. This means that home accidents should be prevented. It is, therefore, necessary that appropriate safety devices be provided for. The house should also be free from air pollution.

Social Criteria

Good housing should be designed to enable the family function effectively in regard to its cultural background. This means that the required privacy for adults should be catered for. It should have a suitable setting for bringing up children.

Characteristics of Adequate Housing

The following are the characteristics of a good house.

Natural Light

The sun provides natural light, which is essential for physical growth, especially in young children. Lighting is also essential for proper vision. The presence of sunlight into the house kills some micro-organisms. This underscores the need for sunlight in the house. Some insects are also driven away by adequate lighting.

Artificial Lighting

This type of lighting is needed at night. The sources are electricity, oil lamps and gas. The type of lighting used should correspond to the purpose for which it is needed in the house.

Ventilation

Fresh air is necessary for our health. Ventilation of a house is the removal of impure air and pouring in pure air. This is achieved through windows and door ventilators. Good ventilation in the house is important, because it keeps the air on continuous movement without creating draught, cools the housing and maintains the room temperature at a constant.

Room Separation

The house should have adequate rooms to provide separate accommodation for adults and children. The shelter for animals should be separate from the main house. There should also be separate rooms for food storage and preparation.

Others

The house should have, where possible, cemented floor and plastered walls to protect against insects and should be rodent-proof. It should also have water supply in adequate and reliable quantity and quality. It should have a good latrine and a clean compound. It should be equipped with proper methods of refuse disposal, for example, composting, burning or burying waste. The house should be dry. The cooking arrangements should be satisfactory to

avoid home accidents. Generally, there should be an effort to protect against all types of home accidents, for instance, those caused by fire, tools and chemicals.

Remember:
It may not always be possible to meet all the necessary requirements for adequate housing. However, housing can be improved in a number of simple and practical ways.

Suitable Building Sites

The following factors should be considered when selecting a suitable site for a house:

- The soil should be suitable for construction.
- The site should be dry, sunny and exposed to free air.
- The surroundings should be hygienic and healthy.
- The site should be away from noisy factories, cinema halls and heavy traffic.
- It should be on high ground to avoid water from standing and stagnating. This will prevent breeding of mosquitoes.

Characteristics of Poor Housing

A poor house does not protect its inhabitants from environmental hazards. It may have some or all the following negative characteristics:

Characteristics

- Dampness due to poor drainage.
- Overcrowding is a common feature in poor housing. This is due to an insufficient number of rooms. Dampness and overcrowding enhance the spread of common respiratory diseases such as colds, influenza, tuberculosis and pneumonia.
- Earthen floors and walls encourage breeding of fleas and bed bugs while unscreened windows encourage entry of mosquitoes.
- Unprotected fire places with poor cooking arrangements cause home accidents with children. Working tools can cause accidents if not properly stored.
- Water supply and storage, which lacks hygiene, poses a health hazard for the transmission of water-borne diseases.
- Proper storage of clean utensils is often lacking in poor housing. This is accompanied by poor personal hygiene in the preparation and serving of food.
- The home environment may lack a good latrine, usually accompanied by improper excreta and inadequate refuse disposal. This increases the chances of getting hookworm infestation.
- Compounds with tall grass, pools of water and sprawling litter may provide good breeding places for mosquitoes, rodents and other vectors responsible for transmission of many communicable diseases.

Community Involvement in Improving Housing

It is very important to explain to the community the reasons they need to adopt new hygienic practices. If the members of the community are not well convinced, your environmental health measures will fail. This is because new practices mean a change in people's behaviour and they will not be willing to change unless they see personal advantages in it. Avoiding diseases, making more money or just being more comfortable are some of the advantages that must be emphasised to the community. You must make the new idea attractive. The following are only some ways of how to introduce change.

- Find out what people think about the problem. Do they see it as a problem? If they do not, then you will have to help them understand that the problem exists and needs to be given attention.
- Encourage them to think of possible solutions and guide them towards those that are technically possible and suitable for the situation. Encourage community participation.
- Aim to set an example in your health facility or home.
- Talk and work with people, encourage them to ask for advice or help in solving their problems, for example, inadequate water supplies, waste disposal, food safety regulations and hygiene,

improved housing, controlling of vectors and pests.

The community would enjoy living in good housing. A little effort is needed to improve housing by using locally available resources.

Sensitisation

Sensitisation is the process of creating awareness. Community health nurses come in contact with the communities and should make use of these opportunities to share health messages with them. You should start at the health facility then extend your efforts to their homes. The health team will have conducted a community diagnosis so as to have valid information on the problem.
The following steps can be followed when trying to involve the community.

Meeting the Health Team Members

The first step involves planning to meet and explain the need for community involvement, with the health team members. Ensure that the relevant consultants and government officers dealing with housing are invited so that they can give pertinent information on housing matters according to the Housing Act. In this meeting, the health team members will deliberate on community sensitisation and identify ways of improving housing in the community. All the health team members should be committed to carrying out their plans for solving the housing problem.

Sharing Health Messages Daily at the Health Facility about Improving Housing

The second step will be to start sensitising the community at the primary health care facility. This will be accomplished by sharing health messages on improved housing. In this way, the patients and clients will get pertinent information on types of houses, criteria for adequate housing, effects of housing on health, characteristics of poor housing and diseases associated with poor housing. This will make the community aware of the problem and the need to improve housing for the family.

Meeting the Community Leaders

The third step is where the community health nurse organises to meet and go over the subject with the community leaders of the area. These leaders include formal leaders in government offices, for example, the District Commissioner, the District Officer, Chief and Assistant Chief. The informal leaders, such as opinion leaders, community own resource persons, leaders of women, men and youth groups should also be involved. Moreover, you should target community-based health workers, traditional birth attendants and community-based distributors of family planning. These leaders will be aware of the problem and the need for improved housing in their community. They will identify and suggest ways of improvement. You should be able to guide them on the techniques of carrying out the health activities. You may use clinical records to confirm the health problem and the need for community involvement.

Identifying Ways of Improvement

Through the previously-mentioned meetings and activities, the health team and the community leaders will identify many ways of improving housing. From their list they will select the best alternative and then plan and organise their resources, that is, manpower, money, materials, and time to carry out the selected activities. Some of these activities will be the provision of outreach clinic services. During the clinic session, the same content on improved housing will be covered in the health messages.
During home visits, the nurse, public health technician and community-based health worker should inspect the houses and focus on simple practical ways of improvement. This will enhance the implementation as the solutions are being provided directly at home.
A school health service is another community health activity where this knowledge may be imparted for the children to share with their parents. The community health nurse, with her team members, conducts regular supervisory visits to the centres of community-based health care activities. These supportive visits help the

groups to build their self-confidence and improve their skills. They are encouraged to explore solutions to their housing problems. They also encourage mutual respect and understanding between the health team and community members.

The effectiveness of these health activities will be determined on monthly basis when outreach and school health services are carried out. It is necessary to let the community know the time frame for evaluation of the activity. A period of about six months would be appropriate.

Evaluation of Housing Activities

After the implementation of the housing activities it will be necessary to evaluate the extent of community participation. Community participation builds the confidence of the community members. It enables the members to examine their situation.

Remember:
Community participation was covered in unit two of this module.
You are able to obtain information from reports on home visiting, outreach clinic services, also from the public health technician and community-based health workers. The reports can be gathered from the community's formal leaders.
The Ministry of Housing will also give their reports.
Finally, the patients and clients will also be interviewed on improved housing. It will be necessary for the nurse to carry out a community survey in the area to assess the community participation. This will be carried out at the time suggested for evaluation. The questionnaire will include all the necessary aspects of housing and focusing on new improvements. The findings of this survey will be communicated to the community leaders and the community. This will enable the community to take appropriate action.

SECTION 5: CONTROL OF VECTORS AND PESTS

Introduction

This is the final section of unit three.
In this section you will learn about vectors and pests.

Objectives

By the end of this section you will be able to:

- Describe diseases associated with vectors and pests
- Describe methods of control of vectors and pests
- Describe how you will involve the community in the control process

Diseases Associated With Vectors

A vector is an organism, usually an insect, which transmits a pathogen from a source of infection to a susceptible host. Insects are controlled because of the role they play in disease transmission, destruction of food and building materials. To control vectors you have to deprive them of suitable breeding places, food and harbour.

ways a vector may transmit pathogens.

Mechanical Transmission
In this mode of transmission, the vector carries the infective pathogen or agent on its body or limbs. Alternatively, the infective agent may be ingested by the vector and excreted unchanged in its faeces.

Biological Transmission

The vector acquires the infective agent from the blood or skin tissue of the infected host and the infective organism undergoes some development in the vector. The infective vector may also inoculate the infective agent from its salivary secretion into a new host to cause disease, for example, in the transmission of malaria.

Contamination of Skin or Mucous Membranes

The host may be infected through contamination of skin or mucous membranes by the infective faeces of the vector, for example, louse borne relapsing fever.

Ingestion

The host may acquire infection by ingesting the vector, for example, guinea worm.

List six vectors and the diseases they transmit.

Vector	Disease Transmitted
Houseflies	1. Amoebic and bacillary dysentery 2. Typhoid
Tsetse flies	1. Sleeping sickness in man 2. Trypanosomiases/Nagana in animals
Mosquitoes	1. Malaria by female Anopheles mosquito 2. Filariasis by culex mosquito 3. Yellow fever by aedes aegypti mosquito 4. Dengue fever by aedes aegypti mosquito
Fleas	1. Bubonic plague 2. Murine typhus fever. It is less severe than the louse borne
Bed bugs	1. Insomnia 2. Severe nuisance
Lice	1. Human relapsing fever. It is caused by crushing an infected louse into a bite, abrasion of the skin or a wound. 2. Louse borne typhus fever. It is caused by rubbing faeces or crushed louse into a bite, abrasion of the skin or wound.
Snails	Schistosomiasis
Mites	Scabies
Cockroaches	No specific disease known but like flies it is a mechanical vector of pathogenic organisms
Ticks	Tick borne relapsing fever

Pest-Related Diseases

A pest is an organism, which in a given circumstance adversely affects human health or the economy. Rats and mice are pests and they belong to a group of animals called rodents. Insects such as white ants, weevils, aphids are also pests. Pests have to be numerous in order to cause a serious problem.

Insecticides and pesticides are used to eliminate pest infestations. The safest and the most economical methods available are used.

Rodents	Diseases Transmitted
Rats and Mice	1. Bubonic plague, refer to fleas 2. Murine endemic typhus fever 3. Salmonellosis. This is transmitted through food, which is contaminated with the infected faeces or urine of an infected rodent. 4. Haemorrhagic jaundice (Weil's disease). This is transmitted to humans through eating food contaminated with faeces or urine from an infected rodent, bathing in contaminated water or handling infected rats or excreta from rodents. 5. A bite from an infected rodent causes a rat bite fever. Their noise is a nuisance in the houses.

Insects and rodents also cause property destruction.

- Rodents destroy all types of dry grains in houses' granaries and in the fields.
- In food processing regulations, the evidence of rodent droppings and urine stains causes condemnation and disposal of large quantities.
- They can destroy buildings by gnawing wood, water pipes, electric cables and they can cause fire outbreaks.

Methods of Pest Control

The following methods may be used to control pest infestations.

Personal Hygiene
This includes thorough hand washing, which should be practised before preparing or eating food and after visiting the toilet. Short and clean nails should be kept and a daily bath should be taken. Wearing of shoes will prevent infestation by jiggers and hookworms. The hair should be kept short and clean. The use of shampoo, which has a suitable insecticide, is helpful for cases of head lice.

Clothing
Clothing should be washed at least once a week and ironed.

Bedding
Bedding should be cleaned thoroughly at least weekly and dried well in the sun. If infested with mites and lice it should be boiled and ironed, in order to kill them.

Food
Food stores, cupboards and tables should be kept clean. All foodstuffs should be covered to prevent flies gaining access to them. All food utensils should be kept clean and dry. Make use of the improved methods of preservation of food that have previously been covered.

Environmental Hygiene
The following factors should be considered.

Drainage of Water
The aim of proper water drainage is to destroy all mosquito-breeding sites. Drain any stagnant water or slow moving water around the house. All holes and ditches should be filled to avoid standing water. All receptacles likely to retain water, for example, used cans and tins, bottles, coconut husks, vehicle tyres and so on should be collected and properly disposed of. Slow moving streams should be canalised to facilitate faster water flow.
Roof gutters should be cleared regularly to prevent blockage of water flow by leaves and other materials. Clearing of the vegetation around the buildings, and water banks removes damp areas where mosquitoes breed.

Cleanliness
The home or village environment should be kept clean. Animal shelters should be at a reasonable distance away from the main house.

Waste and Excreta Disposal

This should follow the proper methods of waste disposal as described in section two of this unit.

Improved Housing

Floors and Walls

These should be cemented so that they can easily be swept and washed. The floors should be cleaned after meals to clear all the food on the floor. All the crevices and cracks in the walls and floors should be plastered.

Beds and Other Furniture

People should not sleep on the floor but on raised beds. Beds and mattresses should be regularly taken outside in the sun to kill any lice, mites and bed bugs. Boiling water can be poured on the bed stands for the same purpose. Joineries of furniture with cracks and crevices should be filled up with plastic wood filler.

Buildings and Food Stores

Rat proof buildings and food stores should be constructed. In malaria areas, buildings should be mosquito proof, with wire gauze to cover all ventilation openings, doors and windows. Buildings should be inspected regularly for pests.

Use of Chemical Substances such as Pesticides and Insecticides

Chemicals used to kill the pests are in the form of insecticide sprays, dusting powders, miticides, rodenticides, emulsions, oils and molluscides.

Farmers are advised on the safe use of pesticides, for example, spraying vegetables such as cabbages, tomatoes, sukumawiki (kale) and spinach. There are instructions on the containers of these pesticides, which indicate the right age of the plant for specific use of a pesticide. Precautions are also given concerning protective clothing and washing after using the chemicals.
After harvesting, the cereals and legumes are dried in the sun and then treated with pesticides in the form of dust or powder. This protects the grains against pests for at least six months.

Remember:
Crop production should follow the rules of agricultural practice, which involves spraying crops against pests.

For cats, dogs and cows, the appropriate insecticide is used to dust or wash them regularly to kill any fleas and ticks. Rodents are controlled by the use of rodenticides, which are available in most shops, for example, Rat & Rat, Rat Rid, Fuko Kill and so on.
The floors and walls of houses may also be treated with insecticides regularly. Mattresses and bedsteads can be treated in the same way. Heavily infested buildings should be treated with residual insecticidal sprays. Kerosene is also used to kill bed bugs and white ants when worked into cracks and crevices by use of an applicator like a feather. Insecticides and larvicides in the form of oils and emulsion are sprayed on the water surface to kill insects in water.
Molluscides may be applied in water to kill the snails, which spread schistosomiasis.

Community Involvement
Community health nurses and other health workers have the responsibility to share health messages in the community. This facilitates community participation in keeping the environment safe.

i)Identification of Resources

You can conduct a community diagnosis. Make an effort to utilise the skills of, and work with the agricultural field officers in the community. Identify the shops or chemists where community members can buy agro-chemicals, for example, rodenticides, insecticides, fungicides and fertilizers.
You should also identify and utilise co-operative societies depending on the crops grown in the region, for example, tea, coffee, horticulture, pyrethrum, grains and cereals.

ii)Utilisation of Insecticides

The health team will meet with community leaders including the agricultural field officers. This meeting would be most effective in a chief's baraza where many community members will be present. This will serve to give the implementers, that is, the health and agricultural officers and the community a big moral boost. They will gain confidence in the utilisation of agro-chemicals. The information can also be distributed as the officers visit the homes during their fieldwork.

UNIT FOUR: COMMUNICABLE DISEASES

In this unit, you will explore the common communicable diseases found in this country. The unit is divided into eight sections. In section one and two you will cover patterns and principles of communicable diseases, respectively. In sections three to eight, you will examine specific communicable diseases classified according to their modes of transmission.

This eight units are as follows:

Section One: Patterns of Communicable Diseases
Section Two: Principles of Communicable Disease Control
Section Three: Contact Diseases
Section Four: Vector-borne Diseases
Section Five: Diseases Caused by Faecal-oral Contamination
Section Six: Airborne Diseases
Section Seven: Helminthic Diseases
Section Eight: Diseases of Contact With Animals or Animal Products

Unit Objectives

By the end of this unit you will be able to:

- Describe the pattern of communicable diseases in a community
- Explain the principles of communicable diseases
- Describe the causative factors of communicable diseases
- Explain the mode of transmission of communicable diseases
- Describe the management approaches for communicable diseases
- Describe the preventive measures for communicable diseases

SECTION 1: PATTERNS OF COMMUNICABLE DISEASES

Introduction

In unit three, you covered environmental health and learnt that although the environment can be a source of ill health, you can prevent many diseases and health problems through simple measures such as good personal hygiene and proper waste disposal. However, despite your best efforts, you can still contract diseases from different sources. The common cold is a good example. It takes just one person infected with the flu virus to spread it round to the others in the office or at home. A disease that is passed from one person to another person is called a communicable or transmissible disease. Transmissible diseases include: measles, HIV infection, tuberculosis, chickenpox, gonorrhoea, scabies, malaria, cholera, and roundworms among others.

Communicable diseases are among the most important diseases in this country. They are important because:

- Many of them are common
- Some of them are very serious and cause death and disability
- Some of them cause widespread outbreaks of disease – epidemics
- Most of them can be prevented by fairly simple means

In this section you will cover disease patterns in the community, the meaning of host and infection, as well as the transmission cycle of communicable diseases.

Objectives

By the end of this section you will be able to:

- Describe the patterns of diseases in the community
- Describe the interaction between the host and the infecting agent
- Describe a typical transmission cycle

Patterns of Communicable Diseases in the Community

Different diseases are common in different places and at different times. To understand why this happens, you need to consider the disease causative organisms (the agents);

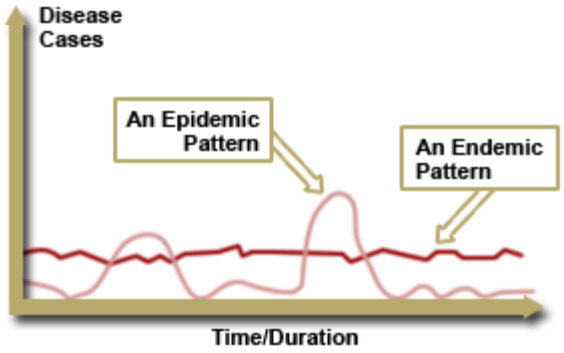
the people they infect (the hosts); and the surroundings in which they live (the environment).

A delicate balance exists between the agent, the host and the environment and it can change in different ways. For instance, the agent needs a suitable environment in which to grow and multiply and thus be able to spread and infect other hosts. If the environment does not support the agent it dies or transforms to a dormant state. The host (person) is also affected by the environment. For example, a person may live in a hot, wet climate where there are many mosquitoes. However they can change this environment by draining swamps, clearing the vegetation and adding competing hosts such as animals. If the balance is shifted against the agent, the disease will be controlled and the number of cases will go down.

When the balance between the agent, the host and the environment is fairly constant, you tend to see approximately the same number of cases of the disease every month. When this happens the disease is said to be endemic. When the balance is shifted in favour of the agent (organism), for example, when many non-immune children have been born in an area since the last measles epidemic, a large number of cases of measles may occur in a short time. This is called an epidemic. Epidemic diseases occur during certain periods or seasons and cause sudden deaths and much suffering in the community.

An endemic disease can be termed as that which occurs in a given population at a constant rate over a period of several years. An epidemic disease is that which occurs in a population at a higher rate than is usually the normal for that population over a given time interval.

Diagrammatically the endemic and epidemic disease patterns can be illustrated as shown on the right.



List down three epidemic diseases in Kenya.

Some Common Epidemic Diseases in Kenya

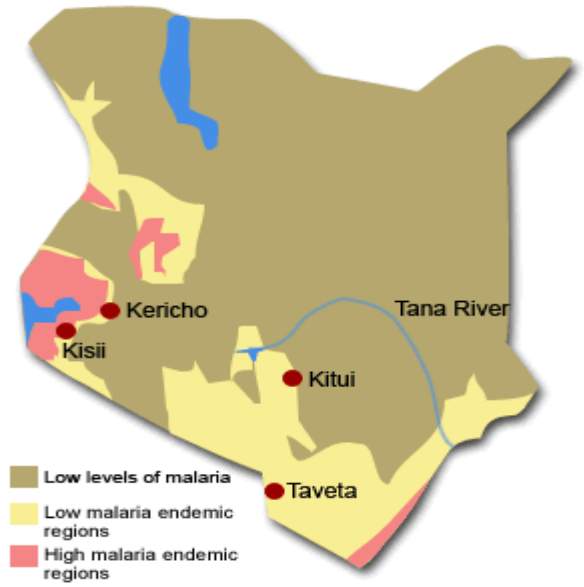
- Cholera
- Typhoid fever
- Highland malaria
- Acute bacterial meningitis

In Kenya, malaria is endemic in the lowlands, such as the Tana River basin, the coastal strip, and the Lake Victoria region. Schistosomiasis which is related to water use is endemic around the Lake Victoria region and the Mwea irrigation scheme. Leishmaniasis is endemic in Baringo, along Tana River, and along the River Athi in Machakos.

In some parts of the country, some disease outbreaks occur only occasionally without a regular pattern. Such diseases are said to be sporadic in their occurrence.

Opposite is a map of Kenya illustrating the malaria patterns.

Now, look at what happens once an infecting organism enters a person's body and causes disease.



The Host and Infection

A person who is invaded by a disease-causing micro-organism is called a host. An infection occurs when this micro-organism begins to reproduce (multiply) and grow. When an organism infects a person, there are three possible stages to consider.

Incubation Period

The incubation period is the time between infection and the appearance of symptoms and signs of an illness. During the incubation period the host does not realise that they have an infection until several days later when detectable symptoms and signs of the illness occur.

Sub-clinical Infection

At this stage, infection does not produce clear signs and symptoms. The host's immune system is trying to fight off the agent.

In some cases, the organism is overcome by the host immune cells hence no signs and symptoms are felt and the infection process is terminated.

Clinical Infection

This is the period when the host develops detectable symptoms and signs of an illness. At this time the agent has multiplied within the host overcoming the host's immune system and has started causing abnormal functioning of some body cells and tissues. This produces overt signs and symptoms of the disease.

It is important for you to understand these stages because people with symptoms are easier to identify as they come to your health facilities for treatment. People with sub-clinical infections do not allways know they are infected and hence are a danger to other people. They are also difficult to detect in the general population without special tests. An individual who is suffering from a sub-clinical infection is also likely to infect others, as in the case of HIV infection which leads to AIDS after a long period. They are therefore known as carriers. An individual who develops a clinical or sub-clinical infection is said to be susceptible to the disease. A susceptible individual is one whose body lacks resistance to the disease. Resistance of the body to a disease occurs due to various immunity mechanisms.

Write down the two types of immunity found in our body.

Your answer should have included the following two types of immunity:

- Natural acquired immunity (passive and active)
- Artificially acquired immunity (passive and active)

For more information on immunity, read module one, unit three part one, section one, on the organisation of the human body, dysfunctions and management.

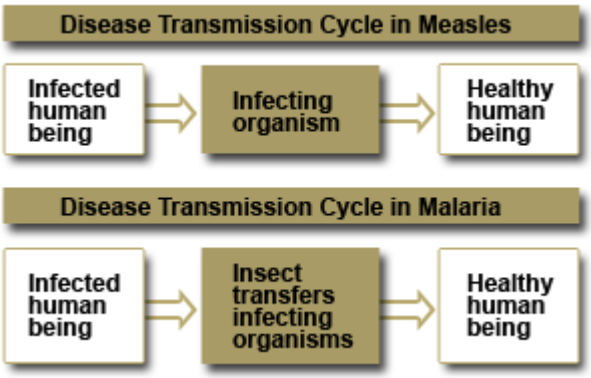
The Disease Transmission Cycle

A disease transmission cycle is a series of steps that a disease-causing organism undergoes in its disease-causing process.

Disease-causing organisms are living things that need somewhere to live and reproduce. This may be within inanimate or animate environment (example in rodents, insect, or the human body), which is known as the reservoir of infection. The human being is the main reservoir of most of the communicable diseases that affect humanity.

When an infection spreads to a new host, the place, animal or human from which the organism came from is called the source of the infection. The way in which an organism leaves the source (the infected host) and passes to a new susceptible host is called the route of transmission. Each disease-causing organism has particular routes which play a large part in how these organisms spread in the community.

For example, some organisms are spread through water and food, while others are spread by vectors like mosquitoes and snails.
The diagram above illustrates the differences between the disease transmission cycle in measles, and in malaria where the causative organism passes from human being to mosquito and back to the human being.



Every transmission cycle is made up of three parts.

The Source
This is where the disease-causing organisms spreads from. It could be an infected person, animal, place, or object. The reservoir is the source of infection.

Transmission Route
The main routes of transmission are:

- Direct contact, for example sexual contact, contact with skin or mucous membranes
- Vectors
- Faecal-oral (ingesting contaminated food and water)
- Airborne
- Transplacental (mother to foetus)
- Blood contact (transfusion, surgery, injection)
- Contact with animals or their products

Susceptible Host
An individual who has low resistance to a particular disease is said to be a susceptible host for that disease. There are a number of factors which lower the body's resistance to a disease:

- Not having come in contact with the disease-causing organisms before and therefore not having any immunity to it. For example, passive immunity against measles is lost at the age of 6 - 12 months. Therefore if a child comes into contact with the measles virus after this age, they may develop the disease.
- Having a serious illness like AIDS which suppresses a person's immunity. People with AIDS have a high risk of developing tuberculosis.
- Malnutrition
- Certain drugs such as those used to treat cancer can lower a person's resistance to disease.

SECTION 2: PRINCIPLES OF COMMUNICABLE DISEASE CONTROL

Introduction

Welcome to section two. In this section you will look at the main methods (also known as principles) that are used to control the occurrence and spread of communicable diseases. It is a short but intense section which will give you the foundation you need to prevent and control the diseases you shall cover in subsequent sections

Objectives

By the end of this section you will be able to:

- Explain the principles of communicable disease control
- Describe the methods used to prevent communicable diseases

- Explain the role of the community members in prevention of communicable diseases

Methods of Communicable Disease Control

Communicable disease can be controlled and eradicated from the community. When thinking about the control of diseases it is always good to think of all the possible methods. In most cases one or two specific methods will have the greatest effect and should be the focus of your activity, in other cases some methods will be useless against the disease. The aim of control is to tip the balance against the agent.

The control and eradication of communicable diseases can be done by:

- Attacking the source of the disease-causing organism
- Interrupting the transmission route
- Protecting the susceptible host

You will now look at each method in turn.

Attacking the Source

There are various specific measures which can be used to control the spread of an infectious disease.

They include:

- Treating the infected person or animal with the appropriate antibiotics that destroy the disease causing-organism.
- Treating the carriers and sub-clinical cases after carrying out screening tests among suspected individuals or groups.
- Treating specific groups of persons who are at high risk of being infected(mass treatment). This is called chemoprophylaxis.
- Isolating those persons who are infected with highly infectious diseases such as ebola, marburg fever, lassa fever; so as to prevent the spread of the organism to other healthy people.
- Treating sick animals such as cattle suffering from brucellosis, immunising animals such as cows from anthrax, and dogs from rabies; killing sick animals such as rats to control plague and dogs to prevent rabies; separating humans from animals.
- Notifying the local health authorities immediately you suspect a patient is suffering from an infectious disease. Though this does not directly affect the source, it is an essential way of keeping watch on the number of new cases and thereby monitoring the effectiveness of the control programme.

All of the methods mentioned on the previous page are methods of controlling the reservoir - where an animal is the reservoir.

In summary you can state that the measures for attacking the source are:

- Treating the infected person/s
- Treating the carrier
- Mass treatment of persons at risk
- Isolating the infected person/s
- Treating the sick animal such as cows
- Immunising animals such as dogs and cattle
- Killing the animal reservoir such as rats
- Separating humans and animals

Interrupting the Transmission Cycle

A number of methods are used to interrupt the transmission cycle. Some of the measures were covered in detail in unit three of this module. They include the following:

- Personal hygiene
- Environmental health
- Water and sanitation
- Vector control
- Good and adequate housing
- Effective food handling and adequate nutrition

Remember: A clean environment and good personal hygiene are the most important measures in the primary prevention of diseases.

Please review each one of these measures in unit three of this module so as to complete this section successfully. In addition to the measures covered in unit three, add sterilisation of medical equipment and the use of sterile surgical equipment. These methods are useful for interrupting the transmission of diseases such as, Human Immunodeficiency Virus (HIV) infection and hepatitis-B infection.

Protecting the Host

This is the third principle of controlling the spread of communicable disease in the community. Any person who is not yet infected by a specific disease-causing organism is known as a susceptible host. This is because they are at risk of contracting the infection. All susceptible hosts must be protected from contracting the infection.

Remember: The most effective way of controlling communicable diseases is to use a combination of methods: attacking the source of the infecting organism, interrupting the route of transmission, and protecting the susceptible host.

There are various specific and general measures for protecting the host.

Specific Measures

- Immunisation using vaccines such as the KEPI vaccine
- Chemoprophylaxis using for example:
  - Proguanil (PaludrineR) to suppress malaria parasites
  - Tetracycline during cholera outbreaks
  - Cotrimoxazole during plague outbreaks

General Measures

- Use of barriers such as bed nets, gowns, gloves to prevent insect bites (especially mosquitoes)
- Use of chemicals for example insect repellents to prevent mosquito bites
- Wearing shoes to prevent penetration by hookworms from the soil
- Adequate housing to reduce overcrowding
- Improved nutrition
- Adequate ventilation
- Health education

Other Control Measures

There are other useful measures that can be taken to control the spread of communicable disease. Among these is the notification of disease. Notification requires you to keep watch (surveillance) on the number of new cases of communicable diseases in your area of work and to immediately inform the local health authority when you come across a patient suffering from an infectious disease. One of the main reasons for notification is to help the health authorities take measures to confirm your suspicion and to control the spread of the disease. Notification of infectious communicable diseases is the responsibility of all health care workers. It is also a legal requirement according to the Public Health Act, Chapter (cap) 242, section eight of the laws of Kenya.

Remember: It is your responsibility to notify your local health authority immediately should you suspect the presence of an infectious disease.

List any six notifiable diseases found in Kenya.

Notifiable Diseases in Kenya

- **Plague**
- **Cholera**
- Measles
- Poliomyelitis
- Diphtheria
- Tuberculosis
- Anthrax
- Trypanasomiasis
- Typhoid fever
- Whooping cough
- Meningococcal meningitis
- Rabies

Yellow fever

The diseases in bold spread so quickly that they need international control measures. These diseases are reported by the Ministry of Health to the World Health Organisation (WHO).

Application of Communicable Disease Control Measures

The actual application of the control methods you have just seen can be undertaken by different groups of people and institutions at various levels. These include individuals and village level, dispensary and health centre level and the district and central government (Ministry of Health) level.

Remember: A successful communicable disease control program is the one that involves members of the community.

Control Measures at Individual and Village Level

At this level, each person and indeed every member of the village is responsible for:

- Completing the immunisation
- Personal and environmental hygiene
- Food hygiene and adequate nutrition
- Using bed nets and protective wear
- Abstaining from casual sex, being faithful to one sexual partner or using condoms
- Protecting water supply and using clean water
- Digging and using pit latrines
- Controlling vectors
- Healthy habits, for example not smoking, consuming alcohol and abuse of drugs

Control Measures at Dispensary and Health Centre Level

The health care workers should support and encourage their clients and community to establish and sustain community based disease control programs. In addition, the health care workers should:

- Increase immunisation coverage
- Participate in vector and reservoir control
- Emphasise water protection and purification
- Inspect food, markets and eating places
- Encourage sanitation and refuse disposal
- Promote health and prevent diseases using Information, Education and Communication (IEC)
- Notify diseases

Control Measures at District, Regional and National Level

At these higher levels, health care workers are responsible for:

- Vector control schemes
- Mass immunisation campaigns
- Mass treatment and chemoprophylaxis
- Mass media IEC programmes
- Health statistics registration
- Research on disease control methods
- Emergency, epidemiology and control teams
- Manpower training and continuing education for staff

SECTION 3: CONTACT DISEASES

Introduction

Welcome to the third section of this unit. From this section onwards, you will group communicable diseases according to their mode of transmission and then investigate their individual causes, mode of transmission, diagnosis, treatment and preventive measures. You will start with contact diseases (also known as contagious diseases). This is a group of communicable diseases that are transmitted through direct or indirect contact between susceptible and infected persons.

Objectives

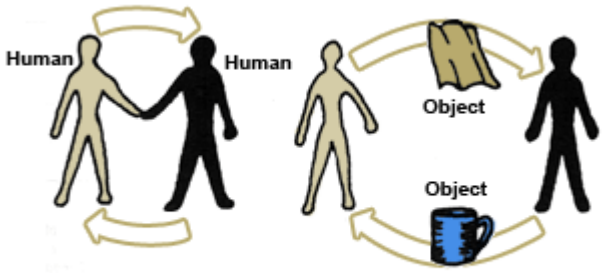
By the end of this section you will be able to:

- List factors that favour the transmission of contact (contagious) diseases
- Identify signs and symptoms of infections, namely; scabies, fungal skin infections and trachoma
- Describe the management of contagious diseases
- Describe the control measures of contagious diseases

Transmission of Contact Diseases

A large number of patients seen in your health facility, particularly school children, are suffering from contact diseases which are easily preventable. Contact diseases tend to occur in clusters within households, children's play groups, schools and workplaces. They are passed from one person to another either directly by skin-to-skin contact or indirectly by handling contaminated objects such as clothing,

bedding or combs. Such groups of infected people are known as clusters.



Transmission of Contagious Diseases
(Adapted from Communicable Diseases Manual, 1999. Transmission of Contagious Diseases.)

List four factors that increase the transmission of contact diseases.

Factors Increasing the Transmission of Contact Diseases.

- Close personal contact (for example: sexual intercourse)
- Inadequate housing leading to overcrowding
- Poor personal hygiene usually due to inadequate water supply
- High population density as in urban (slums) areas

Scabies

This is a parasitic infection of the superficial layer of the skin characterised by severe itching. It is caused by the female of an insect called Sarcoptes Scabiei (itch mite). The female mite burrows in to the skin and makes a small tunnel. Within the tunnel, the insect deposits its eggs and faeces. The eggs hatch in four to five days and the larvae leave the mother's tunnel and bury themselves in the skin and in other places. The larvae do not make tunnels.

Mode of Transmission

Scabies is spread through direct close body contact, as in bed, or through contact between parents and children or among children playing together in schools. Transmission of scabies can also occur indirectly through clothing or bedclothes. Poor living conditions and poor hygiene promotes the spread of scabies.

Clinical Picture

The patient presents with intense itching, especially at night, and eczema-like signs. You will also find an itchy rash with typical distribution especially where the skin is curved (between fingers, elbows, buttocks, etc). Because it is very itchy, you might also find that the skin is torn with scratches and thus secondary infection often follows.

There are a number of reasons why people with scabies do not seek early medical attention. The skin lesions may be so common that they are not considered to be a disease. Also people who suffer from leprosy or other diseases which interfere with normal sensation may not feel the itching caused by scabies.

Remember: Severe itching accompanied by typical distribution especially at the folds is suggestive of scabies

Management

The whole family should be treated together with the patient to prevent re-infection. The management of scabies is as follows:

- The patient should take a warm bath.
- Rub a handful of 10% Benzyl Benzoate Emulsion (BBE) all over the body.
- After 24 hours, the patient should bathe again and put on clean clothes.
- BBE does not kill the eggs of Sarcoptes Scabiei and therefore the treatment must be repeated after four to seven days to kill those larvae which have hatched since the first treatment.
- If itching is severe treat it symptomatically with calamine lotion.

Prevention of Scabies

The best way of preventing and treating scabies is good personal hygiene. Regular firm bathing, washing of clothes and frequent use of soap will control scabies.

Remember: All these activities require regular supply of water.

Dermatomycosis

The term dermatomycosis means fungal infections of the skin and mucous membranes. Fungal skin infections are mainly a problem of personal appearance rather than illness, but it is important to distinguish them from leprosy and

syphilis. Also, fungal skin and mucous membrane infections are sometimes indicators of immunosuppression as occurs in AIDS, cancer and tuberculosis.

Mode of Transmission

Fungal infections are usually spread by direct and indirect contact. Genital infections such as vulvo-vaginitis may be spread during sexual intercourse.

Clinical Picture

A fungal infection typically produces a flat patch or shamba-like growth on the human skin. This patch may be found on the head, on dry exposed body skin, between the toes, or in moist places like the mouth or private parts. Each of these patches (depending on where they are found) looks slightly different and has a different name, but they are all fungi. Fungal infections can be divided into two groups: ringworms and candiadiasis.

Ringworms

Ringworm manifestations are described in Latin after the areas of the body they commonly affect:

- Tinea capitis (ringworm of the scalp)
- Tinea corporis (ringworm of the body)
- Tinea pedis (ringworm of the foot)
- Tinea unguium (ringworm of the nails)
- Tinea versicolor or pityriasis

Characteristics of Ringworm Diseases

(Adapted from Communicable Diseases Manual, 1999, Characteristics of Fungal Skin Infections.)

Fungus	Risk Factors	Main Symptoms	Diagnosis	Treatment
Tinea Capitis	Children under 10	Brittle hair; areas of broken hair on scalp		Whitefield's ointment b.i.d. for 3 weeks
Tinea corporis	Excessive sweating; hot and humid areas	Ring-shaped lesions; central healing	Branching filaments crossing borders of cells	Keep dry and clean
Tinea pedis (athlete's foot)	AIDS	Scaling and cracking of skin between toes		Apply Whitefield's ointment daily
Tinea unguium	Nail injuries; corticosteroids	Thickening, discoloration or brittleness of nails		Surgical removal of nails plus Whitefield's ointment daily for 16 weeks
Tinea versicolor	AIDS; excessive sweating; hot humid areas	Superficial small round light coloured areas	Short filaments, round thick walled cells, budding	Personal hygiene

Candiadiasis

Candiadiasis which is also known as moniliasis or yeast infection manifests in the following ways:

- Oral thrush – patchy white dots which appear on the mucous membrane of the mouth
- Vulvo-vaginitis
- Balanitis
- Intertrigo

Characteristics of Candiadiasis Diseases

(Adapted from Communicable Diseases Manual, 1999, Characteristics of Fungal Skin Infections.)

Fungus	Risk Factors	Main Symptoms	Diagnosis	Treatment
Oral thrush	Measles; Newborn; Vulvo-vaginitis of mother after antibiotics; AIDS	Pseudomembranes on mucous membranes		G.V paint
Vulvo-vaginitis	Pregnancy; Diabetes; AIDS; Post-antibiotics	Thick white vaginal discharge and itching		Nystatin vag. Tab, G.V. paint
Balanitis	Lack of personal hygiene (acquired by sexual intercourse)	Itching and redness		Hygiene, G.V paint
Intertrigo	Fatness; Diabetes; Humid areas (armpits, breast folds, between toes)	Intertriginous areas of redness (like eczema)	Long filaments, oval cells budding	G.V paint; (Diet in diabetes); Keep areas dry by exposure and talcum powder.

Trachoma

This is a chronic inflammation of the conjunctiva and the cornea of the eye. It is caused by an organism called Chlamydia trachomatis of the Chlamydiae group. Other organisms of the Chlamydiae group cause non-gonococcal ophthalmia neonatorum, non-gonococcal urethritis, cervicitis and salpingitis. Trachoma is a major cause of blindness especially in those parts of East Africa where water is scarce, such as among the pastoralist communities who inhabit the drier grasslands.

Mode of Transmission

Trachoma is very common among communities living in dry areas where there is scarcity of water. Transmission of trachoma is by direct contact with the eye discharge of an infected person. Flies and fingers are important in the transmission of the disease. After infection, the disease progresses very slowly all the time destroying the cornea and the conjunctiva, eventually leading to permanent blindness in one or both eyes. The early stages of the diseases are the most infective and transmission is high among children.

Clinical Picture

Trachoma develops in four stages.

Stage 1: Early Trachoma

Initially the eyes are red and watery (as in ordinary conjunctivitis). After 30 or more days, follicles (small pinkish-grey lumps) form inside the upper eyelids. To see these you would have to turn back the lid. Usually there is a little pus in the eye, but if the pus is copious this may indicate a secondary infection by bacteria. Examination of scrapings from the conjunctiva in the laboratory show the cells with a characteristic dark object in the cytoplasm. The dark object is called an inclusion body and its presence in the cell helps to confirm the diagnosis of trachoma.

Stage 2: Pannus Formation

Normally, the cornea has no blood capillaries on it. But during this stage, many tiny blood vessels are found to be growing towards the edge of the cornea. These tiny blood vessels which grow in the cornea are called pannus. You can see the pannus by using an ordinary magnifying glass. Again, the presence of both the follicles and the pannus strongly suggests the diagnosis of trachoma.

Stage 3: Scarring of the Conjunctiva

After several years the follicles on the conjunctiva slowly begin to disappear leaving behind whitish scars on the conjunctiva. In the cornea, the small blood vessels degenerate. The vision becomes hazy and remains so for many years unless there is rupture of the cornea scars, in which case blindness occurs.

Stage 4: Entropion and Trichiasis Formation

The scars formed after the healing process,several years after the onset of the disease,are the ones that do the greatest damage. Due to this scarring, the scar tissue retracts (shortens), thereby causing the eyelids

to become thick and to turn inwards. This is called entropion. As the thick, rough eyelids turn inwards, the eyelashes point inwards and rub against the cornea. This is called trichiasis. trichiasis adds to the damage already done to the eye and results in blindness

Remember: The combination of entropion and trichiasis completely destroy the cornea leading to blindness

Management

The drug of choice for the first three stages is 3% tetracycline topical eye ointment twice a day for five days every month for six months. Stage four of the disease with entropion must be treated surgically. It is essential to do this as soon as possible because every time the patient blinks it increases corneal damage. If it is not possible to perform surgery in your health facility, you can remove the in-turned eyelashes by pulling them out with sterile forceps. This should be done before you refer the patient. While entropion operations can be carried out at the health centre level, pannus and opacity of the cornea have to be done by eye specialists.

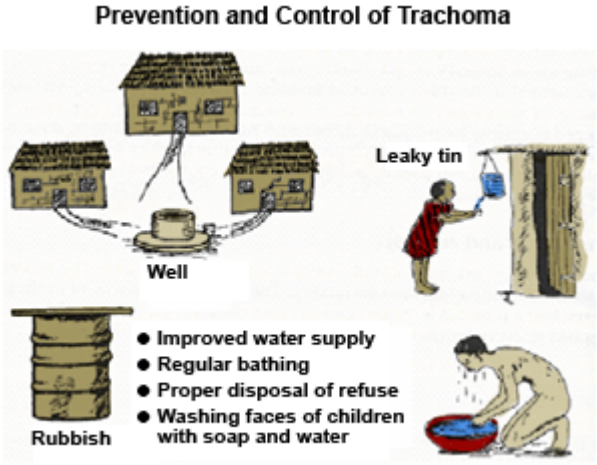
Prevention and Control of Trachoma

Trachoma is an example of diseases that are associated with lack of water in the community (water scarcity). The most effective way of controlling and eradicating trachoma is through supply of adequate water to the community. Regular bathing and washing of children's faces with water and soap should be encouraged.

Other additional measures include:

- Where water is scarce, the community should be taught how to use the 'leaky tin' (a technique where water for hand washing is put in a container that has a small hole near the bottom, the hole is closed with a piece of stick and when the sick is removed water trickles slowly. It minimises wastage of precious water in water scarce areas and improves personal hygiene) and be motivated to use it

- Reducing the fly population in the community through proper disposal of refuse and waste
- Early treatment of infected individuals
- Mass treatment especially of school children who live in trachoma endemic areas using 3% tetracycline eye ointment twice a day for three to five days each month for six months



SECTION 4: VECTOR-BORNE DISEASES

Introduction

In this section you will examine communicable diseases which are transmitted by invertebrate hosts, that is organisms without a backbone. This section is longer than the previous one due to the large number of important diseases which fall under this group. As usual you will look at each type of disease, its causative organisms, clinical features, management and prevention.

Objectives

By the end of this section you will be able to:

- List at least nine common vector-borne diseases
- Describe the clinical features of vector-borne diseases
- Describe the transmission cycle of vector-borne diseases
- Explain the management of vector-borne diseases
- Discuss the preventive measures of vector-borne
  diseases namely:

  - Malaria
  - Filariasis
  - Yellowfever
  - Trypanosomiasis
  - Schistosomiasis
  - Leishmaniasis
  - Plague
  - Relapsingfever
  - Onchocerciasis

Vector-borne Diseases

The organisms which cause vector-borne diseases usually undergo part of their development inside the vectors themselves. The time taken by the disease-causing organism to develop inside the vector is called the extrinsic incubation period. Although the housefly is an insect that is known to carry bacteria and chlamydia, it is not considered a vector. This is because it is merely a mechanical transmitter of disease; the organisms do not develop inside its body.

The majority of vectors are insects with the mosquito being the most common. This is because the mosquito is responsible for transmitting more diseases than any other vector. Insect vectors usually acquire disease organisms by sucking blood from infected persons. They then transmit the infection by depositing infected faeces or body fluids in skin cracks or abrasions. Most vectors have quite specific breeding, feeding and attacking behaviour. They therefore only thrive in areas where suitable conditions exist for their survival. As a result, vector-borne diseases tend to be present all the time (endemic) in a given geographical area or population.

Many of the diseases transmitted by vectors can also become epidemic, especially when there are environmental or other changes leading to increased transmission. Some serious epidemics which have occurred in Africa have been as follows:

- Yellow fever: Ethiopia, Sudan, Nigeria, Ghana
- Trypanosomiasis: Uganda
- Kala Azar: Kenya, Sudan
- Plague: Uganda, Kenya, Tanzania
- Typhus fever: Burundi, Rwanda, Ethiopia

When communicable diseases are present in animals all the time, such as the case of yellow fever in monkeys and plague in rats, the disease is said to be enzootic (epidemic in animals).

Some Diseases and Their Vectors

Disease	Causative Organism	Vector
Malaria	Plasmodium falciparum Plasmodium ovale Plasmodium malariae Plasmodium vivax	Anopheles funestus (female mosquito) Anopheles gambiae (female mosquito)
Filariasis (elephantiasis)	Wuchereria bancrofti	Culex pipiens Culex quinquefasciatus Anopheles spp (female mosquito)
Yellow fever	Flavivirus	Aedes aegypti (mosquito)
Visceral Leishmaniasis (Kala Azar)	Leishmania donovani	Phlebotomus lutzomyia (Sandfly)
Trypanasomiasis (Sleeping sickness)	Trypanosoma gambiense Trypanosoma rhodesiense	Glossina palpalis Glossina morsitans (Tsetse fly)
Onchocerciasis (River blindness)	Onchocerca volvulus	Simulium damnosum (black fly)
Plague	Yersinia pestis	Xenopsylla cheopis (Rat flea)

Malaria

Malaria is an acute infection of the blood caused by protozoa of the genus plasmodium. For a long time in Kenya, it was found mainly in humid low-lying areas of the coastal plains and the shores of Lake Victoria. However, these days it is also common in the highlands. Malaria is directly or indirectly responsible for much ill-health and death, especially of children.

The vector responsible for the transmission of malaria is the anopheline mosquito (anopheles gambiae and anopheles funestus), which thrive in humid, warm climates where water is available. The parasites develop properly in the mosquito in places where the mean temperature is 16 - 32℃. The cooler the environmental temperature the longer it takes for the parasites to develop in the mosquito. The parasite takes about 35 - 36 days to develop at a mean daily temperature of 16℃, and nine days when the mean daily temperature is 30℃ or above. Mosquitoes have an average life span of two to four months.

Remember: Treatment and prevention of malaria is one of the national public health 'high priority packages' in Kenya today.

Malaria Epidemiology

Malaria is caused by the plasmodium (parasite) that is transmitted to human beings by the bite of the infected female anopheles mosquito. There are four plasmodium species and any of them can cause malaria. They are:

- Plasmodium falciparum
- Plasmodium malariae
- Plasmodium ovale
- Plasmodium vivax

In Kenya 98% of malaria is caused by plasmodium falciparum. The other 2% of the cases are caused by plasmodium malariae and plasmodium ovale. Malaria caused by plasmodium vivax is very rare. Malaria due to plasmodium falciparum is usually the most severe form of malaria and is called malignant malaria. The mortality rate due to malaria is highest in children under five years of age.

In Kenya, malaria occurs in two patterns:

Endemic Malaria

Endemic malaria (also called 'stable malaria') is transmitted all the year round. This type of malaria is found around Lake Victoria and the coastal region of Kenya. Endemic malaria causes severe infection in children under five years of age and in pregnant mothers. The mortality rate is high among infected children. After repeated bites by infected mosquitoes older children and adults develop partial immunity to malaria.

Remember: Endemic malaria is transmitted all the year and severely affects children under five years old and pregnant mothers.

Epidemic Malaria

Epidemic malaria (also called 'unstable malaria') occurs seasonally and affects people of all ages. Seasonal malaria occurs in Machakos, Embu, Kitui, Tharaka and Marigat in Baringo.

Another form of epidemic malaria occurs in the highlands and those areas bordering endemic zones. This type of malaria is called highland malaria and is seen seasonally and affects all people severely. Highland malaria epidemics have had high mortality rates. The areas in Kenya which have been affected by highland malaria include Kisii, Nyamira, Kericho, Turkana and Narok.

Remember: Epidemic malaria occurs seasonally and affects people of all ages.

Transmission and Life Cycle of Malaria

Malaria parasites develop in two cycles: The first cycle takes place in the mosquito and the other cycle in the infected human being. The first cycle which takes place in the mosquito is called the sexual cycle, while that which takes place in the human being is called the asexual cycle. You will now examine each transmission cycle starting with the asexual cycle.

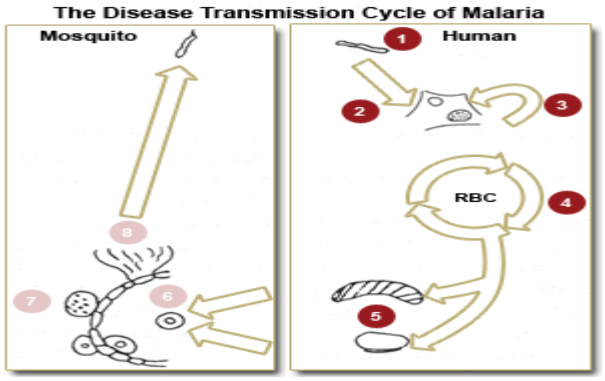
Asexual Cycle

The asexual cycle of transmission takes place in the body of the infected human being and starts when the infected female anopheles mosquito bites a person.

Upon biting humans, the infected female mosquito injects sporozoites via its proboscis into the blood stream (1). The sporozoites circulate in the blood for about one hour and then they enter the liver cells (2). In 10 - 14 days the sporozoites develop into liver schizonts while still in the liver (3). The liver schizonts later burst releasing large numbers of merozoites. The merozoites leave the liver and enter the blood stream (4) where they penetrate the red blood cells.

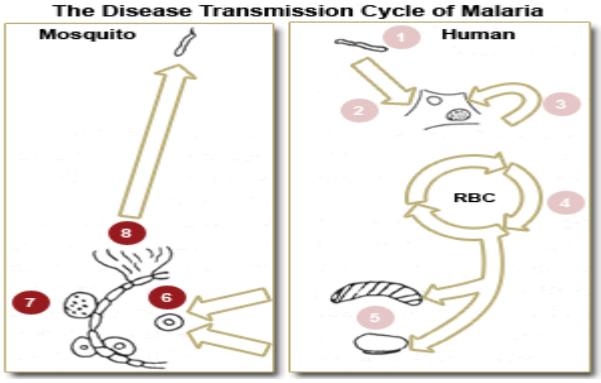
Inside the red blood cells, the merozoites develop into trophozoites. The trophozoites then develop into erythrocytic schizonts.

These erythrocytic schizonts burst releasing a shower of merozoites, which invade fresh erythrocytes (5). Some of the released erythrocytic merozoites form male and female gametocytes, which are sucked by the feeding mosquito.



Sexual Cycle

The sexual cycle of the malaria parasite takes place in the body of the female anopheles mosquito. This cycle begins when the feeding mosquito sucks blood containing the male and female gametocytes. In the stomach of the mosquito, the male gametocytes mate with the female gametocytes. The fertilised gametocyte is called the ookinete (6). The ookinete stays in the stomach of a mosquito for about 12 - 18 hours after which it penetrates the stomach wall. Upon reaching the outer surface of the stomach wall, the ookinete changes into an oocyst (7). The oocysts grow rapidly and burst releasing large numbers of sporozoites into the body cavity of the mosquito. Many of the sporozoites move to the salivary glands of the mosquito (8) from where they are injected into the body of the next human being when the mosquito feeds.



Clinical Features of Malaria

The incubation period of malaria is about 10 - 14 days after the infection. The symptoms appear once the invaded erythrocytes rupture to release new merozoites. This stimulates the body's immune system and the signs and symptoms of malaria then appear:

- Headache and dizziness
- Joint pains
- Backache
- Fever and chills (high body temperature, rigors)
- Nausea and vomiting
- Diarrhoea
- Excessive sweating
- Jaundice
- Enlargement of spleen
- Convulsions
- Anaemia

A typical attack of malaria progresses through the following three stages:

The Cold Stage

This stage starts suddenly and lasts for fifteen minutes to one hour. The patient's body temperature rises and they shiver. During this stage, the infected erythrocytes rupture releasing merozoites in the blood circulation.

The Hot Stage

The hot stage last for two to six hours. The body temperature is high (40 - 41℃) with severe headache, nausea and vomiting. The skin is hot and dry.

The Sweating Stage

The fever drops rapidly and the patient sweats profusely. This stage last for two to four hours.

Complications of Malaria

Severe malaria can cause serious complications and is life threatening.

Brain

Mental disturbance appearing as acute psychosis, meningitis-like symptoms and coma.

Diagnosis of Malaria

Diagnosis is made through:

- Clinical symptoms
- Laboratory examination of thick and thin peripheral blood films/slides (smears) which demonstrate the parasites (Trophozoites)

Management of Malaria

The treatment of malaria depends on whether the disease is complicated malaria or uncomplicated malaria (severe malaria). Uncomplicated malaria is usually treated on an outpatient basis.

Treatment of Uncomplicated Malaria

Dosage of tablets of sulfadoxine (500mg) plus pyramethamine (25mg) and paracetamol for all age groups.

Age Group	Weight Range	Total SP Tablets as a Single Dose	Paracetamol Tablets (maximum of four doses in 24 hours)
< 3months	<5	¼	¼
3mo to 11 mo	5 to 9	½	¼
12mo to 3yr	10 to 14	¾	½
4yr to 6 yr	15 to 18	1	½
7 yr to 11yr	19 to 37	1 ½	1
12 yr to 15 yr	38 to 49	2 ½	1 ½
16 yr and above	50 and above	3	2
Dose per Kg body weight		25mg/kg of Sulfa component	Paracetamol 15mg/kg

Patients presenting with coma, convulsions, respiratory distress, acute renal failure, jaundice, shock, hypoglycaemia, or acidosis due to malaria should be admitted into the ward for complicated malaria.

Treatment of Complicated Malaria

Age Group	Expected Weight (Kg)	Number of tablets per dose given eight hourly	
		Quinine Sulphate 200mg	Quinine Bisulphate 300mg
< 3months	<5	¼	¼
3mo to 11 mo	5 to 9	½	½
12mo to 3yr	10 to 14	¾	¾
4yr to 5yr	15 to 18	1	1
6yr to 7yr	19 to 25	1 ¼	1 ¼
8yr to 12yr	26 to 37	1 ¾	1 ¾
13yr to 15yr	38 to 49	2 ½	2 ½
16 yr and above	50 and above	3	3

Intravenous quinine in dextrose is used in severe complicated Malaria where the patient presents with vomiting and coma.

Remember: The treatment of malaria keeps changing depending on current research findings. Please check on the current treatment and adjust your notes accordingly.

Prevention and Control of Malaria

Chemoprophylaxis

Antimalarial chemoprophylaxis using oral proguanil (PaludrineR) may be given according to the national guidelines for diagnosis, treatment and prevention of malaria for health workers. Individuals who will benefit from chemoprophylaxis include:

- Patients with leukaemia (lowered immunity)
- Patients with sickle cell disease
- Patients with tropical splenomegally
- Non-immune visitors to malaria-endemic areas

Intermittent Preventive Treatment (IPT)

IPT is based on the assumption that the pregnant woman is infected with malaria. According to the Ministry of Health (MoH) guidelines, the drugs used for IPT are the ones that contain Sulfadoxine and Pyrimethamine (SP) such as FansidarR, MalaraxinR, FansidinR, MetakelfinR, OrodarR, and FalcidinR. The first single dose of three tablets of SP is given to the pregnant woman between 16 and 24 weeks of gestation; the second and last dose of three tablets of SP is given between 24 and 36 weeks of gestation. (MoH, 2002)

Vector Control

Actions to reduce mosquito-breeding areas include:

- Using insecticide-treated bed nets
- Using mosquito screens in houses
- Using chemical mosquito repellents
- Cleaning drainages and water disposal systems
- Clearing bushes and burying or burning rubbish heaps
- Use of larvicides and insecticides

Health Education

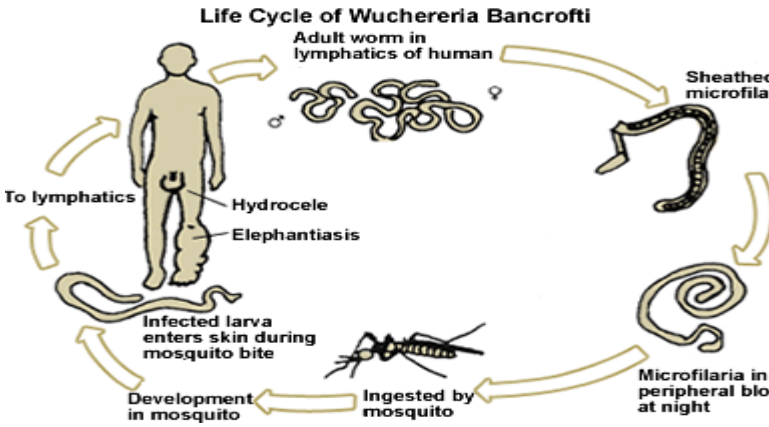
You should encourage community members to seek early diagnosis and prompt treatment for malaria and to use insecticide treated bed nets every night.

Filariasis (Elephantiasis)

This is a disfiguring disease caused by a tiny worm (nematode) called wuchereria bancrofti. It is mainly transmitted by mosquitoes; the culex quinquefasciatus found in heavily contaminated water especially in the urban areas and the culex pipiens and the anopheles mosquito in rural areas. These mosquitoes transmit the worm from person to person in the same way as malaria. The parasitic worm lives in the lymphatic system of the patient causing inflammation of the lymphatic vessels and lymph glands (lymphangitis, lymphadenitis), filarial fever, and eventually elephantiasis of the arms, legs and genitals. The disease is most frequent in the tropical coastal belts and the lake region.

Mode of Transmission

The microfilariae ingested by the feeding mosquito exsheath in the stomach and become first stage larva. They then penetrate the mosquito stomach wall and migrate to the thorax muscles where they moult twice and develop into the infective stage.
Mature infective microfilariae migrate to the mouthparts of the mosquito. The extrinsic incubation period takes 10 -12 days.



Clinical Features

The presence of mature filarial worms in the lymphatic vessels triggers an inflammatory reaction in the walls of these vessels. When the worms die, more foreign proteins are released causing calcification of the lymphatic walls which eventually leads to obstruction of the flow of lymph fluid. If the obstruction of the lymph flow is extensive, chronic oedema develops in the affected areas of the body. Filariasis progresses through three stages.

Acute Phase

- Fever
- Eosinophilia
- Enlarged lymph nodes
- Inflamed lymph vessels (lymphangitis)

Sub Acute Phase

- Fever
- Eosinophilia (severe)
- Attacks of dyspnoea (asthma-like)
- Funiculitis (pain and swelling of the spermatic cord/s)
- Epididymitis
- Hydrocele
- Lymphadenitis (tender lymph nodes)

Chronic Phase

- Lymphoedema
- Elephantiasis
- Chyluria
- Hydrocele

Diagnosis

- Fluid aspirated from swollen lymph glands or from hydrocele can be examined under a microscope to show the microfilariae.
- Thick blood slides for microfilariae should be taken between 10:00pm and 2:00am. This is because microfilariae are not present in the peripheral blood during the day.
- Blood slides for microfilariae may be taken 45 minutes after administration of a provocative dose of diethylcarbamazine 100mg.

Management

The drug of choice for filariasis (adult worms and microfilariae) is diethylcarbamazine (DEC, hetrazan, benocide, notezine) 6mg/kg body weight daily in divided doses (150mg) eight hourly for 12 days for an adult. Diethylcarbamazine may be combined with levamisole. This combination kills microfilariae and reduces the parasite worm count in the body more rapidly.

Prevention and Control

The prevention and control of filiariasis includes:

- Anti-mosquito measures; the same as those used for control and prevention of malaria
- Use of larvicides such as polystyrene powder in the pit latrine
- Reduction of human-mosquito contact including the use of insecticide treated bed nets and screening of houses

Yellow Fever

Yellow fever is an acute viral disease transmitted to human being by the aedes aegypti mosquito. Yellow fever can spread rapidly, and case fatality rate may reach as high as 30% in non-immune populations. Yellow fever is a disease of forest monkeys (zoonoses) and is transmitted among them by the aedes africanus mosquito. Humans may be bitten outside the forest by mosquitoes which have acquired the disease from monkeys feeding on bananas and other agricultural plantations. In urban areas, yellow fever is transmitted by the aedes aegypti. Yellow fever is a disease of tropical African countries, especially in the rain forests.

Mode of Transmission

The mosquito becomes infected after feeding on the blood of an infected monkey or person on the third day of fever. The incubation period takes 18 days at a daily temperature of 18℃ and four days at 37℃. The cycle takes four days and once infected, the mosquito remains infected and infective for its entire life (about two to four months).

A person may also become infected with yellow fever through handling of blood from an infected individual in the first three days of the disease or handling infected monkeys in the early stages of viraemia. Laboratory staff may become infected when working on infected monkeys or infected mosquitoes.

Clinical Picture

The onset is sudden with the following signs and symptoms:

- Fever
- Headache
- Backache
- Nausea and vomiting
- A bleeding tendency (epistaxis, bleeding gums, haematemesis, malaena)
- Liver cell necrosis (in severe illness) resulting in jaundice

- Nephritis leading to albuminuria which may proceed to anuria and renal failure

Management

Yellow fever like most other viral haemorrhagic diseases has no specific drug for treatment. You only give supportive treatment and ensure that the patient is nursed in strict isolation using ordinary barrier nursing techniques. You also ensure that the patient has no further contact with the mosquitoes through the use of insecticide treated bed nets and ensuring that the room is well screened. This is to prevent further spread of the disease from the patient to other healthy people.

Prevention and Control

- Administering yellow fever vaccine to all travellers coming from or going to yellow fever endemic areas.
- Spraying aircraft coming in from yellow fever endemic areas with insecticides to kill imported mosquitoes, which may be infected.
- Isolating all persons who have been in contact with the infected persons. Such individuals should be quarantined in screened houses for seven days.
- Mass immunisation campaign for the community in areas infested with the aedes aegypti mosquito.
- Spraying of larvicides in all possible mosquito breeding places including water holding plants.

Trypanosomiasis (Sleeping Sickness)

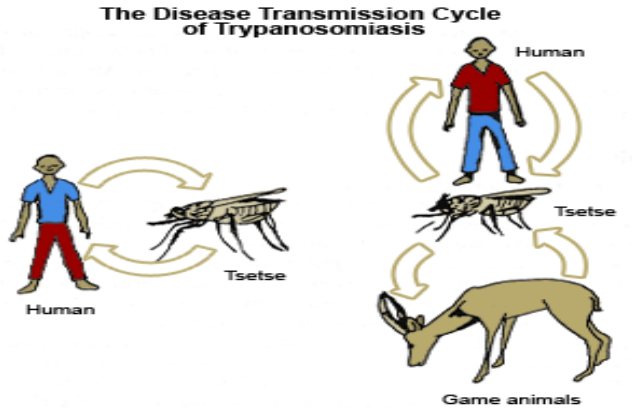
Trypanosomiasis is a tropical disease caused by protozoa called Trypanosoma brucei gambiense (Tbg) and Trypanosoma brucei rhodesiense (Tbr). The important reservoir of Tbr in the wild is the bushbuck. Trypanosomiasis affects both humans and cattle and is invariably fatal over varying periods of time if not treated. Trypanosoma brucei gambiense causes an acute, rapidly progressive illness with death from cardiac complications within several weeks or months. Reservoirs include antelope and pigs. Tbr is found in eastern Africa, now mostly in south-east Uganda.

Trypanasomiasis spreads very rapidly unless the source (the very first case) is identified early, isolated and treated properly. Trypanasomiasis is found in the same areas in Africa where yellow fever is found.

Mode of Transmission

Trypanosomiasis is transmitted by tsetse flies which live in areas of wooded vegetation. Tsetse flies are usually not found in flat plains, closely cultivated areas or areas densely inhabited by people. There are two important types of tsetse flies known to transmit the disease to humans. There is glossina palpalis, a riverine type which breeds along rivers and lakes, and glossina morsitans the woodland type which lives away from water. glossina palpalis is the main vector of Tb gambiense, while glossina morsitans is the main vector for Tb rhodesiense and it prefers to bite cattle and game but will also bite humans. Of the two types of tsetse flies, glossina palpalis (which transmit Tb gambiense parasite) is the main vector in East Africa.

Tsetse flies become infected with sleeping sickness parasites when they take a blood meal from infected persons or animals. After a period of time, during which the trypanosomes undergo development changes, the fly is able to transmit the infection when it bites another susceptible animal or person.



Clinical Features

There is considerable variation in the clinical picture of African trypanosomiasis (AT). Within a few days of a tsetse bite, fever develops due to the invasion of the blood stream by the trypanosomes. The incubation period between the tsetse bite and the onset of fever varies from as short as a few hours following the chancre to several weeks. The early stages of trypanosomiasis are characterised by irregular episodes of fever with headaches, malaise, weight loss, muscle and joint pains, pruritus,

anaemia, skin rash, and deep hyperaesthesia (Karandel's sign).
The clinical features of trypanosomiasis depend on the infecting parasite as follows:

- Trypanosoma brucei gambiense (Tbg) infection causes a slow chronic sleeping sickness, resulting in death from the disease in several months or years. Pigs, dogs and antelopes are the reservoirs.
- Trypanosoma brucei rhodesiense (Tbr) infection is acute and rapidly progressive unless prompt treatment is administered. The parasites damage the heart causing cardiac complications and death within several weeks or months. Pigs and antelopes are the reservoirs for Tb rhodesiense.

Trypanosomiasis presents in the following three stages:

Primary Stage (chancre stage)

Within a few days of the tsetse bite, a painful indurated erythematous nodule may appear at the site of the bite. This chancre may last for one to two weeks and then resolve spontaneously. The chancre occurs in 70% of cases in Europeans but is rare in Africans.

Blood Stage (systemic illness)

During this stage, the trypanosomes spread to the blood, lymph and lymph nodes. There is fever, which does not follow any typical pattern but recurs at intervals of days or weeks. After the fever resolves, the patient develops anaemia, debilitation and general body weakness. The spleen becomes enlarged as well as the lymph nodes. The cervical lymph nodes especially of the lower back of neck become visibly enlarged in 80% of patients - this is called Winterbottom's sign. The other signs and symptoms of trypanosomiasis include:

- Pruritic rash (beginning six to eight weeks after infection)
- Hepatosplenomegaly
- Poor appetite resulting in weight loss, debility, pitting oedema of face and lower legs
- Impotence and menstrual irregularities
- Heart failure

Cerebral Stage (Sleeping sickness stage)

This is the terminal stage of trypanosomiasis. During this stage of the disease, the parasites invade the brain leading to mental deterioration and coma. Convulsions and localised signs such as hemiplegia and facial palsy may occur. Patients are very weak, they sleep during the day but are restless at night. As the disease progresses, the patients become severely ill and die if not treated.

Diagnosis

- Microscopic examination of the chancre fluid to demonstrate the trypanosomes
- Examination of blood (buffy coat) for trypanosomes
- Wet blood smear for microscopy
- Thick blood smear for microscopy
- Serological test (card agglutination test)
- Lymph node aspiration (microscopy)

Management

Day 1	Day 2	Day 3	Week 2	Week 3	Week 4
0.5ml	1.0ml	1.0ml	2.5ml*	3.5ml*	5.0ml*

important: The drugs used for the treatment of trypanosomes are highly toxic.

Common Side Effects of Trypanosomiasis Drugs

Drug	Toxicity
Suramin	Mild proteinuria, arthralgia, severe dermatitis, diarrhoea, nephritis
Pentamidine	Hypoglycaemia, nephritis, diabetes mellitus, injection abscess, collapse if injected intravenously
Melarsoprol	Jarisch-herxheimer reaction, arsenical encephalopathy, mortality up to 100%
Difluoromethyl ornithine	Diarrhoea, abdominal pain
Nitrofurazone	Haemolysis, neuropathy

Remember: The drugs used for the treatment of trypanosomes are highly toxic. As such the patient should be monitored carefully and the drugs administered very carefully.

Prevention and Control

The following measures are effective in the prevention and control of sleeping sickness.

- Chemoprophylaxis; IM pentamidine 250mg single dose protects against Tb gambiense infection for six months in those working in endemic bush land areas such as wildlife personnel.
- Bush clearing (which may harm the environment) and establishment of agricultural settlement will in the long run destroy tsetse fly breeding areas.
- Use of baited flytraps which have an efficacy of 95% at reducing the tsetse fly population.

Schistosomiasis

This disease is commonly known as Bilharzia after Theodor Bilharz who discovered it in Cairo in 1861. The incidence of schistosomiasis is related to water use. Irrigation schemes or water projects for electricity provide the habitat for the snail vectors. Up to 75% of schistosomiasis is transmitted by infected humans while 25% is said to be transmitted by dogs, cows, rats, and baboons. In East Africa, there are two types of schistosomiasis, both of which are named after the causative parasite. They are schistosoma mansoni and schistosoma haematobium.

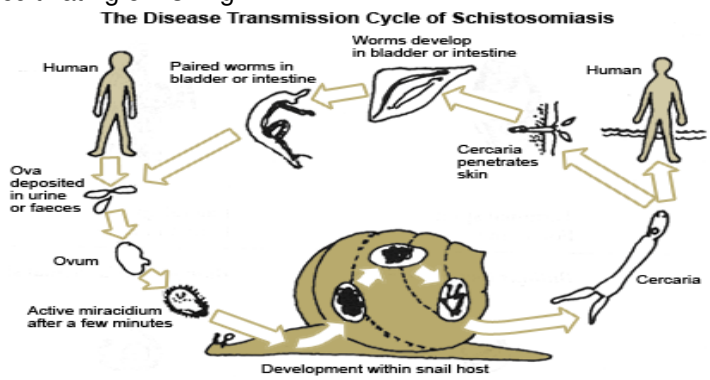
Mode of Transmission

S. mansoni is spread in infected stool while S. haematobium is spread in infected urine. When the schistosome eggs in the urine enter a body of water such as a lake, dam, rice paddy or pond, they hatch into free-swimming larvae called miracidia. The intermediate host for S. mansoni is a vector snail of the genus biomphalaria pfeifferi; while for the S. haematobium it is bulinus africanus. The miracidia, after being shed from the ovum, must enter the appropriate snail host within 24 hours or die.

Transmission Cycle of Schistosomiasis

Inside the body of the snail host, it takes the miracidia four to seven days to develop and multiply into numerous infective cercariae.

The snail sheds them in water where they can only live for 48 hours unless they infect a human. A human being becomes infected when they enter cercariae-infested water, such as when bathing, swimming, laundering, cultivating or fishing.



The cercariae penetrate the skin and enter the bloodstream from where they are carried to the liver or bladder to develop into adult worms. Within four to six weeks, paired adults reach mesenteric and pelvic veins.

Clinical Features

Schistosomiasis as a disease develops in four stages, each of which is characterised by specific signs and symptoms.

Effects of Late Stage Schistosomiasis

Urinary Bladder:	• Obstruction to and dilation of ureters leading to hydronephrosis which may cause kidney failure • Pyelonephritis • Bladder polyps • Calcification of bladder • Cancer of bladder
Liver:	• Portal vein fibrosis leading to portal hypertension • Portal hypertension leading to oesophageal varices which may cause massive haematemesis • Caput medusae and ascites • Hepatomegally
Lungs:	• Pulmonary fibrosis leading to

	pulmonary hypertension, causing congestive heart failure
Bowel:	• Bowel fibrosis and glanulomas • Gastric varices • Haemorrhoids

Diagnosis

The diagnosis of schistosomiasis is confirmed by finding eggs in stools or urine during a microscopic examination. If this test is found to be negative, a colonic or urinary bladder biopsy can be done. Serological tests are also highly sensitive and yield specific results.

Management

The main aim of treatment is to kill the adult worms and to stop their egg-laying activity.

Drugs Used in the Oral Treatment of Schistosomiasis

Type of drug	Dose	Contraindications	Side effects	Remarks
Praziquantel (Biltricide, Distocide, Cysticide, Cesol, Cestox, Coestocide)	S. mansoni: 30mg/kg twice in one day S. haematobium 40mg/kg once (single dose)	None (drug of choice if liver diseased)	Mild giddiness	Expensive but equally effective for both types
Oxaminoquine (Vansil)	S. mansoni 15mg/kg 12 hourly (twice daily) for 2 days	Epilepsy	Occasional drowsiness, dizziness Or psychosis	Not effective for S. haematobium
Metrophonate (Bilarcil)	S. haematobium 7.5-10 mg/kg body wt. given in 3 doses at intervals of 14 days; that is a total dose of 22.5 - 30mg/kg.	None	None if correct dose	Not effective for S. mansoni Cheap

Prevention and Control

The prevention of schistosomiasis can be achieved through the following measures:

- Prevention of ova-containing urine and stool from reaching the water by:
  - Digging and using pit latrines
  - Safe water supply
  - Treating the infected persons
- Attacking the intermediate host (the snail) using molluscicides such as copper sulphate which kills snails and their eggs.
- Avoiding contact with infested water by using protective clothing when laundering, cultivating, swimming and wading. Bathing should be done at home (storing water at home for three days will kill the cercariae).
- Conducting mass treatment campaigns for communities at risk using oral praziquantel, especially school-going children.

Leishmaniasis (Kala Azar)

This is an infection caused by a parasite of the leishmania group. The disease is also known as Kala Azar. There are three forms of leishmaniasis which are caused by different parasites.

The vector of leishmaniasis is the female sandfly (phlebotomus). The four types of sand flies are:

- Phlebotomus martini
- Phlebotomus orientalis
- Phlebotomus longipes
- Phlebotomus pedifer

In Kenya, the main vectors are phlebotomus martini which transmit the parasite leishmania donovani, responsible for visceral leishmaniasis. The species P. orientalis is common in Sudan while P. longipes and P. pedifer are commonly found in Ethiopian and Kenyan highlands. Together they transmit the parasite leishmania aethiopica which is responsible for cutaneous leishmaniasis.

Type of Leishmaniasis	Causitive Parasites
Visceral	Leishmania donovani Leishmania infantum
Cutaneous	Leishmania tropica Leishmania aethiopica Leishmania mexicana
Mucocutaneous	Leishmania braziliensis

Mode of Transmission

The zoonotic hosts of leishmaniasis are mainly dogs and rodents, although in some parts of Kenya humans have become the reservoir as well as host. The parasites of leishmaniasis are transmitted when the sandfly bites an infected person and ingests amastigotes. On reaching the sandfly's stomach, the amastigotes change into promastigotes. After four to seven days, they migrate to the foregut where they develop into infective promastigotes. The infective promastigotes are then conveyed in the saliva of the sandfly during feeding.

During feeding, the sandfly tears the host's tissue to feed on blood and at the same time deposits infective promastigotes at that site. From here the promastigotes enter the bloodstream and into the macrophages. On entering the macrophages, the parasites escape detection by the body's defences and are spread to various body tissues.

Visceral Leishmaniasis

Visceral leishmaniasis is found in many areas of the North Eastern region of Kenya in Machakos, Kitui, Masinga, Tseikuru (Mwingi), Makueni, Kibwezi, and Wajir.

Clinical Features of Visceral Leishmaniasis

Visceral leishmaniasis is characterised by fever, splenomegaliy, hepatomegally accompanied by anaemia and weight loss. Visceral leishmaniasis has a rather long incubation period of four to ten months or longer, before definitive signs and symptoms manifest. Most of the patients (96%) are killed by secondary bacterial infections of the lesions.

Visceral Leishmaniasis

Visceral leishmaniasis is found in many areas of the North Eastern region of Kenya in Machakos, Kitui, Masinga, Tseikuru (Mwingi), Makueni, Kibwezi, and Wajir.

Clinical Features of Visceral Leishmaniasis

Visceral leishmaniasis is characterised by fever, splenomegaliy, hepatomegally accompanied by anaemia and weight loss. Visceral leishmaniasis has a rather long incubation period of four to ten months or longer, before definitive signs and symptoms manifest. Most of the patients (96%) are killed by secondary bacterial infections of the lesions.

Cutaneous Leishmaniasis

Cutaneous leishmaniasis is found in West Pokot, Turkana, Baringo, Laikipia and Kerio valley. It is characterised by single or several painful chronic ulcers in those parts of the body exposed to sandfly bites, such as arms, legs or face. In the lower hotter areas of Kenya such as Baringo, the vector is the P. orientalis, while in the highlands of Kenya, the high altitude sandflies, P. longipes and P. pedifer are the vectors. Phlebotomus longipes bites human beings in their houses at night transmitting the parasite leishmania aethiopica, which is responsible for cutaneous leishmaniasis.

Clinical Picture of Cutaneous Leishmaniasis

In about two to eight weeks following a bite from an infected sand fly, a small itchy papule appears at the site of the bite. Over several weeks, the papule grows in size expanding to form a single indolent ulcer or multiple ulcers. The disease may be mistaken for leprosy. There may be enlargement of the local lymph nodes. The lesions begin to heal spontaneously two to twelve months later. Cutaneous leishmaniasis does not spread to other body organs.

Management of Cutaneous Leishmaniasis

Small lesions may be treated surgically by curettage or by freezing, using liquid carbon dioxide or by infiltrating them with 1 - 2ml sodium stibogluconate. Large disfiguring or multiple skin lesions are treated in the same way as for visceral leishmaniasis using IV or IM sodium stibogluconate 20mg/kg daily for 20 - 30 days. The drug of choice for visceral leishmaniasis caused by leishmania aethiopica is IM pentamidine isothianate 3 - 4mg/kg once or twice a week.

Mucocutaneous Leishmaniasis

This form of leishmaniasis occurs primarily in the tropics of South America. The disease begins with the same sores noted in localised cutaneous leishmaniasis. Sometimes these primary lesions heal, other times they spread and become larger. Some years after the first lesion is noted (and sometimes several years after that lesion has totally healed), new lesions appear in the mouth and nose, and occasionally in the area between the genitalia and the anus (the perineum). These new lesions are particularly destructive and painful. They erode underlying tissue and cartilage, frequently eating through the septum (the cartilage which separates the two nostrils). If the lesions spread to the roof of the mouth and the larynx (the part of the wind pipe which contains the vocal cords), they may prevent speech. Other symptoms include fever, weight loss, anaemia (low red blood cell count). There is always a large danger of bacteria infecting the already open sores.
Treatment is similar to that of cutaneous leishmaniasis. Prevention or early detection and appropriate treatment are preferred. Corrective surgery can be done where need arises.

Prevention and Control

Kala Azar can be prevented through:

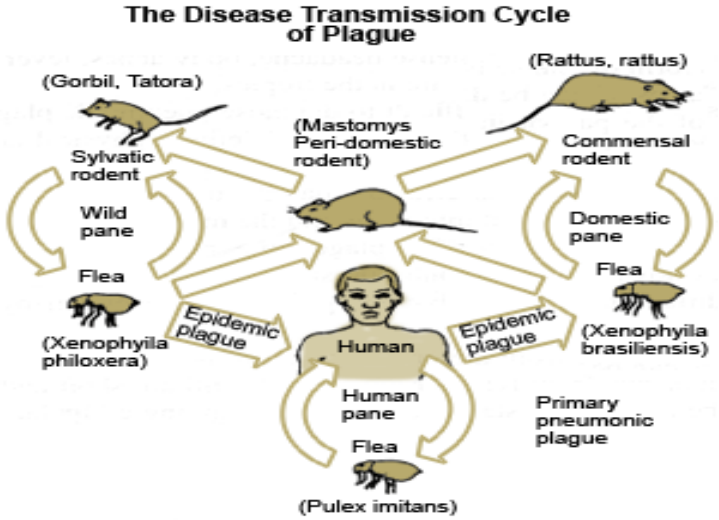
- Use of insecticide treated curtains in homes (these have been used with success in Baringo district)
- Destruction of infected dogs and rodents
- Early diagnosis and treatment of the infected persons
- Health education for communities on preventive measures

Plague

This is a highly infectious disease caused by bacteria called yersinia pestis. Plague is a disease of rodents, especially rats and is spread from rat to rat by a rat flea called xenopsylla
cheopis. Plague is a very rare but serious disease because
it can spread very rapidly unless the first case is recognised
early and appropriate action taken. It is also a serious disease
with a high mortality rate (case fatality rate in the absence of treatment can be as high as 60%).

Mode of Transmission

Plague occurs when infected wild rats, especially the sewer rat (R. norvegicus) die from the disease and their fleas look for substitute domestic rat (rattus italia) hosts. The domestic rat becomes infected and after it dies the fleas start biting human beings. When the first human is infected, the disease causes bubonic plague. People working in the fields may also be bitten by fleas from the dead infected wild rats and develop bubonic plague.



Clinical Picture

Plague has three clinical presentations, bubonic, septicaemic and pneumonic.

Diagnosis

The diagnosis of plague can be confirmed by doing a microscopy (staining) of sputum or pus from the bubo to demonstrate the bacilli.

Remember: Early recognition of plague followed by correct action is a matter of life or death.

You must start treatment as soon as you confirm the diagnosis from clinical and laboratory findings. The plague bacillus (Yersinia pestis) is sensitive to most common antibiotics except penicillin. Drug treatment with any of the following antibiotics is effective:

- IM streptomycin 30mg/kg two to four times daily for ten days
- Oral or IV tetracycline 10mg/kg six hourly for ten days
- Oral cotrimoxazole two tabs twelve hourly for seven days
- Oral chloramphenicol 500mg six hourly for seven days

Remember: Plague is an internationally notifiable disease.

Management

Prevention and Control

The prevention and control of plague depends on the following measures:

- Early diagnosis and notification so that the patients are not moved or referred to the hospital
- Chemoprophylaxis of all contacts of the patients such as family, visitors and health care workers using tetracycline or cotrimoxazole
- Isolation of the infected and quarantine of the contacts for ten days
- Use of insecticides to kill fleas
- Eradication of rats, for example using rat poison
- Vaccination during epidemics using an anti-plague vaccine
- Health education for communities on preventive measures

Relapsing Fever

This is an acute infectious bacterial disease which is characterised by alternating febrile periods. It is also known as Recurrent fever, Spirillum, Tick fever, or Tick Bite fever. It is transmitted by ticks and lice. There are two types of relapsing fever, namely:

- Louse-borne relapsing fever
- Tick-borne relapsing fever

The louse-borne relapsing fever is spread by the human head louse, pediculus capitis, and the body louse, pediculus corporis. They transmit spirochaetes of the genus borrelia reccurentis. The tick-borne relapsing fever is transmitted by soft ticks (ornithodoros moubata) which live in cracks and crevices of walls and floors. They transmit spirochaetes of the genus borrelia duttoni, which cause tick-borne relapsing fever. Children, visitors and pregnant women travelling to endemic areas are more susceptible to the disease. Adults in endemic areas are semi-immune to relapsing fever.

Mode of Transmission

The disease is transmitted from person to person by the bite of the head louse, body louse or soft tick.

Louse-borne

The human louse transmits louse-borne relapsing fever from person to person. When the louse feeds on the blood of an infected person, it takes up the bacteria. The bacteria multiply within the body of the louse (but these spirochaete are not found in the saliva or the excreta of the louse). The infection is transmitted to another person only when the louse is crushed on the body surface near a bite wound. The offspring of an infected louse does not carry the spirochaetes. Epidemics of louse-borne relapsing fever are associated with times of war and famine when refugees are crowded together in unsanitary conditions, which promote infestation with human body lice.

Tick-borne

Tick-borne relapsing fever is transmitted when a tick sucks blood from an infected person. The spirochaetes are taken up and multiply in the tick's body. In seven days, the spirochaetes appear in the tick's salivary glands and the coxal fluid ready to be transmitted to a new host. The organisms can either be injected directly when the tick feeds on the host, or they can infect a new host by penetrating intact mucous membranes (for example in laboratory infections).

Unlike in louse-borne fever where the offspring does not carry the organism, in tick-borne fever the borrelia duttoni organisms pass into the ovary of the tick, thus automatically infecting the offspring of the ticks (vertical transmission). In

this way, a house once inhabited by infected ticks will remain dangerous for up to ten years. In an infected pregnant woman, the spirochaete can cross the placenta to the foetus resulting either in abortion, stillbirth, premature delivery, or congenital infection in the newborn.

Clinical Features

The patient presents with sudden onset of fever which ranges between 39.5℃ - 40.5℃. There is rapid pulse, headache, aching joints, vomiting and infected conjunctiva. Often there is potential rash, epistaxis, and herpes labialis. After five to seven days, the temperature drops by crisis. In about 60% of the patients, a less severe relapse of the symptoms occurs five to ten days after the first attack. A second relapse may occur in about 25% of the patients. In untreated cases, there may be up to ten relapses. The fever and clinical symptoms become less severe each time after the relapse. Relapsing fever has a high mortality rate of 40%. Common complications of relapsing fever include meningitis, iritis, optic nerve atrophy (blindness), myocarditis and liver failure bleeding.

Diagnosis

You can confirm relapsing fever by doing a microscopic examination of a thick blood smear for the spirochaetes.

Management

Treatment should eradicate the spirochaete from the body without eliciting Jarisch-Herxheimer reaction. Some deaths occur after starting treatment as a result of a severe Jarisch-Herxheimer reaction. The antibiotics suddenly kill a large number of spirochaetes which release toxins into the circulation causing the patient to collapse. This reaction is characterised by chills, rapid breathing, elevated temperature (40 – 42℃), confusion, delirium, and sometimes convulsions and coma. The patient then develops very severe hypotension, and may go into heart failure. This complication is however not seen in tick-borne infections. Patients must be nursed flat, given adequate fluids and be confined to bed for at least 24 hours.

The treatment of relapsing fever is IM procaine penicillin 400,000 units stat, followed the next day by oral tetracycline 500mg six hourly for five to seven days. An alternative to tetracycline is oral doxycyline 200mg once (single dose).

Remember: Tetracycline should not be given to children and pregnant women because it discolours the teeth permanently and also causes premature calcification of bones.

Prevention and Control

Louse-borne

To eradicate lice you should advise the patient to do the following:

- Improve their personal hygiene
- Use insecticides to kill lice, for example malathion powder
- Boil clothes to kill lice and eggs (delousing)

Onchocerciasis

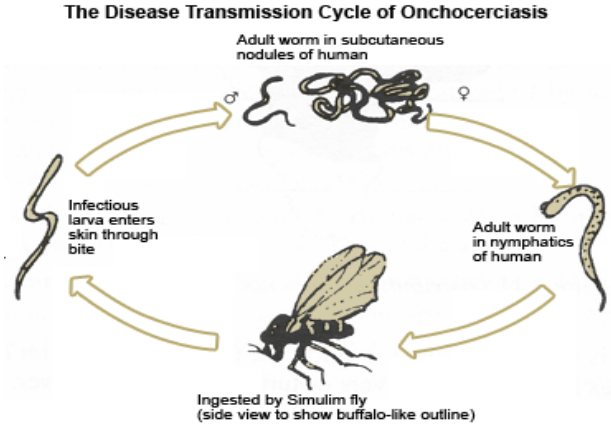
Onchocerciasis is a chronic disease caused by a filarial worm called onchocerca volvulus. It lives in the subcutaneous and connective tissue of the infected person. It manifests mainly as skin nodules on bony surfaces, and causes eye lesions which result in blindness. That is why it is also known as river blindness. The vector for O. volvulus is the female black fly of the genus simulium. In western African countries where the disease is more prevalent, the vector is simulium damnosum, while in East Africa the vector is simulium neavei. The disease is found in western Uganda, southern Sudan, and eastern Democratic Republic of the Congo (DRC). Blackflies are able to travel up to 80km in a day.

The simulium fly breeds in fast running well aerated rivers or turbulent areas of a river such as at the waterfalls and rapids. The eggs of the simulium fly are able to develop into larvae only in water that is rich in oxygen, such as fast flowing rivers. Larvae are attached to submerged plants, rocks and living crabs. The female O. volvulus worm is only about 0.3mm in diameter but can be as long as half a meter (50cm) long. The male is about 0.2mm in diameter and 4 - 13cm long.

Mode of Transmission

River blindness is spread from person to person by the bite of an infected blackfly. Black flies feed during the day both inside and outside

houses. They usually bite early in the morning or late in the evening.
The blackfly takes up microfilariae when it sucks the blood of an infected person. Once in the stomach, the microfilariae penetrate the stomach wall and travel to the thoracic muscles where they develop further for about seven days. They then move to the head of the fly ready to be transmitted to the next susceptible person when the fly feeds.
When the fly bites again, it injects the larvae of O. volvulus into the skin of the healthy host. The larvae mature in the human subcutaneous tissue into adult worms in about one to three years.



Clinical Features

After the adult O. volvulus has lived in the body of an infected person for about one year, it begins to give birth to microfilariae. One adult female worm can produce up to one million microfilariae every year. The microfilariae of O.volvulus have a strong liking for the skin and eyes of the infected host. Adult worms live up to 17 years in nodules in the subcutaneous and connective tissue. Most nodules are found on the bony skin surface such as the elbow, skull, ribs, iliac, crests, and shoulder scapula. The disease has four different clinical presentations:

Severe Itching

This is one of the early symptoms and mainly affects the buttocks. The severe itching is often accompanied by skin depigmentation giving rise to a 'leopard skin'.

Skin Nodules

These are caused by the adult worms which you saw earlier like to live in the skin. They contain adult worms and are painless, rubbery, and firm; ranging in diameter from 3mm - 3cm.

Dermatitis

This is caused by a reaction to the presence of microfilariae in the epidermis and manifests as itchy papules and macules. Later, the skin becomes loose, scaly, atrophic and depigmented.

Blindness

This is caused by the presence of microfilariae in the cornea and the anterior chamber of the eye. It starts with oedema of conjunctiva; then corneal spots and a pannus begin to develop. Finally cataracts, iritis, sclerosing keratitis, and glaucoma develop leading to blindness. You can differentiate between trachoma and river blindness because in river blindness the pannus start at the lower limbus, while in trachoma it affects the upper limbus.

Diagnosis

The diagnosis is made by examining skin snips from the thighs, buttocks and iliac crests under a microscope for microfilariae.

Treatment

Onchocerciasis is not a fatal disease. If the patient has no serious complaints and is likely to be re-infected, there is no urgency for treatment, since the traditional drugs used have been known to cause severe reactions. However, the following groups of patients do need treatment:

- Patient with eye lesions
- Patients with severe skin lesions
- Patients with heavy infections

Two types of treatment are used in the management of this disease. The first one is to kill the microfilariae. Give the patient oral Ivermectine (mectizan) 150 microgram/kg single dose repeated once every six to twelve months. The second type of treatment is aimed at killing or removing the adult worms by surgical resection of the nodules.

Prevention and Control

The following measures have been found to be useful in preventing onchocerciasis:

- Addition of insecticide to the water of rivers known to be breeding places of the simulium fly
- Wearing of long clothing which covers most of the body
- Moving the whole community away from sites near where black flies breed
- Treating infected people with microfilaricides
- Mass treatment of communities using ivermectine

SECTION 5: DISEASES CAUSED BY FAECAL-ORAL CONTAMINATION

Introduction

Diseases caused by faecal-oral contamination are those whose causative organisms are excreted in the stool of an infected person and then, by various ways, enter the mouth of a susceptible person.

Water that looks clean to the eye may be dangerously polluted. Contaminated food may look, smell and taste delicious and yet harbour dangerous organisms. Food and water transmits diseases if contaminated by infected hands, soil, flies, animals, animal products or polluted water. Flies transmit diseases by vomiting on food or by carrying pathogens from faeces and transferring them to food. Indeed, most of the primary diarrhoeal diseases are caused by direct contamination of food or water by faeces, through flies and fingers.

Objectives

By the end of this section you will be able to:

- List eight common diseases spread by the faecal-oral route
- Describe the methods used to interrupt the transmission cycle of faecal-oral transmitted diseases
- Describe the clinical features, of faecal-oral route transmitted diseases
- Describe the management of faecal-oral route transmitted diseases.

Now move on to look at the diseases one by one starting with enteric fevers.

Enteric Fevers

Enteric fevers include typhoid fever and paratyphoid A and B fevers. Typhoid fever is an infectious disease characterised by high continuous fever, malaise and involvement of lymphoid tissue and spleen. Diarrhoea is not a common symptom in typhoid fever.

Paratyphoid fever may present like typhoid fever, but in most cases it presents as gastroenteritis or transient diarrhoea. Both are mainly spread by the faecal-oral route through contaminated food, water and milk. Flies are also important in the transmission of enteric fevers.

You will now consider each type of disease in turn.

Typhoid Fever

This is an infectious bacterial disease caused by salmonella typhi.

Typhoid fever is endemic in many regions of East Africa, although epidemic outbreaks have occurred when a source of water or food used by many people has been contaminated.

The disease has a case fatality rate of 3% with treatment and 10% without adequate antibiotic treatment. Human beings are the only known reservoir and host.

Clinical Features

The incubation period of typhoid fever is 7 - 21 days. The disease has a gradual onset which progresses through the following four stages.

First Week

During the first week and early in the disease, the patient has severe headache, malaise, loss of appetite, body pains and aches and a tendency to nose-bleed.
The body temperature rises day by day or in steps to 39.5ºC or higher. Most patients cough because they develop bronchitis and may also complain
of constipation.

Second Week

In the second week, temperature continues to rise, but the pulse rate is slower than would be expected for that temperature. There is swelling of lymphoid tissue in the intestines as well as Peyer's patches, necrosis and ulcers, which cause the abdomen to become distended and tender.
The high temperature and toxaemia causes mental confusion and disorientation in the patient. Half the patients may develop greenish watery ('pea-soup') diarrhoea and broncho-pneumonia.

Third Week

Body temperature decreases step by step and the patient improves slowly. If there is no improvement, the Peyer's patches in the intestines perforate and toxaemia increases.
The patient becomes delirious and incontinent of urine and stool, muscles twitch and coma may precede death.

Fourth Week

For the patients who do not suffer the serious complications of the third week, the fourth week is a period of convalescence.
The temperature drops back to normal and the patient recovers gradually.

Diagnosis

The best way to diagnose typhoid fever is through a blood culture. This may be positive during the first week and for a variable period after this. Stool and urine cultures can also be made although they are only positive after the first week. Other tests which are undertaken include:

- Widal test during the first and second week, that is indicative of high and rising titres
- WBC count which indicates low levels (leucopenia) with raised lymphocyte count
- Stool to check for presence of occult blood which is found in 100% of the cases

How reliable is the Widal test in typhoid diagnosis?

Although the Widal test is still very useful, especially when two tests are performed four to five days apart after the end of the first week, its interpretation is full of difficulties especially in endemic areas and in people who have had the typhoid vaccine. That is why it is a good idea to also carry out one of the other laboratory tests.

Treatment

The treatment of typhoid fever includes the following:

- Fluid replacement due to diarrhoea
- Oral norfloxacin 400mg 12 hourly for 10 - 14 days
- Oral ciproxacin 500mg bd. for 14 days
- Oral corticosteroids to prevent Jarisch-Herxheimer's reaction
- Patient should be isolated in fly-proof room
- Contaminated articles should be disposed by incineration
- Stools and urine should be disposed of in a pit latrine or septic tank
- Surgical treatment for perforated bowels

Note:

When treatment is started early it is not usually necessary to refer typhoid patients.

Prevention and Control

The prevention and control of typhoid fever is similar to that of many diarrhoea diseases. It includes:

- Identification of the carriers especially those who work as food handlers and treat them promptly
- Administration of typhoid vaccine
- Safe water supply

- Improvement in food hygiene

Paratyphoid Fever

This is the second type of enteric fever which was mentioned earlier. It is caused by bacteria known as salmonella paratyphi types A, B and C. The disease runs a milder course than typhoid fever and also has enlargement of the spleen, bloodstained diarrhoea and swelling of the Peyer's patches.

Treatment
The treatment of paratyphoid fever is as follows:

- Intravenous fluid if diarrhoea is severe
- Oral rehydration if diarrhoea is mild
- Oral contrimoxazole two tablets bd. for five to seven days

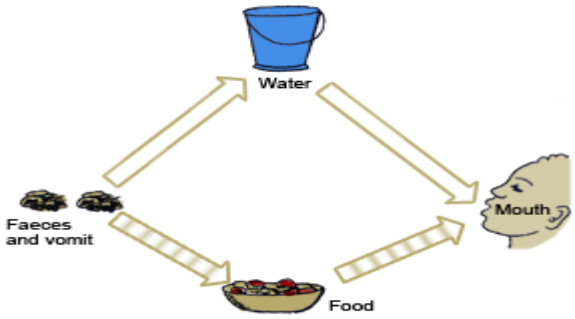
Prevention and Control
The prevention and control measures are similar to those that were covered under typhoid fever.

Cholera

Cholera is an intestinal disease which is characterised by sudden onset of profuse watery stools and vomiting, leading to severe dehydration, acidosis and circulatory collapse.

Epidemiology of Cholera
It is caused by a small comma-shaped motile organism called vibrio cholerae. There are about four sub-strains of the cholera vibrio, namely, El Tor, Ogawa, Luaba and Hikojima. The El Tor sub-strain causes cholera epidemics in East Africa.
Cholera is transmitted through the faecal-oral route, mostly by water which has been contaminated with faecal matter. The vibrios are very sensitive to the hydrochloric acid found in the human stomach, and so a large number of organisms must be ingested for infection to occur.
Cholera occurs in all parts of the world where the living conditions are unsanitary.
The human being is the reservoir and host. Vibrios prefer brackish (salty) water. In seawater, the organisms can live even longer multiplying in crabs and shrimps. Vibrios also multiply in certain foods such as milk and boiled rice.

What is the role and importance of carriers?
The reservoir of infection in cholera is formed mainly by the carriers. For every clinical case of cholera there may be 50 - 100 asymptomatic carriers. Although the carriers excrete a smaller number of vibrios than the patients, they form the greatest danger to the community because of their sheer number and freedom of movement.



Clinical Features
Cholera has a short incubation period of two to three days. The vibrios remain in the digestive tract from where they cause water loss and electrolyte imbalance.

What signs and symptoms would lead you to suspect cholera?
Unlike typhoid, cholera is not a systemic infection and therefore fever is generally low or absent. Cholera progresses through the following three stages.

First Stage
This stage lasts for 3 - 12 hours. During this stage profuse watery stool is passed by the patient until faecal matter disappears. The stool becomes almost clear fluid with flakes of mucus, giving it the classical rice-water stool appearance. Vomiting follows diarrhoea. Initially the patient vomits food but soon after only clear fluid or rice-water is vomited. The patient develops severe cramps in the abdomen and limbs due to electrolyte loss.

Second Stage
The patient becomes severely dehydrated, the skin is cold, dry and inelastic. Blood pressure drops severely, and it may not be recordable. The pulse becomes weak and rapid, urine

production ceases, patient collapses and may go into irreversible shock.

Third Stage

This is the stage of recovery. Some patients recover spontaneously or with treatment. The general condition rapidly improves, diarrhoea becomes less profuse and the patient is able to take oral fluids.

Diagnosis

Cholera should be suspected in any outbreak of diarrhoeal diseases. The diagnosis is made on clinical grounds and also through laboratory isolation of vibrio cholerae from a rectal swab, stool or vomitus specimen.

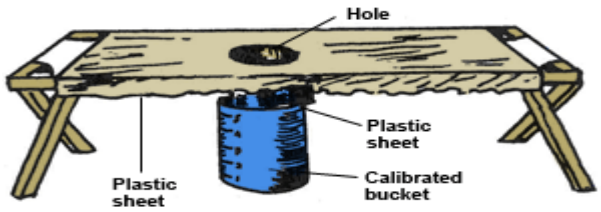
Management

The management of cholera is easily done at health centre level and so there is no need to refer patients to hospital. This is because the main cause of death in cholera patients is dehydration. This can occur very quickly and early in an outbreak before the urgency of treatment is recognised. Therefore early rehydration is the most important part of management.

Other measures taken in the management of cholera include the following:

- The immediate notification of district medical officer. Cholera is an internationally notifiable disease.
- Admission of patients in temporary treatment centres, such as school or church and the treatment of patients on 'cholera beds', that is beds with a central hole through which the stools can pass into a bucket and measured.
- Barrier nursing and patient isolation should be practiced to prevent spread of the disease.
- Disinfection of hospital equipment and proper disposal of stool and vomitus into a pit latrine or septic tanks.

Now move on to see more measures that are taken in the management of cholera.



Measures taken in the management of cholera also include the following:

- Immediate introduction of intravenous fluids to correct the severe fluid and electrolyte loss. If this is started in time it can save many cholera cases. As soon as a patient is able to drink, Oral Rehydration Solution (ORS) should be given in water at a rate of 200 - 300ml per hour.
- Intravenous fluids for patients who are in shock or too weak to drink.
- Oral tetracycline, 500mg six hourly for five days. This speeds up recovery and prevents convalescent carrier state.
- Oral cotrimoxazole, two tablets 12 hourly for three days can also be used effectively.

Remember:
Rehydration will save almost all cholera cases.

Prevention and Control

The following measures are useful in the prevention and control of cholera.

- Surveillance: early detection is central to the success of cholera control because it enables immediate action to be taken as soon as there is an outbreak of the disease. Surveillance leads to immediate notification of an outbreak.
- Provision of clean safe water to the community can easily control cholera because it is mainly a water borne disease.
- Teaching and demonstrating to members of the community cheap and effective methods of purifying water at their home.
- Foods which can transmit cholera such as milk, should be pasteurised or boiled; raw or uncooked food should be avoided or washed in safe water, foods

should be protected from flies and markets inspected.

Now move on to see more measures that are useful in the prevention and control of cholera.

Measures that are useful in the prevention and control of cholera also include.

- Encouraging the digging and use of pit latrines.
- Provision of chemoprophylaxis to all contacts of the patients including family, friends and visitors using oral tetracycline.
- Administering cholera vaccine to health care workers in contact with the patients during the epidemics.
- Enrolling the assistance of formal and informal community leaders to address negative cultures and customs that contribute to the spread of cholera. Such communities should be targeted with information, education and communication messages.

Remember:
Cholera is an internationally notifiable disease.

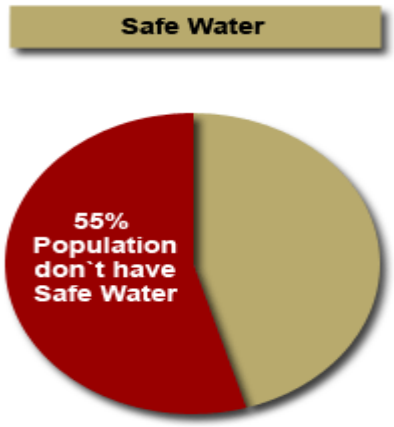
Bacillary Dysentery (Shigellosis)

Bacillary dysentery, also known as shigellosis, is an acute bacterial disease of the intestines. It is common especially in areas where the standards of hygiene are low, particularly, where there is scarcity of safe water, improper human excreta disposal, large population of flies and child malnutrition. Once again humans are the only known reservoir.

It is caused by a non-motile gram-negative bacilli of the genus shigella spp. The organisms responsible for outbreaks are:

- *Shigella sonnei*
- *Shigella dysenteriae*
- *Shigella flexneri*
- *Shigella boydii*

However, the first three organisms are the most common causes of outbreaks.



Mode of Transmission

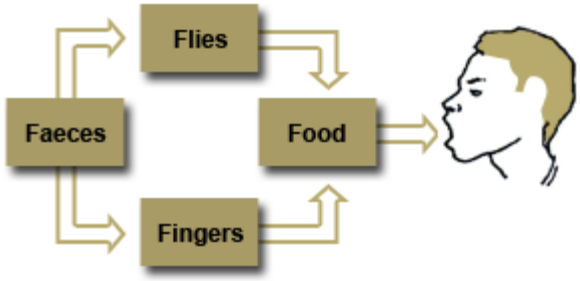
The mode of transmission of the disease is the faecal-oral route. The organisms are transmitted directly through flies or contaminated hands.

Indirect transmission may also occur through dishes which are poorly washed. The shigella multiply in food which when ingested causes dysentery.

Clinical Features

The disease has a short incubation period of one to four days. The onset is sudden with fever, headache, diarrhoea with streaks of blood, and colicky abdominal pains.

After a few motions (usually in a few hours) diarrhoea stops and is followed by severe colicky abdominal pain known as dysenteric syndrome, and painful contractions of the sphincter ani which produce an irresistible urge to defecate (tenesmus). When the patient goes to the toilet they pass small amounts of purulent mucus and blood. Vomiting may also occur. Toxins produced by the shigella on the wall of the colon may be absorbed into the blood stream resulting in toxaemia. Toxaemia causes high fever and rapid pulse. Dehydration is also common and dangerous as it may cause muscular cramps, oliguria and shock. In infants, rectal prolapse may occur as well as convulsions.



The 4 F Connection

Diagnosis

The following laboratory examinations are undertaken:

- Stool examination which shows the presence of blood and mucus
- Stool microscopy which shows presence of large numbers of white blood cells and erythrocytes
- Stool culture for shigella spp.

Management

Mild bacillary dysentery is self-limiting and all it requires is prevention or treatment of dehydration. However, in the case of severe infection, you will need to combine rehydration with antibiotics as follows:

- Antibiotics: oral ciprofloxacin 500mg 12 hourly for five to seven days
- Analgesics for colic such as codeine phosphate and loperamide, belladonna, or paracetamol
- Rehydration due to diarrhoea and fluid loss. Oral rehydration using ORS in water is always useful as an aid to parenteral rehydration. It also carries less danger of disturbing electrolyte balance. However, intravenous fluid should be given to the very ill who cannot take anything orally.

Prevention and Control

The prevention and control of bacillary dysentery depends on stopping the faecal-oral transmission through the following ways:

- Safe water supply
- Improvement in personal hygiene
- Digging and use of pit latrines
- Practising food hygiene
- Giving health education that emphasises environmental hygiene and breastfeeding
- Inspection of public eating places, markets, boarding schools and camps

Giardiasis

This is an infection of the small intestines by protozoa called giardia lamblia. The disease may be mild (asymptomatic) in some individuals, while in others it may cause diarrhoea, malabsorption of digested nutrients and weight loss.

Giardiasis is found in all the countries of the world, but it is more common in developing countries such as Kenya, where the water supply may be contaminated by human faeces or sewerage.

Mode of Transmission

Often, the disease is spread from person to person, especially within families by asymptomatic carriers.

Cysts which are excreted in the stool of an infected person remain infectious for up to three months in cold water or four days if the temperature is 37ºC. As soon as the cysts are ingested by a human being, they are activated by the hydrochloric acid in the stomach. Trophozoites emerge and adhere to the wall of the upper portion of the small intestine. Here they begin to multiply and in about 10 - 14 days, the symptoms manifest.

Clinical Features

Acute giardiasis is characterised by sudden onset of nausea, loss of appetite, abdominal distension (bloating sensation), prominent bowel sounds, and diarrhoea with frequent, frothy, yellowish stools with offensive odour. Fatigue, lethargy and weight loss often occur.

After about three weeks the symptoms reduce in severity and for many of the patients, this is the beginning of spontaneous recovery. Some patients however, remain symptomatic and continue to lose weight because of ongoing malabsorption of nutrients, mostly fat, vitamin B12 and lactose. The disease may persist for months or years

Diagnosis

Diagnosis of giardiasis is often difficult to establish because stool examination rarely

reveals motile trophozoites. However, approximately 60% of samples will show cysts. The diagnosis is therefore made through the following ways:

- Stool microscopy to show cysts (three separate stool specimens should be collected to increase sensitivity of the test)
- Serology (giardia antigens can be detected in stools) - immunological test

Management

Any one of the following three alternative treatments is effective enough to clear the infection:

- Oral tinidazole 50mg/kg body weight single dose
- Oral metronidazole 2g single dose. Repeat the dose after ten days to increase the cure rate
- Oral metronidazole 250mg eight hourly for seven days

Prevention and Control

The cysts of giardia lamblia are not affected by chlorine treatment of water or by iodine. However, they are highly susceptible to heat, therefore, the following preventive measures are important:

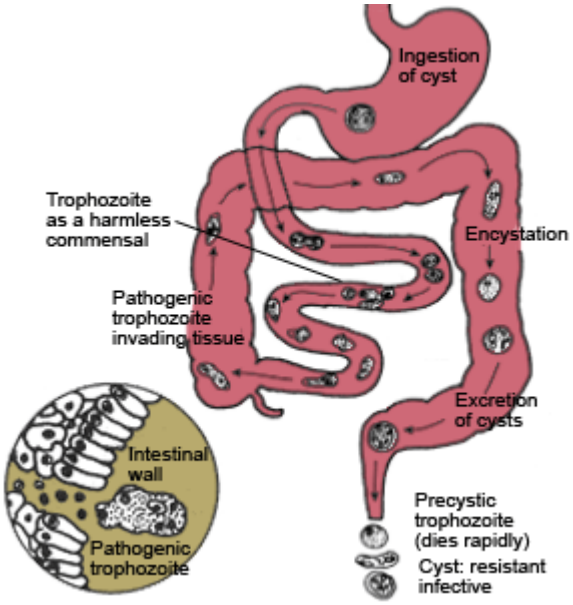
- Cooking food and boiling drinking water to kill the cysts
- Advise people to avoid eating raw salads, ice cream, unpeeled fruit and ice cubes in endemic areas
- Use of sand filters is also effective in protecting water from giardia cysts
- Tracing and treatment of healthy human carriers

Amoebiasis

This is a protozoal infection mainly of the intestinal mucous membrane in humans caused by *entamoeba histolytica*. The disease is found in all parts of the world but more common where sanitary conditions are poor. Amoebiasis can occur in families or spread through institutions but usually does not occur in epidemics. It can be endemic in a population in which many individuals are asymptomatic cyst-passers with only a few getting the disease.

Mode of Transmission

Cysts are passed from person to person by the faecal-oral route, by fingers soiled with faeces either directly into the mouth or via food. Infections may also occur from drinking contaminated water. Amoebiasis can occasionally spread from the bowels to other organs of the body, especially to the liver leading to amoebic liver disease.



Pathogenesis

Once the cysts are ingested, the emerging trophozoites take up residence in the intestinal mucosa.

The organisms multiply in the mucosa (causing the formation of bottle-shaped ulcers each 1-2cm in diameter). Too many such ulcers may cover the large intestine. Some of the ulcers may become perforated leading to severe peritonitis with shock. In the small intestines, the *entamoeba histolytica* may pass through the mucous membrane and enter the liver. After a variable incubation period a liver abscess may form.

Clinical Features

The signs and symptoms of amoebiasis include:

- Colicky abdominal pain
- Watery foul smelling diarrhoea containing blood-streaked mucus
- There may be a hard large tender abdominal mass (amoebic)

Remember:

Amoebic infection is usually asymptomatic.

Diagnosis

This is reached by doing a stool microscopy for cysts of *entamoeba histolytica.*

Management

No treatment is necessary for asymptomatic patients as in time they clear the infection. However, for invasive disease either one of the following treatments is effective:

- Oral metronidazole 800mg eight hourly for five to seven days
- Oral diloxamide furoate 500mg eight hourly for ten days

In hepatic amoebiasis, oral metronidazole is very effective.
A three day course of 1.4g - 2.4g a day will treat the disease.

Extra-intestinal Amoebic Disease

The most common site for extra-intestinal amoebiasis is the liver where it forms a liver abscess. Other secondary sites include lungs and skin leading to:

- Amoebic infection of the skin
- Amoebic balanitis
- Amoebic lung abscess
- Amoebic brain abscess

Prevention and Control

Who is responsible for the spread of amoebic dysentery?

It is the cysts-passers who are usually asymptomatic. Therefore in order to prevent and control this disease, you need to do the following:

- Advise people to boil drinking water (chlorination does not kill the cysts)
- Search for and treat carriers among food handlers
- Commence a campaign for more latrines in an area with endemic amoebiasis
- Conduct community campaigns about good personal hygiene practices, such as regular hand washing

Viral Hepatitis

This is an acute viral disease which mainly affects the liver, causing inflammation of the liver cells (hepatocellular inflammation) followed by jaundice. The disease is found in all the countries of the world. There are five types of viruses which cause hepatitis. These are:

- Hepatitis A Virus (HAV)
- Hepatitis B Virus (HBV
- Hepatitis C Virus (HCV)
- Hepatitis D Virus (HDV)
- Hepatitis E Virus (HEV)

Hepatitis A virus causes infectious hepatitis and is the most infectious of these viruses, while hepatitis B virus causes serum hepatitis (also called epidemic hepatitis). The hepatitis B virus causes chronic active infection of the liver (hepatitis) which may be followed some ten years later by liver cirrhosis (in 10 - 20% of the patients). In some of the patients who develop cirrhosis, the disease progresses to liver cancer (hepatocellular carcinoma). Hepatitis B infection occurs in about 1 - 3% of the human beings, but the incidence may be higher in patients undergoing kidney dialysis and in cancer wards (due to repeated blood transfusions), and among children because of close personal contact. It is difficult to tell the difference between infectious hepatitis and serum hepatitis on clinical observations alone.

Mode of Transmission

Hepatitis A and E infections are transmitted through faecal-oral route and are both called infectious hepatitis. Hepatitis B, C and D are transmitted through blood products and close personal contacts and are called serum hepatitis. Serum hepatitis may cause chronic liver infection and liver cirrhosis.
The human being is the only known reservoir and host of viral hepatitis. The disease is transmitted from the infected person to the susceptible host through faeces, contaminated food and objects, blood, blood serum and other body fluids.

In the case of hepatitis B infection, transmission takes place through two main routes:

- Percutaneous route - this is through injections and transfusion of blood and blood products.
- Non-percutaneous routes - these include close personal contact for example, kissing and sexual intercourse, from mother to foetus

through placenta or to baby during delivery.

Clinical Features

All types of hepatitis infections are characterised by a similar clinical picture. The incubation period is one to four weeks in the case of hepatitis A and 12 weeks or longer in the case of hepatitis B. Hepatitis infections manifest in two phases.

Pre-icteric Phase (no jaundice)

- Fever of sudden onset
- Malaise
- Loss of appetite
- Nausea
- Abdominal discomfort

Icteric Phase

- Appearance of jaundice
- Enlarged tender liver (hepatomegaly)
- Extreme tiredness and myalgia
- Feelings of deep sadness (depression)
- Pale stools
- Dark urine (contains bilirubin)

Those At Risk of Hepatitis

Reservoirs of hepatitis B virus include sexually promiscuous individuals, spouses of acutely infected persons, health care workers exposed to blood, family members of chronically infected persons, anyone who requires repeated blood transfusions.

Diagnosis

How would you diagnose viral hepatitis in a patient?

The urine of a person suffering from viral hepatitis is dark and contains bilirubin, while the stool is usually pale. In the blood, both direct and indirect bilirubin levels are raised. In the case of hepatitis B, diagnosis is made by detecting various immunological markers in the blood. The most important is the hepatitis B surface antigen (HBsAg) which is present when the virus is in the blood in the acute stage and in the chronic carrier state.

Management

No specific treatment is available for both hepatitis A and B.

The patient should be given symptomatic treatment together with diet and bed rest at home to prevent the spread of the disease. If admission is indicated for one reason or the other, you should ensure that the patient is isolated and extra precautions taken during handling and disposal of excreta. Since alcohol increases the risk of cirrhosis, you should advise the patient to avoid alcohol for at least six months.

Prevention and Control

Just like in the other diseases that have been covered, improvement of environmental sanitation will prevent the transmission of hepatitis A.

Other control measures include:

- Isolating patients suffering viral hepatitis
- Administration of hepatitis vaccine
- Screening blood for hepatitis B surface antigen before giving it for transfusion and excluding all donors with a history of jaundice
- Effective sterilisation and high level disinfection of all instruments, needles and syringes

Bacterial Food Poisoning

Food poisoning is a sudden, acute and sometimes life threatening illness which follows ingestion of contaminated food, drink or water. The major causes of food poisoning include intoxication with chemicals, toxins produced by bacterial growth, and a variety of organic substances such as poisonous plants and mushrooms. Food poisoning occurs in small outbreaks and mortality is usually low. In this country, you often hear of severe cases of food poisoning caused by consumption of cheap alcoholic drinks ('Kumi Kumi'). It is also suspected that some cases diagnosed as gastroenteritis in health facilities are actually caused by food poisoning.

There are two common types of bacterial food poisoning found in communities.

These are:

- Staphylococcal food poisoning
- *Clostridium botulinum* food poisoning

Staphylococcal Food Poisoning

This type of poisoning is caused by contamination of food (for example, with pus

from a septic finger) by an infected person). The staphylococci in the pus multiply and produce toxins when the food is allowed to stand for several hours before being served. Although the bacteria itself is harmless if ingested, the toxins it produces are very poisonous. Following ingestion of the toxin-contaminated food, there is sudden severe abdominal cramping, nausea, vomiting, diarrhoea, headache and excessive salivation.

Diagnosis
This disease is usually recognised when people who have shared food all fall sick within a short time.

***Clostridium Botulinum* Food Poisoning**
Botulinum poisoning occurs when food contaminated with botulinum spores (from the soil) is kept warm and in tightly covered containers for many hours. The organisms multiply in warm anaerobic (low oxygen) environments especially in protein-rich foods.
When such food is contaminated, *clostridium botulinum* multiplies and starts producing toxins. The contaminated food may appear spoiled (greenish) and emit an offensive odour. Once a person eats this food, they may suffer a mild illness that requires no medical treatment or a rapidly fatal illness terminating in death within 24 hours.
The symptoms of botulism begin to manifest 12 - 36 hours after ingestion of toxin contaminated food. The patient presents with the following signs and symptoms:

- Nausea and vomiting
- Dizziness and tinnitus
- Seeing double images (diplopia)
- Inability to speak clearly (dysphasia)
- Difficulty swallowing (dysphagia)
- Difficulty breathing (dyspnoea)
- Muscle weakness (neck, limbs, respiratory)
- Death may occur from sudden respiratory paralysis and airway obstruction

Diagnosis
Diagnosis is difficult when only one person is affected because the signs of botulism are similar to those of acute polio, myasthenia gravis and Guillain-Barre syndrome. However, diagnosis can be made when a group of people who had consumed the same food (especially tinned or canned foods) suffers from the same neurological symptoms without mental confusion or loss of awareness.

Management
The main cause of death in botulism is respiratory failure.
The patient therefore must be managed in a high-dependence unit.
A tracheostomy is performed and mechanical respirator used. Cleansing enemas are administered to remove unabsorbed toxin from the colon and botulinum autotoxin serum is given and repeated after two to four hours.

Prevention and Control

What points would you emphasise when giving a health education talk on prevention of bacterial food poisoning?
Your list should include the following preventative measures:

- Health education to encourage people to serve meals immediately they are prepared in order to prevent growth of organisms,
  such as staphylococci
- Keeping food covered to keep off dust and rodents
- Thorough reheating of left over foods (to kill toxins food must be heated to over 140℃)
- Excluding persons with skin infections from food handling
- Refrigerating cooked food
- Keeping the kitchen and cooling areas clean

SECTION 6: AIRBORNE DISEASES

Introduction

In this section you are going to learn about those communicable diseases whose main route of transmission is the air you breathe. That is, the organisms which cause these diseases enter the body through the respiratory tract. Most respiratory tract infections are airborne diseases. In module one unit four on paediatric nursing, you covered quite a number of respiratory tract diseases. Can you remember which ones were covered?

List the respiratory tract diseases you learnt in the unit on paediatric nursing.
In module one unit four on paediatric nursing, you covered Acute Respiratory Infections (ARI), streptococcal sore throat, Acute Laryngo-Tracheal Bronchitis (ALTB) and pneumonia.
In this section you will look at other airborne diseases, namely: influenza, measles, whooping cough, mumps, chickenpox, meningococcal meningitis, tuberculosis and leprosy.

Objectives

By the end of this section you will be able to:

- List at least eight common airborne diseases
- Describe the methods used to interrupt transmission cycles of airborne diseases
- Describe the clinical features of airborne disease
- Describe the management of airborne diseases
- Explain the preventive measures of airborne diseases namely: influenza, measles, whooping cough, mumps, chickenpox, meningococcal meningitis, tuberculosis
  and leprosy

Airborne Diseases

Airborne diseases have remained a major public health challenge in Eastern Africa. As mentioned in the introduction to this section, the organisms which cause these diseases enter the body through the respiratory tract.

When a patient or carrier of pathogens talks, coughs, laughs or sneezes, droplets of fluid are discharged into the air. The smallest of these droplets remain in the air for some time and may be inhaled by a new host. The bigger droplets fall to the ground and mix with the dust.
Some organisms survive the drying conditions and may be inhaled with the dust. Once they get into the body, they may affect the immediate organs involved in respiration, for example, nose and lungs, or they may pass through and spread to the blood or other distant organs like the brain or middle ear.
Overcrowded conditions such as congested houses, classrooms and public transport vehicles (matatus, buses and commuter trains), make the spread of these diseases very easy. Therefore, good ventilation and good manners such as covering one's mouth when sneezing or coughing can go a long way to reduce transmission of these diseases.

Influenza

This is an acute viral infection of the respiratory tract caused by any one of the three strains of the influenza viruses, types A, B and C. Influenza occurs in all countries of the world. It has a high attack rate with high mortality rates, especially among the elderly and those suffering from chronic illness such as diabetes, kidney and
heart disease.
Influenza viruses are also found in domestic animals (dogs, horses, pigs, ducks and chicken) and wild birds. Influenza spreads rapidly. Mortality is caused by secondary bacterial infections of the respiratory tract.

Mode of Transmission
The viruses are transmitted through secretions from the respiratory tract of an infected person. A susceptible host may be infected by:

- Direct contact with secretions from an infected person
- Inhaling droplets secreted when an infected person sneezes, coughs or talks
- Handling contaminated handkerchiefs and other articles belonging to an infected person

Clinical Features

The signs and symptoms of influenza include the following:

- Sudden onset of fever (39℃ - 40℃)
- Malaise and prostration
- Sore throat
- Coughing
- Running nose (rhinorrhoea)
- Headache
- Muscle pain (myalgia)
- Nausea and vomiting
- Abdominal pain
- Diarrhoea

Complications

Some of the common complications of influenza are:

- Pneumonia
- Chronic bronchitis
- Myocarditis
- Meningitis

Management

As with many viral diseases, there is no specific treatment. You should prescribe bed rest and give paracetamol to relieve pain and fever. Prophylactic broad spectrum antibiotics may also be prescribed to prevent secondary bacterial infections.

Prevention and Control

Since the infective particles are spread by droplets from patients or carriers, an important part of the control of this disease is based on preventing droplets from being inhaled by others. That is, people must not inhale 'second-hand' air.

This can be achieved through the following measures:

- Avoiding overcrowded places especially where ventilation is poor
- Immunisation using anti-influenza vaccine about once every year
- Avoiding close contact with an infected person or handling the patient's personal articles, such as handkerchiefs
- Covering one's mouth when coughing or sneezing

Measles (Morbili, Rubeola)

This is an acute and highly contagious disease that mainly affects children. Measles is a major cause of child mortality in less developed countries such as Kenya. Together with pneumonia it accounts for about a quarter of all deaths occurring in hospitals in Eastern Africa.

Non-immunised and malnourished children under the age of three years are at high risk of contracting measles. The severity of measles is related to the viral load one gets from the source. That is, children who live in overcrowded dwellings and who are in close contact with the index case for the whole infective period obtain a high dose of the virus. Such children develop severe measles with high case fatality rates.

Mode of Transmission

The measles virus spreads through invisible droplets secreted from the respiratory tract of an infected person. Measles spreads very easily and fast. The virus infects the skin and the layer of cells that line the lungs, gastrointestinal tract, eyes, mouth and throat. In addition, the measles virus weakens the child's immune system for many weeks after the onset of the illness, leaving the child at risk of other infections.

Clinical Features

The clinical features of measles depends on the nutritional status of the affected child. The skin rash of measles is characteristic and is said to 'match' from one region of the body to another in a systematic way. It begins on the face and neck, then spreads to the chest and abdomen after 24 hours. On the third day, the rash spreads to the arms and lower limbs. Depending on the nutritional status of a child, measles can either be complicated or uncomplicated.

Uncomplicated measles generally occurs in well-nourished or slightly underweight children. It presents with the following signs and symptoms:

- Fever
- Conjunctivitis
- Rhinitis
- Coughing
- Koplik's spots
- Stomatitis
- Skin rash

All these may disappear after a few days with or without treatment.

Complicated measles occurs in malnourished children and those who are underweight. It presents with the following signs and symptoms:

- Nasal flaring
- Rapid respiration (pneumonia)
- Dyspnoea
- Hoarse voice (laryngitis)
- Barking cough
- Inspiratory stridor
- Skin rash
- Loss of interest to feed
- Vomiting (this causes malnutrition)
- Diarrhoea (gastroenteritis)
- Dryness of eyes, hazy cornea (keratitis)
- Photophobia (encephalitis)
- Convulsions
- Ear discharge (otitis media)

Diagnosis

The diagnosis of measles is usually based on the following signs and symptoms:

- WHO Diagnostic criteria:

  Rash of three or more days
  Fever of 38℃ or higher
  Presence of 3Cs: coryza, cough and conjunctivitis
- Febrile xanthema in which there are red eyes and a cough
- Typical skin rash ('matching' skin rash)
- Koplik's spots

Management

Uncomplicated measles is usually treated on an outpatient basis. You should advise the mother to give the child adequate fluids, a light nutritious diet, and paracetamol for pain and fever.
Give a single dose of vitamin A 200,000iu in order to speed up recovery from measles and prevent the development of complications. Also, advise the mother to bring the child to the clinic everyday for follow up.

Remember:
Weigh all children suffering from measles.

In the case of complicated measles, you should admit the child to hospital and give them a balanced diet to improve their nutritional status.

List five complications of measles that you have come across.

You should watch out for the following complications and treat them accordingly.

- Convulsions: give anti-convulsants
- Gastroenteritis: give oral rehydration
- Xerophthalmia: give vitamin A 200,000 units
- Meningitis, pneumonia, conjunctivitis, otitis media: give broad spectrum antibiotics
- Fever: give antipyretics and apply fever reduction measures such as tepid sponging

Prevention and Control

The only successful method of preventing measles and its serious complications is immunisation. This should be given to all children from the age of nine months; both the healthy and the sick who have not been previously immunised.

Whooping Cough (Pertussis)

This is an acute infectious disease of the respiratory tract caused by bacteria of the genus bordetella called bordetella pertussis. Whooping cough is also known as pertusssis.
The disease causes production of very sticky mucus that blocks the lumen of the bronchioles. This leads to a persistent cough in an attempt to get rid of the mucus. Usually, the cough occurs after feeding thereby causing the child to vomit. This robs the child of the little breast milk or food they may have eaten thus causing them to be malnourished. Mortality from whooping cough is highest in children aged one year or less.

Mode of Transmission

It is spread by droplets from secretions of the upper respiratory tract. The disease can also be spread by direct contact with freshly contaminated objects.

Clinical Features

The incubation period of the disease ranges from six to ten days after infection, after which the clinical features appear. In babies aged three months or less, there is no 'whoop' experienced during coughing. As such the diagnosis may be missed.
The characteristic 'whoop' is seen in children over three months of age.
Whooping cough progresses through three stages as follows.

Catarrhal Stage

This stage begins after the incubation period and lasts for one to two weeks. The patient has slight fever and a cough that is troublesome especially at night. The cough often ends with vomiting. Gradually the cough becomes paroxysmal in character with a running nose.

Paroxysmal Stage

During this stage, the fever and the running nose disappear but the cough becomes more troublesome. The cough occurs in paroxysms. The child coughs with his mouth open and tongue protruding out. This severe persistent cough causes cyanosis, protrusion of eyeballs, congestion of face and neck veins, sweating, and exhaustion. The patient may vomit suddenly, pass urine or stool, bleed from the nose, bite their tongue or suffer convulsions.

Convalescent Stage

Most patients improve gradually within one to three weeks, but some patients may continue to have paroxysms of coughing for months.

If whooping cough is not treated it can lead to a number of complications:

- Inguinal hernia
- Broncho-pneumonia
- Collapse of the lung (atelectasis)
- Convulsions
- Rectal prolapse
- Sub-conjunctival haemorrhage
- Pneumothorax
- Surgical emphysema
- Retinal detachment (which may lead to blindness)

Diagnosis

Diagnosis of whooping cough is made through a postnasal swab for culture and sensitivity of *bordetella pertussis* and clinical symptoms (paroxysmal cough with a 'whoop').

Remember:
Young babies do not 'whoop'.

Management

The management of whooping cough requires supportive treatment such as good nutrition, plenty of fluid intake and avoidance of factors which provoke coughing. Broad-spectrum antibiotics are also given to kill the pertussis organisms. However, antibiotic therapy does not shorten the paroxysmal stage of the disease. You should also avoid giving sedatives and cough suppressants because they may make the illness worse.

Prevention and Control

Just like in the case of measles, the only way to control whooping cough is by high immunisation coverage. To prevent whooping cough three doses of the pentavalent vaccine, starting at the age of six weeks is currently being administered. It is given at intervals of four weeks.

Why is the administration of the vaccine started so early?

This is because very little or no passive immunity is inherited from the mother, yet it is in the first three months of life that whooping cough has a high mortality rate.

Mumps (Epidemic Parotitis)

This is an acute viral disease, which usually affects school aged children and is characterised by fever and painful swelling of the salivary glands.

Mumps is not a major cause of death, but if contracted after puberty it can cause infertility due to its effect on the testis and ovaries. Other rare complications of mumps include; meningitis, encephalitis, pancreatitis, thyroiditis and unilateral deafness.

Mode of Transmission

The virus is transmitted by droplets and by direct contact with the saliva of an infected person, or indirectly through freshly contaminated articles.

The incubation period is 17 - 19 days.

Clinical Features

The general signs and symptoms of mumps are:

- Headache
- Sore throat
- Fever (pyrexia)
- Difficulty in swallowing
- Swelling and tenderness of salivary glands

There is no rash and the fever and swelling disappear after a few days. However, in some patients complications do develop.

Orchitis

This is a very common complication which occurs in about 20% of post-pubertal males. Orchitis is usually

unilateral. The fever returns and the testis become swollen and painful. The affected testis may atrophy leading to infertility. In girls, oophoritis may develop. It is less common than orchitis. The child complains of severe lower abdominal pain and vomiting.

Pancreatitis

Pancreatitis may occur but it is not common. It presents with severe upper abdominal pain, fever and vomiting.

Meningitis

This is a common complication of mumps. It presents with fever, headache, vomiting, neck rigidity and spinal rigidity. The condition resolves spontaneously.

Encephalitis

This is rare and may occur with or without meningitis. The patient presents with disturbed behaviour, drowsiness, convulsions, and coma. Mumps encephalitis is a serious condition, and has a mortality rate of 2%.

Management

The treatment of mumps is supportive and includes:

- Analgesics/antipyretics
- Nutritious fluid diet
- Regular mouth washes
- Bed rest preferably at home
- Scrotal support for orchitis
- Corticosteroid therapy to reduce swelling and pain of orchitis (oral prednisolone 40mg od. for four days)

Prevention and Control

It can be prevented by the administration of live attenuated mumps vaccines where it is available. This live attenuated vaccine is combined with measles and rubella.

Chickenpox (Varicella)

This is a mild viral disease characterised mainly by a skin rash. It mainly affects children under ten years of age and its case fatality is very low. The causative organism is the Varicella-Zoster Virus (VZV). Chickenpox is highly contagious. An adult person who becomes infected suffers a severe form of the illness. Once a person develops chickenpox they develop immunity against the disease. However, the virus stays within the body and may reappear as herpes zoster (shingles) when the immunity of a person is weakened, for example in AIDS and diabetes.

Mode of Transmission

The virus is spread by droplets from the upper respiratory tract or from the discharges of ruptured lesions on the skin.
The incubation period is 14 - 21 days.

Clinical Features

The disease begins with mild fever, sore throat and a sore palate. After two days, a characteristic rash appears on the trunk, and within a few hours, the rash spreads to the face, axilla, and scalp, and sometimes to the arms and legs. The rash vesicles are superficial. The infection usually clears spontaneously and the vesicles usually collapse and dry after three to four days, leaving skin spots but no scars. The spots clear after a while. Complications usually do not occur.

Management

The treatment of chickenpox is symptomatic. Give the patient calamine lotion to relieve itching. A local antiseptic can also be given for infected skin lesions for example chlorhexidine (hibiscrub, hibitane).

Prevention and Control

Chickenpox is a self-limiting non-fatal disease. Healthy school children should be kept off school if there is an outbreak among schoolmates.

Meningococcal Meningitis (Epidemic Meningitis)

This is an acute and dangerous bacterial disease, which occurs sporadically and in epidemics. The causative bacterium is the neisseria meningitides, also known as meningococcus. There are two types of meningitis.
The first type known as meningococcal meningitis is spread by droplets from one person to another and may cause epidemics in crowded institutions such as army barracks, boarding schools, prisons and camps.
The second type is caused by a variety of other organisms usually occurring as a complication of

some other disease in the body, or by direct extension from neighbouring structures such as the middle ear (otitis media). This type of meningitis occurs one case at a time, that is, it is sporadic.

Mode of Transmission

About 20 - 25% of people may be healthy carriers of the meningococcus and the other organisms which cause meningitis, such as, *haemophilus influenzae* type B and *streptococcus pneumoniae* (pneumococci). Transmission of the *neisseria meningitides* occurs by direct contact and by droplets from nasal and throat discharges of infected persons.

Clinical Features

When a susceptible host is infected the organism causes blood poisoning (septicaemia) and pyogenic meningitis. The onset is sudden with the following signs and symptoms:

- Severe headache and neck rigidity
- Fever and rigors
- Pain in the back and limbs
- Irritability and confusion
- Drowsiness and coma
- Positive Kernig's and Brudzinki's signs
- On lumbar puncture, Cerebral Spinal Fluid (CSF) is under pressure and contains high levels of White Blood Cells (WBCs), has raised protein and lowered glucose
- Petechial haemorrhages
- Circulatory collapse (Waterhouse-Friderichson syndrome)

Diagnosis

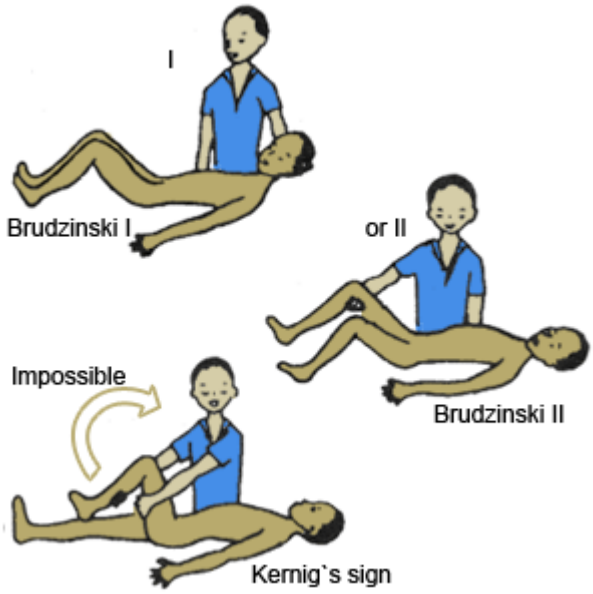
The following tests are useful to confirm a diagnosis:

- Lumbar puncture
- Positive Kernig's sign
- Positive Brudzinki's 1 and 2 signs
- Blood culture for neisseria meningitides

Management

The patient must be admitted in the hospital and antibiotic therapy started immediately. Either one of the following drugs can be given:

- IM crystalline penicillin (benzyl penicillin) six mega units stat followed by three mega units every six hours
- IM chloramphenicol 500mg every six hours
- IM cefotaxine



Prevention and Control

The prevention of meningitis follows the same principles that were covered in the other airborne diseases. They include:

- Improvement in housing: adequate space,
  good ventilation
- Proper disposal of respiratory secretions
- Health education to avoid overcrowding in poorly ventilated houses
- Isolation of the suspected patients
- Notifying the District Medical Officer of Health
- Immunisation during epidemics using meningitis A and C vaccine
- Chemoprophylaxis (single dose of oral floxacillin
  500mg or rifampicin) for all household and other contacts of the patient including the health care workers
- Use of gowns, gloves and masks while caring for these patients

Tuberculosis (Koch's Disease)

Tuberculosis (also known as Koch's disease) is a chronic bacterial infection caused by bacteria that belongs to the family of mycobacterium. These are *mycobacterium tuberculosis, mycobacterium bovis* and *mycobacterium*

avium. The lungs are affected in most cases, but other organs such as the skin, bones, brain, lymph nodes, and intestine are also affected (extra-pulmonary tuberculosis).

Tuberculosis is found in all parts of the world and affects all age groups and sexes equally. If untreated, tuberculosis causes death and severe disability. After many years of immunising children against tuberculosis with the BCG vaccine, tuberculosis was almost controlled. However, the HIV infection which can lead to AIDS has led to the resurgence of tuberculosis. The cases of AIDS related tuberculosis have risen and continue to rise. The prevalence of tuberculosis increases as social and economic status decrease.

Mode of Transmission

Tuberculosis is spread from an infected person to a healthy susceptible host by droplet infection. This happens when a person with pulmonary TB coughs out heavily infected sputum into the air. Though many people may thus become exposed to TB infection, only a few will progress to develop actual disease. This is because the majority have acquired active natural immunity to the disease. However if this immunity is depressed by for example, age or HIV infection, tuberculosis may flare up again and cause obvious clinical disease.

As mentioned earlier, there are three organisms that cause tuberculosis.

Mycobacterium Tuberculosis

This is the main cause of pulmonary tuberculosis and extra-pulmonary tuberculosis.

Mycobacterium Bovis

This causes disease in cattle and is spread to humans through infected milk. It also causes extra-pulmonary tuberculosis.

Mycobacterium Avium

This causes disease in birds. Bird droppings spread pulmonary tuberculosis in individuals whose immunity is depressed (opportunistic mycobacterium).

Types of Tuberculosis

List down three types of tuberculosis?

Clinical Features

The clinical features of tuberculosis can be divided according to the early and late signs and symptoms.

Early Signs and Symptoms of Tuberculosis

- Productive cough lasting three or more weeks
- Night sweats
- Unexplained weight loss
- Loss of appetite
- Fatigue
- Evening fever (pyrexia)
- Positive tuberculin test

Late Signs and Symptoms of Tuberculosis

- Coughing blood stained sputum (haemoptysis)
- Difficulty breathing
- Enlargement of lymph nodes
- Extreme loss of weight
- Signs and symptoms of other body organs affected for example meningitis, pleurisy, pericarditis, peritonitis and pleural effusion

Remember:

TB bacteria are shed in the air in droplets whenever a patient coughs, sneezes, talks or even breathes.

How to Diagnose Tuberculosis?

The best way to diagnose tuberculosis is by means of a direct sputum smear examination (Acid Fast Bacilli - AFB test) in the laboratory. If possible, at least three early morning specimens must be examined within two days.

Other tests include skin tests such as the Mantoux test and chest x-rays.

Management

The Kenya National Leprosy and Tuberculosis Programme (NLTP) coordinate the treatment of tuberculosis and leprosy. The NLTP, which is a Ministry of Health project, has developed the treatment guidelines for these two diseases. Treatment regimen for tuberculosis depends on the type of tuberculosis as well as the age of patient.

The drugs used for the treatment of tuberculosis are abbreviated as follows:
S-streptomycin
E-ethambutol(plain400mgtablet)
H - isoniazid (150g combined with ethambutol 400mg,tablet)
R-rifampicin(tabletorcapsule)
Z-pyrazinamide(500mgtablet)
rifater (rhz): a combination of rifampicin 120mg, isoniazid 50mg and pyrazinamide 300mg
rifinah (rh): a combination of rifampicin 150mg andisoniazid100mg
ethizide: a combination of ethambutol 400mg and isoniazid 150mg
The following gives guidelines on dosages for anti-tuberculosis drugs as set down in the National Leprosy and Tuberculosis Programme (NLTP), Diagnostic Flow Chart for Pulmonary Tuberculosis.

Dosage for Anti-Tuberculosis Drugs
(Ministry of Health (2002), National Leprosy and Tuberculosis Programme (NLTP), Diagnostic Flow Chart for Pulmonary Tuberculosis.)
The following gives guidelines on dosages for anti-tuberculosis drugs as set down in the National Leprosy and Tuberculosis Programme (NLTP), Diagnostic Flow Chart for Pulmonary Tuberculosis.
Dosage for adults

Drug	Patient's Body Weight	Dose
RHZ(rifater)	30 to 39kg	2 Tablets
	40 to 49kg	3 Tablets
	Above 50kg	4 Tablets
RH (rifinah)	Under 50kg	3 Tablets
	Over 50kg	4 Tablets
E (ethambutol)*	30 to 39kg	1 1/2 Tablets
	40 to 49kg	2 Tablets
	50 to 59kg	2 1/2 Tablets
	60 and above	3 Tablets
S (streptomycin)	30 to 49kg	¾ gm
	50 and above	1 gm
	Not over 40 year's old and under 60kg body weight	Reduce dose by ¼ gm

**Children are not treated with ethambutol because it is known to impair vision and small children would not complain if affected.*

Dosage for children

Drug	Patient's Body Weight	Dose
RHZ (rifinah)	5 to 10kg	½ Tablet
	10 to 20kg	1 Tablet
	20 to 30kg	2 Tablet
RH (rifinah)	4 to 10kg	½ Tablet
	10 to 20kg	1 Tablet
	20 to 30kg	2 Tablets

First Regimen
(For AFB smear positive or very sick patients.)
- **2ERHZ/6EH**
  - Intensive therapy phase > 2ERHZ
  - Continuation therapy phase >6EH

Second Regimen
(For AFB smear negative and extra-pulmonary TB, and not severely ill patients.)
- **2RHZ/6EH**
  - Intensive Treatment phase > 2RHZ
  - Continuation treatment phase >6EH

Third Regimen
(For defaulters and drug resistant cases.)
For re-treatment of resistant tuberculosis and treatment defaulters and opportunistic mycobacterium infection as in AIDS associated TB.
- **Intensive Treatment Phase**
  - IM streptomycin daily for two months, and
  - Oral rifater daily for one month, and oral ethambutol daily for two months
- **Continuation Treatment Phase I**
  - Oral rifater daily for one month, and oral ethambutol daily for one month
- **Continuation Treatment Phase II**
  - Oral rifinah daily for five months and oral ethambutol daily for five months

The treatment of tuberculosis keeps changing depending on current research findings. Please check on the current treatment and adjust your notes accordingly.
The aim of tuberculosis treatment is to kill the mycobacteria as efficiently as possible and within the shortest possible time. That is why the WHO came up with a TB treatment strategy

known as DOTs (Directly Observed Treatment short course).

Remember:
For the DOTs strategy to succeed the government must be committed to the programme.

When using the DOTS strategy, you must adhere to the following rules:

- Follow the national treatment guidelines
- Ensure that there is an adequate supply of anti-TB drugs
- Ensure each patient is on the correct treatment regimen
- Administer the initial (intensive) phase of treatment under supervision
- Encourage all patients to attend the TB clinic regularly during the continuation treatment phase
- Promptly trace defaulters
- Maintain accurate records on patient personal data and clinic attendance

Common Complications of Tuberculosis

The following are some of the common complications of tuberculosis:

- Severe haemoptysis
- Respiratory failure
- Meningitis
- Kidney failure
- Pleural effusion
- Pericardial effusion
- Potts disease (collapse of the backbone)

Prevention and Control

The following measures are important in the prevention and control of tuberculosis.

- Immunising the newborn babies with BCG vaccine
- Case finding and treatment (completing treatment)
- Health education to the patients so that they can stop spitting carelessly
- Encourage them to use a sputum mug
- Health education to the community members to avoid overcrowding and to improve ventilation in their houses
- Drinking only pasteurised or boiled milk

Remember:
To eliminate TB, find the people who have infectious TB and cure them so that they do not continue to spread the infection.

Leprosy (Hansen's Disease)

Leprosy is one of the oldest diseases of human beings. It is caused by a bacteria belonging to the same family as the mycobacterium that causes tuberculosis, known as *mycobacterium leprae*. Leprosy is a major public health and socio-economic problem because it is a disabling and deforming disease. Leprosy is not a killer disease in that it runs a chronic course and does not significantly reduce the life expectancy of the infected individual.

In some communities patients suffering from leprosy are discriminated against or stigmatised due to ignorance and unfounded traditional beliefs. This causes a lot of distress and misery to those infected and their families. In Kenya, leprosy has almost been eradicated except for a few endemic areas in the Coast, Eastern, Nyanza and Western Province.

Mode of Transmission

Leprosy has a long incubation period and runs a chronic course if it is not adequately treated at an early stage. The *mycobacterium leprae* bacillus multiplies very slowly (dividing only once every 14 - 30 days). That is why the incubation period is long, about five to eight years. Just like tuberculosis, the leprosy bacillus is transmitted by droplets, by sneezing, coughing, spitting and unhygienic nose cleaning habits. The organism is also suspected to enter the body through broken skin such as small wounds. Leprosy is common among family members of the infected.

There are certain factors that increase the incidence of leprosy in the community:

- Presence of many untreated cases
- Overcrowding in living houses
- Presence of susceptible new comers in a leprosy endemic area
- Hiding patient with leprosy and starting treatment late

Classification (Types) of Leprosy

Broadly speaking, there are two forms of leprosy: the tuberculoid form and the lepromatous form.

Pauci-Bacillary Leprosy (PBL), also called **tuberculoid leprosy** is characterised by:

- Absence or presence of very few of bacilli in the skin smears or skin biopsy (skin smear is negative)
- Skin patches 1 - 5cm
- Reaction type I
- Nerve involvement/damages affects one or more peripheral nerves
- Disability and deformities are common as a result of irreversible nerve damage and most are disfiguring

Multi-Bacillary Leprosy (MBL), also called **lepromatous leprosy**, is characterised by:

- Presence of numerous bacilli in most tissues of the body, except brain and spinal cord
- Skin patches six or more cm
- Skin smears positive (numerous bacilli present)
- Reaction both type I and type II
- Nerve damage comes late
- Disability and deformities usually develop at a later stage of the disease

Nerve Involvement in Leprosy

The main cause of disability in leprosy is the destruction of the nerves. Damage to the sensory nerve fibres causes anaesthesia, while damage to the motor nerve fibres causes paralysis. Impaired circulation, loss of sweating and skin atrophy is caused by damage to autonomic nerve fibres.

Leprosy patients may get burned or injured on their limbs and fail to notice because of anaesthesia. The patient may walk on an injured foot without realising it.

In the eye, the cornea may become anaesthetic so that foreign bodies may enter unnoticed leading to corneal damage. Anaesthetic eyelids may lose the blinking reflex or fail to close the eye (lagophthalmos) leading to dryness, iritis, adhesions, glaucoma and blindness.

Clinical Features

After infection, the mycobacterium leprae bacilli multiply in macrophages of the skin and the schwann cells of the peripheral nerve fibres. The bacillus has a preference for the relatively cool places in the body such as the face and the limbs. The early signs of leprosy are as follows:

- Hypopigmented patches on the skin with loss of sensation to pain, touch and temperature
- Loss of sweating or loss of hair over the affected part
- Burning sensations in the skin
- Weakness of eyelids, hands or feet
- Thickening of cutaneous nerves especially the ulnar, median and lateral popliteal nerves
- Nodules in the skin especially of the nose, face and ears
- Painless wounds (ulcers) and burns on the hands and feet

Reaction Types

Reactions are sudden unexpected changes which occur in all types of patients with leprosy. These reactions are caused by a change in the balance between the immunity of a patient and the bacilli. There are two main types of reactions, type I or reversal reaction and type II or erythema nodusum leprosum.

Type I Reaction (Reversal Action)

Type I reaction (reversal action) is common in Pauci-Bacillary Leprosy (PBL). It occurs after a sudden increase in immunity results in a rapidly increased response of the body to the leprosy bacilli. This reaction causes sudden inflammation in places where the leprosy bacilli are present. It causes nerve damage, inflamed and raised red skin lesions and oedema of hands, face or feet.

Type II Reaction (Erythema Nodosum Leprosum)

This appears six months or more after treatment and is caused by a reaction between dead leprosy bacilli and circulating antibodies. Nerve damage is not common in this reaction. Eyes, joints and testes become inflamed, nerve become tender and ulcerating tender nodules appear on the skin. Thus, reaction is usually of sudden onset and tends to recur.

Generally, reactions in leprosy are provoked by a number of factors. These include:

- Malaria, malnutrition, anaemia
- Severe emotional or physical stress
- Menstruation, pregnancy, abortion, puberty and childbirth
- Using drugs containing iodine

- BCG vaccination
- Osteomyelitis
- Septic wounds

Remember:
Drugs for leprosy do not cause reactions and therefore should not be stopped.

Late Deformities of Leprosy
The following are the late deformities of leprosy:
- Paralytic deformities including claw hand, claw fingers, wrist drop, food drop, claw toes, lagophthalmia, corneal ulcers, and facial paralysis
- Depression of the nasal bridge
- Wrinkling of facial skin
- Disfigured ears
- Stiffness of finger joints
- Shortening and loss of fingers and toes

Diagnosis
The diagnosis of leprosy can be made using the following:
- Clinical signs: presence of pigmented anaesthetic patches on skin and thickened nerves
- Bacteriological examination: skin slit and skin crap, nasal smears for leprosy bacilli
- Chemical tests: histamine test, lepromin test

Management
The aim of leprosy treatment is to prevent nerve damage, deformity, blindness and defaulting. The National Leprosy and Tuberculosis Programme (NLTP) in Kenya uses the WHO recommended multiple drug therapy for the treatment of the two classes of leprosy.

Pauci-Bacillary (Tuberculoid) Leprosy (PBL)
This type of leprosy is treated for six months as shown in the table below.
Six months treatment for pauci-bacillary leprosy for all ages*.

	0-5 years	6-14 years	Over 14 years
Rifampicin every four weeks supervised	150mg	300mg	600mg
Dapsone daily	25mg	50mg	100mg

*Adapted from the Kenya National Leprosy and Tuberculosis Programme (NLTP)

Multi-Bacillary Leprosy (MBL)
Multi-bacillary or lepromatous leprosy is also treated for six months as shown in the following table.
Six months treatment for Multi-Bacillary Leprosy for all ages*

	0-5 years	6-14 years	Over 14 years
Dapsone daily	25mg	50mg	100mg
Clofazimine (lamprene) four weekly supervised	100mg	200mg	300mg
Clofazimine (lamprene) unsupervised	50mg on alternate days	50mg daily	50mg daily
Rifampicin every 4 weeks supervised	150mg	300mg	600mg

*Adapted from the Kenya National Leprosy and Tuberculosis Programme (NLTP)

Having looked at drug therapy you will now find out what else can be done to prevent blindness and deformity.

Wound Prevention in Leprosy
Wounds are caused and made worse by the loss of sensation to pain, pressure or burning. Therefore to prevent further damage you should advise the patient to do the following:
- Wear protective footwear
- Wear heatproof gloves when working and handling hot objects
- Inspect the feet and legs regularly for swelling, cracks, bruises, injuries, dryness - a small mirror can be used to inspect the soles of feet
- Soak feet for 20 minutes twice daily in salty water, then rub oil on the skin to keep it moist and prevent cracks
- Remove grit from inside the shoes

Eye Care
For the patients who are suffering from lagophthalmos, you should advise them as follows:
- Wear sun glasses

- Check the eye daily in front of a mirror for inflammation and foreign bodies
- Cover the eyes with pads at night
- Avoid rubbing the insensitive eyes

Exercises

It is common knowledge that joints which are not used become stiff, while muscles atrophy and become weak. Also scar tissue tends to retract resulting in contractures. That is why all patients with weak or damaged hands should do suitable exercises. For paralysed muscles, passive exercises help to loosen the stiff joints and lengthen the skin. The exercises should be done for five to ten minutes daily on a regular basis.

Prevention and Control

The cornerstone of leprosy control is to reduce the number of infective cases and interrupt transmission. These can be achieved through the following preventive measures:

- Treatment of all infective cases until cured
- Searching for unknown cases, registering and treating them
- Administration of BCG vaccine which gives some immunity against leprosy

SECTION 7: HELMINTHIC DISEASES

Introduction

In this section you will look at helminthic diseases or diseases caused by worms. There is a wide variety of worms that can, like viruses and bacteria, get into the body of a human being.

Sometimes they present without causing any symptoms, sometimes they cause disease. Some only infect mankind and have a simple life cycle, entering the body through the mouth, living in the gut and leaving in the stools. Others have more complicated life cycles, entering the body through the skin, living in different organs, and having intermediate hosts for transmission.

In this section you will consider the common intestinal worms that fall under two groups, that is nematodes and flatworms.

Objectives

By the end of this section you will be able to:

- List at least six common intestinal worms
- Describe the mode of transmission of helminths namely; threadworm, whipworm, roundworm, tapeworm and hookworm
- Describe the clinical features of helminthic infections
- Describe the management of helminthic infections
- Explain the preventive measures of helminthic infections

Helminthic Diseases

Helminthic diseases are still a very common problem in Kenya, despite the fact that it is known how to prevent and treat them. They are common in low income areas such as slum settlements due to lack of proper facilities for human waste disposal as well as poor attitudes.

The other factors which promote the spread of some helminths are:

- Moist warm soil in the case of hookworms
- Cattle keeping areas in the case of tapeworms

- Lack of latrines in the case of roundworms
- Unwashed hands in the case of threadworm

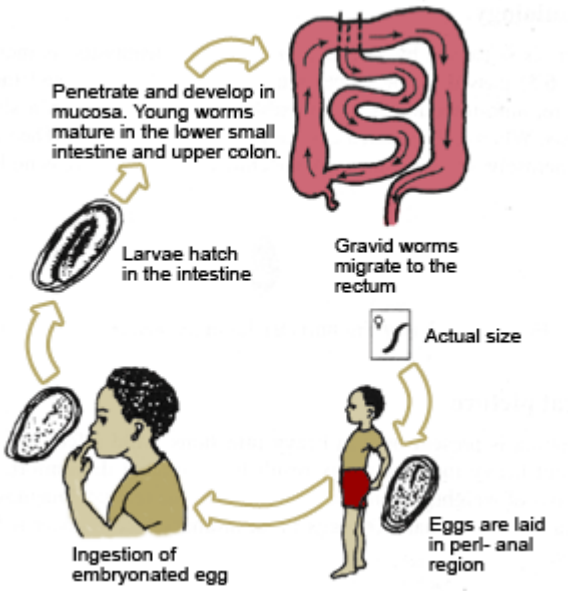
Helminthic diseases can be categorised into two groups: nematodes and flatworms.

Nematodes (Cylindrical-Shaped Worms)

This group is made up of cylinder shaped worms and includes threadworms, whipworms, and roundworms.

Threadworm or Pinworm

The threadworm is caused by enterobius vermicularis. It has a worldwide distribution and mainly affects school aged children, especially in boarding schools. The children reinfect themselves when they scratch their anus and then transfer the eggs on their fingers to the mouth.



Mode of Transmission

Infection with enterobius vermicularis is maintained by direct transfer of infective eggs from the anus to the mouth (auto infection) or indirect contact through clothing, bedding, food and other articles.

After ingestion, the eggs hatch in the stomach and small intestine. The worms mature in the lower small intestine and upper colon and then they migrate to the rectum where they discharge eggs on the perianal skin, especially during the night. This causes itching and consequently scratching.

The graphic illustrates the life cycle of the pinworm.

Clinical Features

List four clinical features of pinworm infestation.

Your list should include the following signs and symptoms of pinworm infestation:

- Mainly pruritus ani leading to intense scratching of the perianal region
- Disturbed sleep
- Restlessness
- Loss of appetite and weight loss

Diagnosis

Diagnosis is mainly made by a laboratory examination of stool microscopy for ova and cyst.

Management

You should treat the whole family with mebendazole 100mg given as a single dose. During treatment you should impress on the patient the importance of avoiding auto-infection.

Prevention and Control

The prevention and control of this disease lies in improved personal hygiene and proper disposal of faeces. You should give health education on the importance of bathing and hand washing, keeping nails short, and how to prevent reinfection.

Whipworm

This infestation is called trichuriasis because it is caused by an intestinal worm called Trichuris trichiura. The worm infects the large intestine and infestation is usually asymptomatic.

Mode of Transmission

The transmission of trichuriasis is indirect, as the eggs passed in the faeces require embryonation in soil. Therefore unlike the threadworm, auto-infection is not possible.
When the embryonated eggs are ingested, they hatch and eventually the mature worms attach themselves to the mucosa of caecum and colon. They are mainly transmitted through food that is contaminated by soil or dirty fingers.

Clinical Features

Often, mild infections are asymptomatic, but heavy infections may result in abdominal discomfort, bloody diarrhoea, loss of weight and prolapse of rectum.

Diagnosis
Diagnosis is made by examining a stool sample microscopically for ova and cyst.

Management
You can eliminate this infection by giving oral mebendazole 100mg 12 hourly for three days.

Prevention and Control

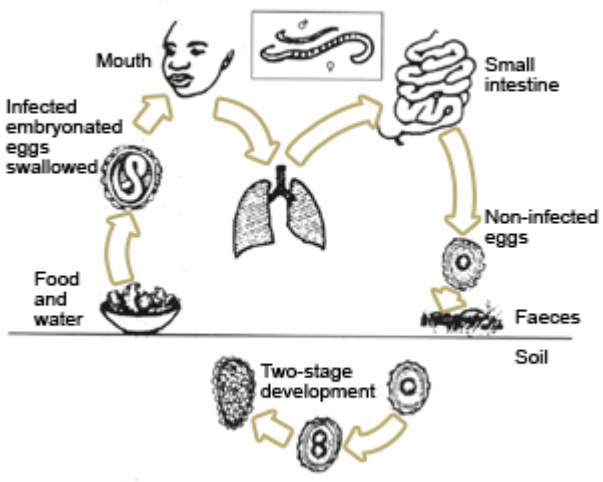
Just like the threadworm, the prevention of trichuriasis can be achieved through good personal hygiene and proper disposal of faeces.

Roundworm (Ascariasis)

This disease is caused by Ascaris lumbricoides, which infects the small intestine.
Ascaris is a large intestinal parasite which often infects children because of their habit of putting all kinds of things in their mouth. It is one of the commonest and most widespread infections of the small intestine. The worms may multiply in large numbers in the intestinal lumen and cause intestinal obstruction at the ileocaecal valve.
The worms also contribute to severe malnutrition and vitamin A deficiency, and may wander out of the intestinal lumen into the peritoneal cavity.

Mode of Transmission
Ascariasis is a soil transmitted parasite. Once the eggs are passed out in faeces, they require embryonation in the soil before they can become infective. This takes 8-50 days. Embryonated eggs can be carried away from the contaminated place into houses by feet, footwear or in dust by the wind.
Human beings may injest the eggs as they eat or drink using contaminated hands and utensils, or through eating raw contaminated foods like fruit. Once the eggs are ingested by a human being they hatch into worms.
In order to reach maturity, the larvae need to pass through the lungs and trachea to the pharynx. Once in the pharynx they are swallowed and return to the gastrointestinal tract where they can live for about a year.

The graphic illustrates the life cycle of Ascaris lumbricoides.



Clinical Features
Infection with a few ascaris is usually asymptomatic and if symptoms are present, they are not characteristic.
There may be vague abdominal discomfort or occasionally the worm may leave the body in

vomitus or stool. Also during the stage of larval migration through the lungs there may be temporary symptoms of pneumonitis (cough).

Diagnosis

Diagnosis is by stool microscopy which should show ascaris ova and cyst.

Management

Any one of the following drug treatments is useful in the management of ascariasis.

- Oral mebendazole 100mg 12 hourly for three days
- Oral levamisole (3 tabs or 5mg/kg body wt) single dose
- Oral piperazine 150mg/kg body wt single dose

Note: For intestinal obstruction, surgical operation is indicated.

Prevention and Control

The prevention and control of ascariasis involves the following measures:

- Improved environmental sanitation such as proper excreta disposal, clean supply of water
- Discouraging the use of raw (fresh) human faeces for manure (Composting for six months kills the ascaris eggs)
- Washing of fruit and vegetables before eating
- Use of drying racks for utensils so that they do not come into contact with soil and dust
- Washing hands after opening bowels
- Washing hands before handling food

Hookworm (Ancylostomiasis)

This is an infection of the small intestine by a blood-sucking worm called Ancylostoma duodenale or necator americanus.

In East Africa, necator americanus is the cause of the disease.

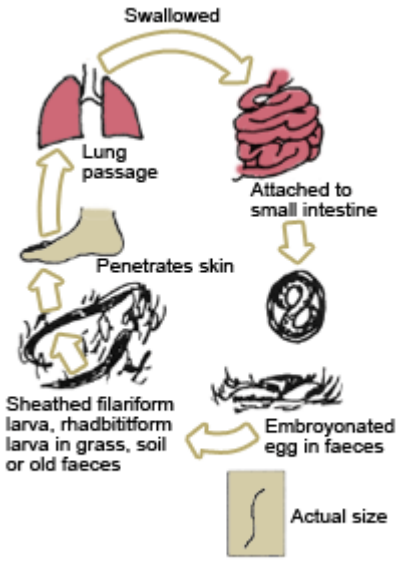
The worm causes severe iron deficiency anaemia and protein loss.

Each adult necator americanus worm causes a daily loss of 0.03ml of blood from the patient. In many infected individuals the disease is asymptomatic because the hookworm load is light.

Mode of Transmission

Hookworm eggs are embryonated by the time they are passed out with faeces. Indeed, when the faeces stand for a long time before examination the free larvae can be found.

When an infected person passes faeces in the soil, the larvae bury themselves in the moist damp soil. The larvae are called rhabditiform and only become infective after five days, when they change into the sheathed filariform stage.



As soon as the filariform larvae come into contact with a human leg or foot, they penetrate actively through the skin and reach the lungs via the venous system and the right side of the heart.

Once in the lungs they penetrate the alveoli and are carried to the larynx and pharynx, from here they are swallowed into the stomach.

When they reach the stomach they attach themselves to the wall of the abdomen with hook-like teeth and start to suck blood from the patient's body.

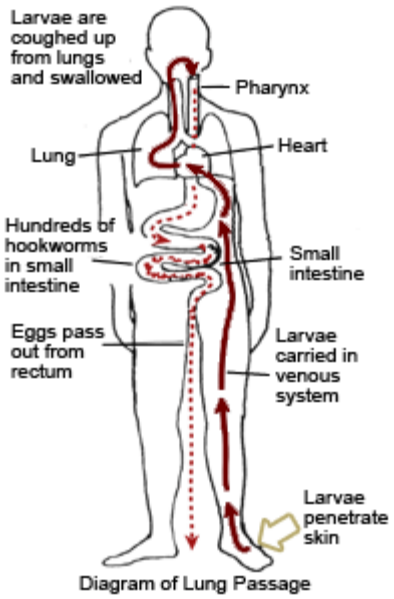


Diagram of Lung Passage

Clinical Features

How would you diagnose a hookworm infection?

In most of the cases, hookworm infestation tends to be asymptomatic. However the following signs and symptoms are indicative of hookworm infestation:

- Itching of the skin at the site of entry (local irritation)
- Anaemia (due to haemorrhage), pallor
- Weakness, puffy face, malnutrition
- Flatulence, constipation
- Pain in abdomen
- Some little blood in stool

Diagnosis

Diagnosis of hookworm infestation is made by stool microscopy which should show ova and cysts and in some cases occult blood. More than 100 eggs in an ordinary faecal smear indicate heavy infection.

Management

The following drugs are commonly used in the treatment of hookworm infections:

- Levamisole 25mg/kg body weight as a single dose
- Mebendazole 100mg bd. for three days
- Albendazole 400mg stat

Flatworms

This group is made up of flat or segmented worms, their intermediate hosts are mainly animals, such as cattle, pigs and dogs.

You will look at two worm diseases under this group, namely tapeworms and hydatidosis.

Tapeworm (Taeniasis)

There are various types of tapeworms, but in human beings the infestations are commonly caused by:

- Taenia saginata or beef tapeworm (commonest infection)
- Taenia solium or pork tapeworm

You will now consider each type in turn.

Taenia Saginata or Beef Tapeworm

Infection with the beef tapeworm is common in areas where beef is eaten raw or lightly cooked.

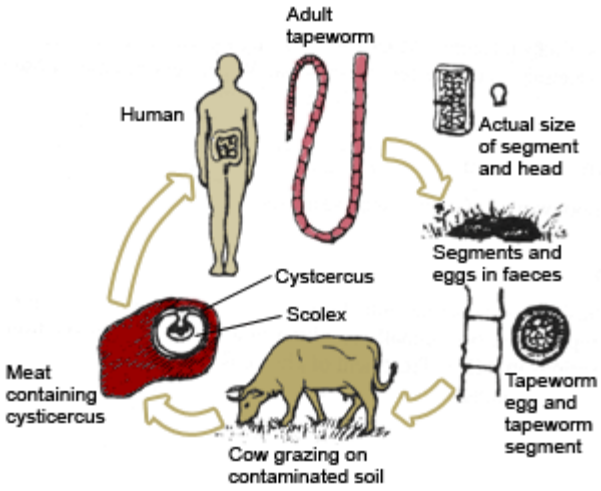
.

Mode of Transmission

The eggs of adult tapeworms living in the small intestines of human beings are passed in the stools.

They are then ingested by cows as they feed on contaminated grass. Once in the gastrointestinal tract of the cow, the embryos hatch and penetrate the bowel wall and are carried via the bloodstream to striated muscles. Here the larvae grow and form infective cysts called cysticerci.

When human beings ingest cow meat containing these cysts, the cysts are dissolved by the gastric acid in the stomach to release embryos.



Clinical Features

Most tapeworm infections caused by taenia saginata do not cause any signs or symptoms.
However, some people may complain of loss of weight, abdominal discomfort and itching around the anus (pruritis ani).

Diagnosis

Diagnosis of tapeworm infestation can be made by
the presence in the stool of segments or eggs.
The eggs are not laid singly and appear only accidentally in the stools.

Management

Drug treatment with oral niclosamide is effective.
The dose is 1gm chewed and swallowed with water
followed one hour later with 1gm (a total of 2gm).

Taenia Solium (Pork Tapeworm)

This disease occurs when a person ingests pork infected with the taenia solium larvae. Whereas in the beef tapeworm the embryo attaches itself to the wall of the small bowel and grows into an adult worm, the pork tapeworm behaves differently.
The embryo penetrates the intestinal wall of the human as it does the pig, and it is carried to organs like striated muscle or the brain. This can cause serious problems such as epilepsy and death.

Clinical Features

Taenia solium is a dangerous worm and the signs and symptoms depend on the organ it has invaded as follows:

- In the brain it causes epilepsy
- In the skeletal muscles it causes myositis (severe pain), which may make movement temporarily impossible
- In the laryngeal muscles it causes difficulty in speaking
- In the myocardium it causes (myocarditis), heart failure or cardiac arrest
- In the eyeball it can cause unilateral or bilateral blindness

Diagnosis

Diagnosis of taenia solium infections can be made by doing the following tests:

- Biopsy examination of the infected tissue
- X-ray examination to locate the calcified cysticercus
- Stool microscopy for ova and cyst

Management

The management involves both the surgical removal of calcified cysticercus where possible as well as drug treatment with niclosamide 2gm.
The dose is 1gm chewed and washed down with water followed one hour later by 1gm.

What measures would you recommend for the prevention and control of taeniasis?

The prevention and control of taeniasis can be achieved through the following simple measures:

- Proper disposal of human faeces in toilets instead of in the field and within reach of cattle and pigs
- Ensuring that beef, pork and fish are thoroughly cooked
- Eating only meats that have been inspected
- Burying in deep pits or incinerating the carcases of heavily infected cattle and pigs

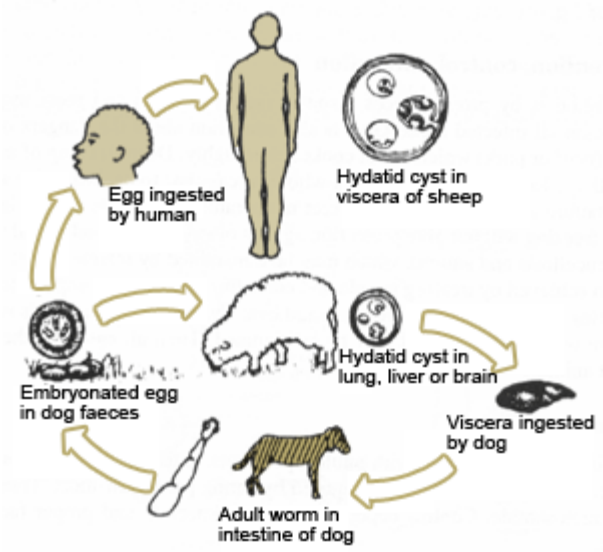
- Washing hands thoroughly after handling carcases and raw meat
- Early diagnosis and treatment of infected persons

Hydatidosis (Hydatid Disease)

The hydatidosis disease is actually a disease of dogs (zoonotic).
Human beings become infected only by accident. Nevertheless, the disease is a serious problem among the Turkana community of northern Kenya.
It is also known as echinococcosis or hydatid disease.

Mode of Transmission

Hydatidosis is caused by the cysts of the dog tapeworm known as Echinococcus granulosis. Dogs and other carnivores such as jackals and lions
are the hosts of the dog tapeworm.
The eggs are passed in the faeces of an infected
dog and ingested by domesticated animals such as
sheep, goats, cattle, camels, donkeys, and wild antelopes. The eggs hatch in the animal's intestine
and penetrate through the intestinal wall to the portal
circulation. They are then carried to the liver and lungs where they form many cysts.
When a dog eats the diseased animal it becomes
infected with these cysts, which then proceed to develop into mature worms.
Human beings become infected when they accidentally ingest eggs from dog faeces. The larvae migrate from the intestine to the liver or lungs causing cysts. The larvae can also cause cysts in other tissue in the body.



Clinical Features

In the liver, the cyst grows slowly over time thereby enlarging the liver. The abdomen may also become grossly distended.

Diagnosis

This is done through a chest x-ray or an abdominal ultrasound investigation. A serological test can also be done to assist in making the diagnosis.

Management

The treatment of hydatid disease can either be medical or surgical.
The medical treatment is as follows:

- Oral albendazole 20mg/kg in divided doses twice daily for 30 days (The cure rate with this treatment is 20%). The treatment can arrest the growth of the cyst and reduce its size
- PAIR (Puncture, Aspiration, Instillation of 95% alcohol and Re-aspiration). This is the treatment for the liver or spleen. The ultrasound machine is used to guide the PAIR procedure. This treatment is very effective and has a high cure rate

The surgical treatment is known as endocystectomy. It is the surgical removal of the cysts contents, especially those cysts that are easily accessible like abdominal cysts.

Prevention and Control

The prevention and control of the hydatid disease can be achieved by eradicating stray dogs and deworming them. Deworming should be done every six weeks with praziquantel.
You should also provide health education on the dangers of close contact with dogs (licking), especially among children. Also, infected meat should not be fed to dogs.

SECTION 8: DISEASES FROM CONTACT WITH ANIMALS OR ANIMAL PRODUCTS (ZOONIC DISEASES)

Introduction

In this section you will look at infectious diseases which are transmitted between animals and humans.

Objectives

By the end of this section you will be able to:

- List three diseases transmitted through contact with animals or animal products
- Describe the management of zoonotic diseases namely; anthrax, rabies and brucellosis
- Describe the control measures of zoonotic diseases

Diseases from Contact with Animals

What do you call diseases that are transmitted between animals and humans?

Diseases that are transmitted between infected vertebrate animals (animals with a backbone) and humans are called zoonotic.
In some of these diseases, humans are usually the last in the transmission cycle or the final host as in the case of hydatidosis, unless of course the person's body is eaten by a predator.
Similarly in other diseases like rabies and brucellosis, the disease transmission ends with mankind, though possibilities of further transmission can occur if for example, a rabid patient bites another person, or a patient with brucellosis accidentally transmits it to another person.

Zoonoses are transmitted between animals and humans through the following means:

Vectors

These include:

- The rat flea which transmits plague among rats and other rodents
- The tsetse fly which transmits trypanosomiasis among game animals and nagana in cattle
- Mosquitoes which transmits yellow fever among monkeys

Ingestion of Contaminated Material

Ingestion of meat or dairy products from sick animals, leading to diseases such as:

- Anthrax (meat from cattle and game animals)
- Brucellosis (milk from infected cattle)
- Taeniasis (milk and meat from infected cattle and pigs)

Animal Bites

Bites, resulting in diseases such as:

- Rabies (from rabid domestic and wild dogs or foxes)

Direct Contact with Infected Animal

Close contact resulting in diseases such as:

- Hydatidosis (close contact with infected domestic dogs or other carnivores)
- Cutaneous anthrax (contact with infected cattle or their products)

In this section you will cover anthrax, rabies and brucellosis, looking at their mode of transmission, clinical picture, diagnosis, management and prevention.

Anthrax

Anthrax is an acute bacterial disease of herbivores (plant eating animals). However, it occasionally also infects human beings especially those who process hides, skins and wool or work in slaughterhouses. Anthrax is caused by a rod shaped bacteria (bacilli) called bacillus anthracis.

The disease can occur in large numbers among cattle (epizootic), especially during drought and flooding when they are moved from one place to another. In humans, this infection takes various forms depending on the route of entry.
There is anthrax of the skin which affects people who handle cattle, anthrax of the lungs which occurs in people working with infected wool; and anthrax of the bowels which affects families who eat the meat of dead animals.
The type of disease caused depends on the route of entry of the bacillus or its spores. In animals, anthrax causes a fever which is followed by septicaemia and death. Vultures, which feed on the dead animal can spread the spores.

Mode of Transmission

The bacillus anthracis forms spores when exposed to the air.
The spores can survive for years in the soil even under harsh weather conditions. The spores enter the animals orally (through the mouth or ingestion).
The body of a sick or dead animal contains millions of anthrax bacilli. These bacilli are shed through animal urine, droppings, saliva milk and blood.
If any of these body fluids are touched or the meat of an infected animal eaten, a person becomes infected with anthrax.

Clinical Features

The clinical features depend on the route of entry of the anthrax bacillus.
Skin or cutaneous anthrax presents with a malignant pustule with a black necrotic centre. The wound is usually painless and has swollen edges. Skin anthrax has low mortality.
Respiratory tract anthrax on the other hand has a high mortality rate and presents with severe respiratory distress and shock.
Digestive tract anthrax is characterised by fever, sepsis, watery diarrhoea and vomiting.

Diagnosis

The diagnosis of anthrax is made by taking a specimen (fluid from vesicles, sputum or stool) for a culture to confirm gram-positive rods.

Management

Bacillus anthracis responds to penicillin and most other antibiotics.
Patients with anthrax of the respiratory tract need respiratory support and oxygen therapy in a high dependence care unit.
Those with anthrax of the digestive tract may need fluid replacement due to diarrhoea and vomiting.

Prevention and Control

Although the main responsibility for the prevention and control of anthrax falls on the veterinary department, you as a health worker also have a role to play.
You should ensure that all meat offered for sale is inspected and educate the community on proper disposal of all infected animals. The carcasses must be burnt or buried two meters deep in the ground in calcium oxide powder (quick lime).
Other measures include annual vaccination of cows at risk, proper disinfection of hides and skins, and vaccination of members of the community who are at risk of getting anthrax.

Rabies

Rabies is a serious viral disease of canines which is incidentally transmitted to humans by the bite of a rabid animal.
It is caused by a virus known as lassa virus type I. The disease is of public health importance because it has a case fatality rate of 100%. If a patient is not treated immediately after the bite, once the clinical signs appear it is too late.
Rabies is found all over the world and in canines. It occurs all the time and in great numbers (enzootic and epizootic). In human beings, rabies is a zoonotic disease, and humans usually do not transmit it any further.
The main reservoirs of lassa virus type I are felines, hyenas, and mongoose.

Mode of Transmission

The rabies virus is transmitted to humans through the saliva of an infected animal such as a dog or cat.
This happens when humans get bitten by a rabid animal or when its saliva comes into contact with the mucous membranes or open wound of a person.

The main reservoirs of the disease are wild animals such as mongooses, jackals and hyenas. These wild animals infect domestic animals including cattle, donkeys and horses, which in turn infect mankind.
In North and South America, rabid bats have been known to infect humans. All warm blooded animals are susceptible to rabies.

Clinical Features
The incubation period of rabies ranges from two weeks to a year, with an average of two to three months. The length of the incubation period is influenced by the following factors:

- The size of the bite - the deeper the bite the shorter the incubation period
- Distance of the wound from the brain - the nearer the wound is to the brain the shorter the incubation period
- Type of wound - if the wound is big with extensive tissue damage the shorter the incubation period

Write down three symptoms of rabies infection.
The earliest symptoms usually consist of increasingly severe pain in the bite wound, depression, irritability, nausea, sore throat, headache and loss of appetite.
Later, two clinical presentations emerge:
Furious rabies whereby the infected person develops convulsions, intense fear of death and irrational excitement, which alternates with periods of alertness and calmness. The patient is also unable to tolerate noise, bright light and cold drought (aerophobia - fear of cold air). There is increased reflexes, muscle spasms, excessive sweating, dilatation of pupils, excessive salivation and lacrimation. The patient develops intense hydrophobia (fear of water) because of the intense pain experienced when swallowing water due to spasms of the pharyngeal muscles. This stage is also known as the 'furious' rabies stage and it lasts for two to three days and sometimes for five to six days. Death usually occurs due to cardiac or respiratory failure during a convulsion.
The next stage is the paralytic rabies stage which is characterised by paralysis of muscles causing paraplegia, quadriplegia and coma. Patients who reach this stage do not survive for more than a week.

Diagnosis
Diagnosis of rabies is made if a person is bitten by a dog with abnormal behaviour and without any provocation. In addition the presence of negli bodies in the brain of a suspected animal should confirm the disease.

Management
There is no cure for rabies once the disease has started. It is however possible to prevent it from reaching that stage by doing the following:

Post Bite Prophylaxis

Immediately someone is bitten you should give first aid treatment of the bite with the aim of removing as much virus as possible. This involves immediate flushing of the wounds and scratches preferably with running water and washing the surrounding skin with a lot of soap and water. Puncture wounds should be irrigated with a sterile catheter using methylated spirit and povidone. Iodine is also virucidal and may be used to clean the wound.
Bite wounds should not be sutured immediately to prevent more traumas from the suturing needle, which will increase the areas for viral entry into the body tissue. Suturing may be done 24 to 48 hours after the bite using very few sutures under the cover of anti-rabies serum locally.

Anti-Rabies Vaccine

This is a very safe and effective treatment following a rabid animal bite.
The vaccine HDCV (Human Diploid cells tissue Culture Vaccine) is administered in six doses sub-cutaneously as follows:
1ml immediately after exposure (day 0), 1ml on day 3, 1ml on day 7, 1ml on day 14, 1ml on day 30, 1ml on day 90.

Other Drugs

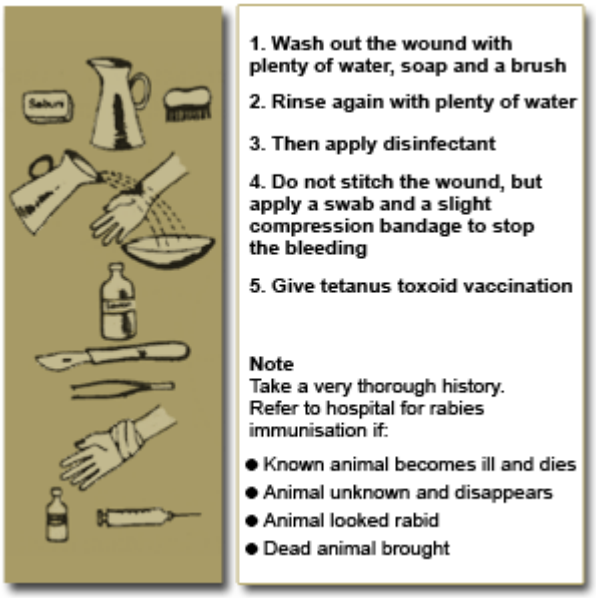
In order to prevent wound infection and tetanus you should give the patient broad spectrum antibiotics.

Note: The animal, which inflicted the bite, should be quarantine and observed for ten days from the day of the bite. If it shows signs of rabies it should be killed anditshead removed and sent under refrigeration for rabies examination.

Prevention and Control

Rabies is a notifiable disease. It is very important to give immediate first aid to a person who has been bitten by a suspect animal.

In addition, you should educate the community members on the importance of immunising their domestic dogs and cats every three years and eliminating all stray dogs and cats.



Brucellosis

Brucellosis is a zoonotic disease or disease of animals. It is caused by a bacteria called brucella melitensis in goats, sheep and camels, brucella abortus in cattle and brucella suis in pigs. All these bacteria however can be transmitted to mankind causing brucellosis.

Distribution

Brucellosis has a worldwide distribution, predominantly in rural areas among pastoral communities.

It is also an occupational health hazard of farmers, veterinarians, abattoir workers and butchers.

Transmission

Brucellosis is transmitted through ingestion of unpasteurised milk or milk products such as cheese.

It can also be transmitted by contact with blood, urine, tissues, through splashing of amniotic fluid or milk on the conjunctiva and blood transfusion.

Clinical Presentation

The incubation period takes about two to four weeks. Initially the signs and symptoms are non-specific and include the following:

- Headaches
- Fever
- Weakness
- Anorexia
- Rigors
- Night sweats
- Constipation

Patients may also complain of pain in the large joints like the hips and knees although any other joint may be affected. Hepatomegally, splenomegally and lymphadenopathy may also be present. If untreated, the disease can continue for many months and the patients may become depressed.

Diagnosis

A serological diagnosis of brucellosis can be made by doing an agglutination test in dilutions. A level of 1:160 or above is associated with the infection.

Blood cultures rarely give positive results but a bone marrow aspirate culture gives better yields of up to 90%. Full haemogram - normochromic, normocytic anaemia, neutropenia and lymphocytosis is common.

Treatment

The treatment of brucellosis is doxycycline 200mg daily for 14 - 21 days and cotrimoxazole tabs 2 bd. for 14 - 21 days.

Prevention

You should educate the community and especially farmers on the importance of boiling or pasteurising milk.

Animal handlers and those at special risk should be advised to take extra precautions.

UNIT FIVE: COMMUNITY DIAGNOSIS

In this unit you will cover the concept of community diagnosis and how to help a community manage its health problems.

This unit is composed of five sections:
Section One: Concept and Purpose of Community Diagnosis
Section Two: Planning a Community Diagnosis
Section Three: Developing and Pre-testing Tools for Data Collection
Section Four: Execution of the Survey, Data Analysis and Presentation
Section Five: Report Writing, Dissemination and Community Action

Unit Objectives

By the end of this unit you will be able to:

- Describe the concept and purpose of community diagnosis
- Explain how to plan a community diagnosis survey
- Describe how to develop and pre-test tools for data collection
- Explain how to execute a survey
- State how to write and disseminate a community diagnosis report and plan community action

SECTION 1: CONCEPT AND PURPOSE OF COMMUNITY DIAGNOSIS

Introduction

When you care for an individual patient, you make a patient diagnosis and organise the appropriate treatment. Similarly, in order to look after a community you must make a community diagnosis and organise appropriate community health programmes. It is therefore important for you to learn the approaches to community diagnosis and what its purpose is, and how it differs from patient diagnosis. You will also learn the terminologies used in community diagnosis.

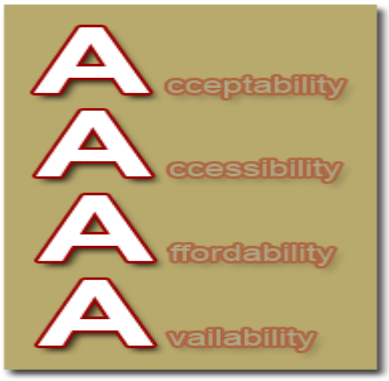
Objectives

By the end of this section you will be able to:

- Describe the concept of community diagnosis
- Explain the difference between patient diagnosis and community diagnosis
- Explain the purpose of community diagnosis
- Describe the terminologies used in community diagnosis

The Concept of Community Diagnosis

Community diagnosis is a process through which health workers together with members of the community identify the community's priority health problems, and together make plans of action and implement them. It points out where the health services should put their main efforts and resources. You learnt in unit three on Primary Health Care (PHC), a community's full participation depends on the four concepts of PHC or the 4As.



The four A's are acceptability, accessibility, affordability and availability using appropriate and local technologies. In the past, professionals including health workers always considered themselves experts on various issues. Health workers would visit a community and without consultation, impose certain sanctions or treatments without the community's consent. Also, some communities have received assistance particularly when there is a disaster

and then been abandoned without being helped to address the causative factors. This has often resulted in dependency, lack of self-initiative to improve themselves or even a belief that they are helpless.

Luckily, this notion has changed. It is now realised that people have the ability to help themselves if they are given some facilitation or guidance. People want to be independent and self-reliant. It is also true that people tend to cherish and care for what they have acquired through a struggle. Such involvement empowers individuals and makes them resourceful and self-reliant.

The community diagnosis concept therefore stresses that the community must identify its problems, prioritise them and draw a plan of action to address the identified problems. The community then implements this plan to resolve the problems. It emphasises total community involvement. This is because the community knows its problems and priorities better than the health worker. When they actively participate in solving these issues they become bound by the decisions they make and feel motivated to see the plans through.

Sometimes, one of the problems you experience as health workers is that communities may be more concerned about water or access to markets than they are about medical problems. In such situations, you need to look at all aspects of community development, that is, adopt an intersectoral approach, so that the real needs
are tackled.

There is no need to rush into a programme before there is understanding and commitment. This will just lead to failure. Sometimes you may even have to show your willingness and interest in what the community wants before you can concentrate on the main health problems.

As health workers, you talk all the time about patient diagnosis. Is this the same as community diagnosis? Move on to look at the difference between patient diagnosis and community diagnosis.

Patient Diagnosis versus Community Diagnosis

In your basic training and in unit one of module one you learned how to diagnose a disease in a patient.

On a notepad write down the four basic steps you would follow when making a patient diagnosis?

Your answer should have included the following:

- Collecting basic information or history taking
- Planning a programme or diagnosis
- Implementation or treatment
- Follow up and evaluation

You can now look at the patient diagnosis steps in more detail:

1. greet and welcome the patient and offer them a seat
2. Ask for the patient's name, age, sex, marital, status and patient's residential address.
3. Take history including details of the patient's progress so far.
4. Perform a physical examination.
5. Carry out or request special nvestigations. Make a differential diagnosis, followed by a specific diagnosis once results of investigations are confirmed. You may even state the expected outcome.
6. Prescribe the most appropriate treatment.
7. Give the patient a date to return for review. A patient with an acute condition should be hospitalised for monitoring and review. Depending on the presenting signs and symptoms, each time they are reviewed their diagnosis may change.
8. As the patient improves discharge them.

Remember:
People are individuals, no two people are alike. Some may have started treating themselves before coming for your help.

In community diagnosis, you follow the same basic steps as the ones you have seen in patient diagnosis. The only difference is that the amount of data is much greater and requires more lengthy analysis and processing.

In community diagnosis you start by collecting basic information. You collect information about the following:

- Local people and their environment
- The number of people and their distribution
- The diseases the local people suffer from
- The organisation of local health services

You then make a community diagnosis by identifying the main health problems and the reasons for them. Identify priority health problems and plan a community health programme or treatment to solve these problems.

Remember:
It is important to only select priority health problems.

This is because health centres often have limited resources and many demands on those resources. There are simply not enough resources to solve all the health problems in the community. Therefore, the health care worker together with the community must select priorities for health action. Remember, it is important to choose only those problems that the community can do something practical about with the help of the local health team (health centre or dispensary staff).
The final step is follow up to evaluate the programme and see if it has made the community healthier. You can evaluate an activity by counting or measuring things or simply by using your judgement. For example, to evaluate whether women are attending your antenatal clinic, you can check how many of the total number of pregnant women in your catchment area attend the clinic. You can also assess whether they are satisfied with the service by talking to women who attend the clinic and also to some who don't.
The tools you use in patient diagnosis are, for example:

- Sphygmomanometer (BP machine)
- Stethoscope
- Weighing scales
- Thermometer
- Chairs
- Record books

In community diagnosis, you use survey tools for example:

- Maps
- Weighing scale
- Specimen bottles
- Questionnaires

Now you have looked at the difference between patient diagnosis and community diagnosis. You can now consider the purpose of conducting a community diagnosis.

Purpose of Community Diagnosis

The main purpose of carrying out a community diagnosis is to collect information on the following:

- Demographic data plus all the vital health statistics
- Utilisation of health services especially of maternal and child health clinics
- The causes of morbidity and mortality (by age and sex)
- State of nutrition, diet, weaning patterns and the growth of preschool and school-going children
- Patterns of leadership and communication within the community
- State of mental health and common causes of stress
- State of the environment including water, housing and disease vectors
- The community's knowledge, attitudes and practices (KAP) in relation to health-related activities
- Epidemiological details of endemic diseases
- Available resources and services for overall development of health-related activities for example, education, agriculture, veterinary and social services
- Socio-cultural and socio-economic class divisions within the community (social stratification)

Although a community diagnosis can yield a lot of data, it is not possible to collect it all in detail. Therefore, you need to tailor your survey to suit the specific information you want to collect.
You will now look at some of the terminologies used in community diagnosis.

Terminologies Used in Community Diagnosis

Many of the terminologies used in community diagnosis have already been defined in unit one, section one and three of this module.
Write down the definitions of the following terms on a notepad.

Community Health
Community health is the science and art of promoting health and preventing disease through organised community participation
Incidence
Gives information on the number of new cases of a disease or condition occurring over any specified time.
Prevalence

Gives information about the total number of cases of a disease or condition at a particular time; whether new or old.

Infant Mortality Rate

This is the probability of dying between birth and exactly one year of age expressed per 1,000 live births. It is calculated by dividing the number of infant deaths during calendar year by the number of live births in the same year.

Crude Birth Rate

This is the number of births per 1,000 population. It is calculated by dividing the total number of births in a year by the mid-year population

Crude Death Rate

This is the number of deaths in one year per 1,000 population. It is also called Crude Mortality Rate. It is calculated by dividing the total number of deaths (D) by mid-year population (P) and expressed per a thousand population

Rate of Natural Increase

RNI in a country can be calculated by finding the difference between birth rate and death rate per 1,000 then expressing such a difference as a percentage. It is the percentage annual rate of population growth without regard for migration.

A negative number means the death rate is greater than the birth rate and so the population is decreasing.

Dependency Ratio

This is the ratio of (potentially) economically active population to the retired population and children under 18 years of age, giving a rough estimate of the number of depedants per worker. It is calculated by dividing under 18's and over 64's by 18's to 64's.

In addition to the terminologies listed, there are two other terminologies used in community diagnosis, namely, indicators and variables.

Indicators

Events or facts that can be measured to reflect the health status of an individual or community.

Variable

Characteristic within the study sample whose value changes among the study subjects. It is an observation made on the study subjects. Often two or more observations are made on a number of subjects. These observations either increase or decrease simultaneously or at varying levels. The two or more observations are called variables and their relationship is called correlation. For example, in a study of youths you may decide to observe their age and weight. In this case, the weight and age are the variables. There are two types of variables, namely, independent and dependent variables. In the example just given, age is an independent variable while weight is a dependent variable. Independent variables are plotted on the horizontal axis of a graph while a dependant variable is plotted on the vertical axis. Variables can also be described as qualitative or quantitative. Quantitative variables are expressed in numerical terms. For example, age, height, area, weight and so on. Qualitative variables are adjectives that describe the subject of study, for example, farmer, teacher, nurse, male, female, green, yellow, white, sadness, happiness, satisfaction, religion.

Ethical Considerations in Community Diagnosis

When conducting community diagnosis, it is very important to avoid taking any action that may be considered offensive by the community. You need to make sure that the tools you use to collect information are not in any way offensive to the community. They should not cause any physical, emotional, spiritual or cultural harm to that community.

You should consider some of the following:

- Obtaining permission to enter into the community boundaries
- Obtaining informed consent before interviewing patients, families or groups
- Establishing rapport before exploring sensitive areas
- Ensuring confidentiality of the data collected
- Selecting good interviewers
- Training interviewers

SECTION 2: PLANNING A COMMUNITY DIAGNOSIS

Introduction

Welcome to section two of this unit on community diagnosis. In the last section you covered the concept and purpose of community diagnosis. In this section you will learn how to plan a community diagnosis survey. Now look at the
objectives of this section.

Objectives

By the end of this section you will be able to:

- Describe the process of community diagnosis
- Explain how to conduct initial exploration and interaction with the community
- Explain how to plan a community diagnosis survey
- Describe how to select a representative sample for the survey

The Process of Community Diagnosis

The process of community diagnosis requires careful planning right from the beginning. It involves initial exploration and interaction with the community, planning of the survey, developing and pre-testing the survey tools and methods, and executing the survey and analysing the results. Once all the information has been gathered it must be documented and its conclusions disseminated to the community. The process of community diagnosis is made up of the following steps:

1. Exploration
2. Planning of the survey
3. Developing and pre-testing survey tools
4. Execution of the survey and data analysis
5. Report writing, dissemination and community action

In this section you willl only learn the first two steps, that is, exploration and how to plan a survey. The rest will be considered in subsequent sections of this unit.

Exploring the Community (Community Inventory)

Exploration simply means mapping out of a community in order to learn or discover about it. It is also known as community inventory. Ideally, you should only carry out a community diagnosis after a request by the community or the people involved in providing health care. The exploration phase is made up of three main activities:

- Seeking permission and informing the various leaders
- Seeking reactions of members of the community
- Gathering background data about the community

Although these activities are listed separately, they actually can take place at the same time.

You will now look at each activity in turn.

Seeking Permission and Informing Authorities in the Community

For the survey to succeed you must seek permission from community leaders.

Start by channelling your request through the official hierarchy of administrative leaders in that community:

- Health personnel such as Medical Officer
  in Charge
- Governmental officials such as Chiefs or District Officers
- Community leaders through, for example, the village health committee

You should approach all these people, introduce yourself and clearly state the objectives of the survey and your plan of action. Remember, for them to give you permission to proceed they need to understand what you intend to do and how it will benefit the community.

So be well prepared. The community leaders are extremely important to the success of the survey as they clearly understand what, how, when, and why things happen. They also influence other members of the community more directly than administrators who do not live in the community. You should therefore seek their assistance in implementing the survey. They will only cooperate if they perceive some beneficial results from their cooperation. So you should always plan a survey with the intention of carrying out an appropriate action programme for the community.

Seeking Reactions of Members of the Community

During this period of exploration, you also sound out the reactions of members of the community. This can be done by talking to people informally in market places and eating places. This way, you will easily find their opinions or problems in the community and their likely solutions. Also by talking to them you can gather information regarding possible resistance to the survey and how to approach different members of the community.

Gathering Background Data

The period of exploration also presents you with the opportunity to gather background data about the community. For instance, the Medical Officer of Health in charge of the district will give you an overview of the health profile of the district. The District Commissioner will give you boundaries,

the population and maps of the area. The District Education Officer will give information about educational activities and literacy levels of the community members. Other district heads will give information related to their areas of jurisdiction. Although some of the records might not contain the most recent data, you can make projections by estimating the current population figures in the community.

Similarly by looking at other government reports you can gather information regarding the climate and weather conditions, water sources and the road network. The older people in the community are a little used resource and yet they can provide you with a lot of information on the community's history.

Gather information as you move around the community by:

- Questioning
- Observing
- Smelling
- Listening

You should also look at findings of previous surveys so that you can adequately address any new problems.

Once you explore the community and gather all the information you need you are now ready to plan your survey.

Planning the Survey

This is a very important part of the process of community diagnosis. There is a popular adage which says 'If you fail to plan you plan to fail'. So if you fail to plan the survey carefully and properly, your study will be unsuccessful or will give you unreliable results.

During the planning phase, you should attempt to answer the following questions.

Why is the Survey Being Done?

A survey is not carried out just to obtain interesting information. There must be good reasons and the reasons must be useful to the community. This question must therefore be answered to the satisfaction of all the leaders who are concerned with the community.

If the community has given you permission to carry out the survey, it will expect and have a right to expect some beneficial results from its cooperation. You should therefore plan the survey with the intention of carrying out a proper action programme for the community. This information would most likely have been communicated during the exploratory phase.

Once the community leaders understand the reasons and are ready to cooperate with you, a meeting of the members of the community should be called to explain why there is a survey, why they have been chosen, what will be involved, when it will be done and what will happen to the results. During this meeting you should invite government, health and community leaders so that the community can see who is supporting your work and who will be moving around their community and homes.

Where Will it Take Place?

You will have made this decision right at the beginning when exploring the community and seeking permission from various community and government leaders.

Who Will be Interviewed?

It is usually not possible to interview everybody in a community unless of course it is very small. You will therefore need to select a sample from the total population which will be considered representative of what is happening in the entire population. The sample could be made up of individuals or households depending on the available resources and time. There are certain techniques used to choose a sample. These are covered in detail later in this unit.

It is also useful to talk to the local opinion leaders such as, the chief, village elders, members of organised groups such as church leaders and traditional healers, professionals in the area such as teachers and medical staff, and other extension workers.

When Will the Survey Take Place?

If you intend to visit people at home, then you should avoid days when people are less likely to be at home, such as market days. It is important to choose carefully the days when the interviewers will be in the field in order to ensure that they find the people they want to interview. The exercise should also not coincide with seasons of important community activities such as planting, circumcision etc. Ideally you should decide when to conduct the survey after consulting the community members so that they are prepared for you.

What Will be Covered in the Survey?

This will depend on what you want to learn about the community's health status and the information you have gathered during the

exploratory phase.

However, some topics like nutritional status of children under five are often covered in a community diagnosis survey. Think of some of the common health problems that you see in your area for; children under five years, women aged from fifteen to forty nine years, and older people of sixty years and over.
You will agree that each group of people has its own unique problems. It is important to find out what these problems are and then decide with the community which problems are the most important.
Some of the specific areas that surveys address include:

- Screening people for diseases
- Seeking to understand and identify ways of getting rid of negative cultural beliefs and behaviour that is causing ill health in the community
- Assessing the utilisation of the available health services

Why are certain variables included and others left out?

Although it is your responsibility to determine what is included or omitted, it is very important to explain the reasons to leaders and members of the community. If you do not explain this clearly they may become disappointed and stop cooperating with you.

What instruments will be used to measure the community's health status?

Usually questionnaires are used to cover most of the topics. However, in some instances, anthropometric measurements, physical examination and laboratory tests may also be necessary. You will cover questionnaires in more detail later in this section.

How will data be collected and with what resources?

To answer this question you will need to specify the tasks that need to be done and then identify who will do them and how long it will take them. Consider the following factors:

- Time to travel to the study area
- Time to locate the groups
- Time and number of times each group will be visited. Allow time for following up defaulters
- Calculate the number of interviews that can be completed in a day
- Calculate the number of days that will be needed to complete the whole sample
- Calculate the time needed for other parts of the study for example five days for preparation and pre-testing and twenty days for actual work

How do we select and train the official interviewers?

Ideally, the interviewers should come from the community so that they are well known to its members. School teachers, school children, health centre staff, village elders and young educated people are some of the people who can help you to survey your area and fill in the questionnaires. However, if your interviewers are not from that community, then you will need to introduce them to the community leaders and if possible to the community members in a public meeting. Once the survey begins, they should wear identification badges and introduce themselves.

Remember:

It is advisable to over estimate the time needed for data collection to allow for unseen delays.

The people you select for training as interviewers should have the following qualities:

- Be literate and well known to the community
- Have the ability to display the right attitudes and opinions
- Be able to explain the questionnaire effectively to the community
- Be able to use the tools presented in your package
- Be able to establish good rapport with individuals, families or groups they will meet
- Be good listeners and sensitive towards other people's feelings
- Be able to relate well to the community members

You should impress on the interviewers the value of working well with all sections of the

community. If one of your tools addresses a specific group like the youths, you should select an interviewer of the same age or sex who can identify with the group. This helps to elicit the salient points from their responses. Whenever possible, select people who speak the language of the study group.
The people who are selected as interviewers have different educational backgrounds from yours and may interpret questions and answers differently. So you must train them on how to administer the survey tools. When training interviewers you need to explain the following:

- The purpose of the survey
- The method to record the various expressions used by people to answer particular questions
- The procedure they should follow to get cooperation from the people being surveyed

If you intend to use a questionnaire you should go through it several times with the interviewers to ensure that they all have a common understanding of the questions and are able to ask them properly. The interviewers should understand the need to follow the questionnaire closely and in a standardised manner. If each interviewer asks questions in their own manner the answers will be unreliable because they may refer to different things.

During the training you should hold mock interviews with the interviewers so that you can ensure that each one of them can handle the assignment. Use this opportunity to correct them and also to clarify issues about the questionnaire such as wrong translations and questions. Once you are confident that your interviewers can handle the job, you should carry out a trial test or pilot test on a section of the community who have similar characteristics as the study group. This gives them a feel of the real situation and helps you to assess them further.
Remember that the pilot group should not be included in the study group.
Interviewers should conduct themselves in an appropriate manner when approaching respondents. The points below should be followed:

- Establish rapport by greeting the respondents and introducing themselves
- Explain carefully why they have come and what is the purpose of the survey
- Ask if they are welcome to interview the family and if it is convenient for them at that time
- Explain that they will be recording the information they collect
- Emphasise that all information collected is confidential
- Give them a chance to ask questions for clarification

Having planned your survey and trained your interviewers, you now need to identify a representative sample which will answer your questions and provide you with the information and results you need. You will now look at sampling.

Sampling for a Survey

Sampling is the process of selecting a number of individuals or units of the study population in such a way that the individuals selected represent the larger groups from which they are selected. You will agree that it is neither practical nor economical to survey a whole population. That is why the part of the population studied is called a sample. The aim is to get the the same information from that sample that you would have got if the whole population had been surveyed. For this reason, when you are selecting a sample for a survey, you must make sure that it is representative of the whole population.

Also, in the sampling process you have to give an equal chance for each person in the population to be included in the sample. Otherwise you can come to wrong conclusions.

A Study Population

A study population is the entire group of individuals, events or objects that have common observable characteristics. For example:

- All first years in nursing
- All under fives in a given community
- All qualified nurses with mental health qualifications

This must be clearly defined for example, according to age, sex, or residence. A study population may also be selected for example, according to villages, institutions, records. Each

population is made up of study units identified by the type of problem that you want to study.
A study population can be divided into two main groups, namely, accessible population and the representative sample.
The accessible population is a group of individuals, objects and events with characteristics comparable to the target population and relevant to the study.
The representative sample is a group from the study population, which has all the important/relevant characteristics of the total population.

Sampling Methods
Before you sample you need to develop a sampling frame. A sampling frame is a list of all units that make up the study population. It enables you to sample the study units in such a way that the probability or the different units to be selected in the sample are known. Sampling techniques fall under two main groups, namely, probability sampling and non probability sampling.
You will now consider each group starting with probability sampling.

Probability Sampling
Probability sampling looks at the entire group of individuals, events or objects that have common observable characteristics. It has been found to give accurate results when one is studying groups that are too large to study in their entity. It also provides you with an efficient system of capturing; in a small group the variations or similarities that exist in the target population.
The following are the most commonly used methods in probability sampling:

- Simple random sampling
- Systematic sampling
- Stratified sampling
- Cluster sampling
- Multi-stage sampling

You will now look at each in turn.

sampling methods

Simple Random Sampling

This is the simplest form of probability sampling. It means that every sampling unit in the population has an equal chance of being included in the sample. You can draw a simple random sample using the following steps:

- Make a list of all the units in the population to be studied
- Decide on the sample size
- Select the required number of units using ballot or lottery method or random numbers

For example to draw a random sample of five patients from a list of 250 using the ballot method, you follow this method:

- Give each client a number (1 - 250)
- Write them on a small piece of paper
- Fold them individually and put them in a box
- Shake the box vigorously to mix them
- Pick five pieces one by one and note the numbers and record

Each patient is a unit and the names of the patients on these numbered papers form the sample or study population.

Systematic Sampling

Here you first decide the sample size you want and then proceed to select the individuals or units using a systematic method.
For example, let us assume that the population size you want to study consists of 1000 women. Out of this population, you only want to pick a sample of ten women for your study. This gives you a ratio of 1:100 or a sample fraction of 1/10.
Now, with this ratio you can proceed to pick the sample population as follows:

- Select the first file randomly. Let us assume that you have selected file number 25.
- Starting with file no. 25, proceed to pick every 100 file, that is, file 125, 225, 325, 525, 625, 725, 825, and 925. You now have your random sample of ten files.

Stratified Sampling

This is dividing the sample frame into smaller sub samples in order to enable you to capture the variable aspects of each subgroup.This method is used when the study population is very variable, for example, different ethnic groups, different ecological areas, or age groups. It allows you to subdivide the population into sub populations which are more

homogeneous.You then apply simple random sampling to each subgroup or stratum.

Cluster Sampling

In this method, you randomly select groups or clusters and not the individuals or cases. This method is used when it is not possible to obtain a sampling frame because the population is either too large or scattered over a large geographical area. In cluster sampling you select an intact group and include all the members of that group in the sample. For example, say you want to study patients suffering from malaria in your district. It would be expensive and time consuming to compile a list of all malaria patients who have been hospitalised in your district.
So the logical thing to do would be to list all health facilities in your district and then randomly select them according to your sample size. Once you select them, you would then include all the malaria patients in those health facilities in your sample.

The methods of sampling you have just covered are known as probability sampling. You will now look at another group of sampling methods known as biased sampling or non-probability sampling methods.

Non Probability Sampling Methods
Non probability sampling methods are used when a researcher is not interested in selecting a sample that is representative of the population. They are mainly used in qualitative studies where the focus is on in-depth information rather than making generalisations. Some examples of non-probability sampling methods are convenient sampling, quota sampling and purposive sampling.
You will now look briefly at each method.

Convenience Sampling

In this method, you select cases or units of observation as they become available.
For example, a health worker wanting to study attitudes of villagers towards family planning may decide to interview all adults visiting Maternal Child Health or Family Planning (MCH/FP) clinic on that day. Such a sample is useful for giving a first impression of a situation. However, it is not representative of the community. This sample is considered unrepresentative because some units can easily be missed out or under selected.

Quota Sampling

In this method, the researcher simply selects subjects to fit in identified quotas, say for example, a certain religion or social class. Quota sampling ensures that various groups or quotas of the population are included in the study according to some criteria. The selection is not random as the individuals are just picked as they fit into the identified quotas.

Purposive Sampling

Here the researcher simply picks individuals or cases that have the information or characteristics which they requires. It is sometimes used in one of the stages in the sampling procedure, for instance, to get the location or district in which the units of observation have the required characteristics. Once the units are selected, the researcher may then apply random sampling to obtain the actual sample of cases.

Bias and Sampling Errors
As you noted in probability sampling, selecting a sample requires special techniques which ensure that each person in a population has an equal chance of being selected into the sample. If a sample is not randomly selected or if the interviewers do not follow a similar and consistent method, there will be errors in the data gathered. These types of errors are called bias. Further, even when the sampling techniques which reduce bias are correctly applied during the selection of a sample, the results of the study may be subject to another error known as sampling error. This is because within the small group selected to represent a larger one, there may be people whose characteristics are very different from anyone else's in the same group. Very small samples tend to have higher sampling errors than large samples.

SECTION 3: DEVELOPING AND PRE-TESTING TOOLS FOR DATA COLLECTION

Introduction

Welcome to the section three of this unit on community diagnosis. In section two you learnt about community exploration and how to plan a survey. You also looked at different sampling techniques which can help you to select a representative sample for your survey.
In this section you will consider yet another step in the process of community diagnosis. You will look at how to develop and pre-test tools for data collection.

You will start by looking at the objectives for this section.

Objectives

By the end of this section you will be able to:

- Name at least two tools that can be used during a community diagnosis exercise
- Explain how to develop a questionnaire
- Describe how to organise a focus group discussion
- Describe how to pre-test the survey instruments

Tools

Tools are implements that help us with our work. Before you embark on any procedure, you ensure that you have all the tools you need to do it effectively and that they are in the best possible condition. Similarly, before you embark on a community diagnosis survey you need to ensure that you have all the tools and instruments you need for measuring the community's health status. The tools used to measure a community's health status are:

- Questionnaires
- Focus group discussions
- Measurements, physical examination and laboratory tests
- Key informant interviews

You will now look at the first two tools in detail starting
with questionnaires.

Questionnaire

A questionnaire is a set of standardised questions designed to collect information about a specific aspect or issue in the community. It is therefore a tool for collecting information. Information from a questionnaire helps you to make plans for your health services and to evaluate them.

Before you design a questionnaire it is important for you to know what information you need to collect and how it will be used. It would help you to make a list of what you want to know. In other words, what do you really want to find out or achieve with the questionnaire?

Qualities of a Good Questionnaire

A good questionnaire has the following qualities:

- Has simple and specific questions. Avoids wording that is above the vocabulary or reading skills of the respondents.
- Has short and precise questions. The number of questions should not be too many or else they will put off the person being interviewed. In other words, keep it short and simple (KISS).
- Avoids use of abbreviations or jargon.
- Avoids questions that are too demanding and time consuming.
- Avoids bias in questions. Biased questions influence people to answer in a way that does not accurately reflect their position. For example, a question like 'Do you agree with the majority of the people that health standards are falling?' implies that the respondent should agree.
- Avoids making assumptions. Questions such as 'How many children do you have?' assume that the respondent has children. You should only ask this question after establishing the situation with the question 'Do you have children?'
- Avoids double questions. For example, 'Did the MCH talk help to identify ways to improve the sanitation and nutrition of your children?' It is better to ask about sanitation and nutrition separately.
- Has clear wording. Words such as majority, older people, regularly, might mean different things to different people and so should be avoided.
- Questions ask about simple common happenings.
- Questions range from known to unknown and from simple to complex.
- All the questions should relate to the purpose of study. Eliminate 'nice to

know' questions, you may end up with 'information overload'.

- Questions are acceptable to the people included in the survey.You should view the questions through the respondents eye and ask yourself the following:
  - Will the question be seen as reasonable?
  - Will it infringe on the respondents privacy?
  - Will the respondent be able and willing to answer the question?
- Questions should not screen disease if no effective treatment can be offered for the cases found or if the condition is rare.
- Type of question should either be open- or closed-ended.
- Questionnaire must be pre-tested before executing the survey. This helps to identify and eliminate questions that are defective or may lead to wrong information. You may even need to rephrase the questionnaire so that it can elicit the correct responses.

Types of Information
Questionaires can help you collect four different types of information.

Understanding
Information about what people know or how well they understand something, that is, knowledge. For example, what is the major cause of accidental deaths among children in the home?

Beliefs, Attitudes and Opinions
Information about people's beliefs, attitudes and opinions. Here you would be asking people to share with you their thoughts, feelings, ideas, judgment or their way of thinking. For example, in your opinion does positive self-esteem prevent drug abuse among adolescents?

Behaviour
Information about people's behaviour. That is, what people have done in the past, present, and what they plan to do in the future. For example, have you ever attended an antenatal clinic?

Attributes
Information about peoples attributes. That is, their personal or demographic characteristics. For example, age, education, occupation and income.
When you design a questionnaire you should be very clear about the objectives and type of information you desire to collect. Otherwise you may end up collecting peoples opinions when in actual fact you wanted to document their behaviour.

Remember:
The response or information you obtain is only as good as the question. To get correct information you must ask the right question.

Types of Question
A questionnaire should be laid out in such a way that it provides easy flow from one topic to another. It should have both open- and closed-ended questions. They should be arranged in such a way that they allow natural flow of discussion.

Open-ended Question

An open-ended question is a type of question that allows the respondent to provide their own answer. It encourages the respondent to think and describe a situation in their own words. The respondent is not given any answers to select from. The answer given is best recorded in the respondent's own words. Although it is the easiest way to ask for information the responses are not easy to analyse. The answers are bound to be varied and so you need to categorise and summarise them.
Open-ended questions are useful because they give more information on:

- Facts and details which the researcher may not be familiar with
- Opinions, attitudes and suggestions
- Sensitive issues

The following are examples of open-ended questions:

1. What did the traditional birth attendants do when your labour started?
2. What do you think are the reasons for the high dropout rate of health committee members?
3. What would you do if you noticed that your daughter (a schoolgirl) has a relationship with her teacher?

As you can see, these questions require deeper thinking and provoke the respondent to elaborate when responding.

Closed-ended Question

These are questions that offer the respondents a list of possible answers to choose from. They are specific and useful when you are interested in certain aspects of an issue. Although they produce more uniform answers than open-ended questions, they depend upon our knowing and including all the relevant answers in the list. To view a table giving three examples of closed-ended questions click the link below.

table of examples of closed ended questions.

Example 1

What is your marital status? Tick the correct answer.

Single	
Married/living together	
Seperated/widower/divorcee	

Example 2

Did you eat any of the following foods yesterday? Circle 'Yes' if you ate any of the foods listed.

1. Peas, bean, lentils Yes/No

2. Fish or meat Yes/No
3. Eggs Yes/No
4. Milk or cheese Yes/No

Example 3

How useful have the activities of the village health committee been in the development of this village?
Tick the box corresponding with the correct answer.

1. Extremely useful 3. Not very useful
2. Very useful 4. Not useful at all

A good questionnaire should cover the following topics:

- Measurement of the community's health status
- Anthropometric measurements
- Physical examination
- Laboratory tests

Once your questionnaire is ready, your next challenge will be to pre-test it. However, before you look at how to pre-test your instruments, you will look at the other type of tool used in a community diagnosis survey, namely, focus group discussions.

Focus Group Discussions (FGDs)

This is a group discussion that gathers together people from similar backgrounds or experiences to discuss a specific topic of interest to the researcher. The group of participants are guided by a moderator (or group facilitator), who introduces topics for discussion and helps the group to participate in a lively and natural discussion amongst themselves.

A focus group is not a group interview where a moderator asks the group questions and participants individually provide answers. The focus group relies on group discussion and is especially successful where the participants are able to talk to each other about the topic of interest. This is important as it allows the participants the opportunity to disagree or agree with each other. It can provide insight into how a group thinks about an issue, about the range of opinions and ideas, and the inconsistencies and variation that exist in a particular community in terms of beliefs and their experiences and practices.

The discussion is usually 'focused' on a particular area of interest. It does not usually cover a large range of issues, but allows you to explore one or two topics in greater detail.

Focus Groups in a Community Diagnosis Survey

Focus groups can be used in the following ways:

Exploratory Studies

Focus groups are a valuable method to explore a topic about which little is known, or little has been written in the past. For example, in order to set up a successful health education programme you need to understand people's traditional health beliefs. Focus groups can begin this process by providing the first in-depth descriptions of how the community sees the cause and treatment of certain illnesses. Focus groups can also be used to discover local terms used for signs and symptoms of illness, types of illness, and other concepts relating to health.

Testing Ideas about New Programmes

In the planning phase of a new programme, it is possible to use focus group discussions to find out what the community feels about the new plan. You can use the method to see what the community identifies to be major problems or difficulties in existing programmes and incorporate their needs into the new programme. Focus groups can give you an understanding of how appropriate the new plan may be in terms of culture or technology.

Solving Specific Programme Problems

Sometimes programmes have been running for some time and do not appear to be having the expected impact. A focus group can be used to explore such issues and identify the problems that may be hindering the success of the programmes.

Conducting a Focus Group Discussion
In order to conduct a successful focus group discussion you should adopt the following four steps:

Step One: Preparation

First you recruit participants. Focus groups are 'focused' because the participants usually share a common characteristic. This may be age, sex, educational background, religion or something directly related to the topic. This encourages the group to speak more freely about the subject without fear of being judged by others who are thought to be superior. For example, young women may not be as forthcoming in their ideas and opinions in the presence of their mothers or mothers-in-law. The participants should have prior knowledge so that they can come prepared.

Step Two: Physical Arrangment

It is good to make sitting arrangements that allow participants to see each other. Circular seating is the best as everybody can see each other. Avoid the traditional classroom type of sitting. Ensure the room is well lit and ventilated and has minimum or no disturbance so that the participants can concentrate on the discussion. The environment should promote talking and sharing.

Step Three: Preparing a Discussion Guide

You should prepare a set of questions that will help you to guide the discussion. These questions should also allow free flow from one aspect of the topic to the next in a relevant fashion. This helps the participants to think logically and build on the topic you are investigating. Have a mixture of general and more specific questions. If your questions are all general, you may not elicit detailed responses from the participants. On the other hand, if your questions are all specific, you may neglect to address and receive information on the 'bigger picture.'

Make sure you have a variety of follow up 'probes' for each of your questions in the event that you need to clarify questions or have participants elaborate on their responses.

Step Four: The Discussion

Before you proceed you should identify among your team one facilitator and one recorder and introduce them to the group.

Functions of the Facilitator
The functions of the facilitator are to stimulate and support the discussion by:

- Introducing the topic and all the other participants. Self introduction is better because it already sets in motion the tone of sharing for everybody.
- Reassuring them and explaining the purpose of the discussion and the type of information required. The participant also needs to know how and where the information will to be used.
- Encouraging discussion by being enthusiastic, lively, humorous and showing interest in the group's ideas. The facilitator formulates and asks questions following the prepared guide. The facilitator should involve all the members but must remain neutral to all responses so that the participants can freely express their feelings, opinions and views.
- Encouraging involvement of all the members of the group.

To encourage involvement of all members of the group the facilitator should ask open-ended

questions. The facilitator should identify and manage individuals who dominate the discussion and deny others a chance to respond. One way of managing domineering members is to ignore them and instead give attention to the other members when they want to give an opinion. Maintain eye contact with the shy ones and prompt them to talk by calling them by name and posing questions directly to them. Build rapport and empathise as necessary. You should also watch their expressions, mannerism and non-verbal communication. Try to understand what they are saying, communicating or insinuating. If something is not clear ask for elaboration. Avoid being
an expert.
The members may ask for your opinion. Re-direct the question back to them by asking for their opinion instead or what action they would take in respect of the question.
After the session is over, you could share with them the information they were asking for. Control the discussion without blocking their freedom of expression and keep within the time allocated for this. At the end of the session you should thank them for sharing their time and ideas with you.

What the Recorder Records
The recorder records all key issues raised in the session and other factors that may influence the interpretation of information in as much detail as possible. This involves noting down the responses from the group and observing and documenting any non-verbal messages that could indicate how a group is feeling about the topic under discussion.
The following must also be recorded:

- Date, time, place
- Names of participants
- Description of the group level of participation including any dominant participant
- Details of opinions of participants as much as possible using their own words especially for key statements
- Details of emotional aspects and the vocabulary used. This will be particularly useful for developing questionnaires or health learning materials. If possible, a tape recorder should be used as well

The recorder may also help the moderator if necessary. She or he may point out questions that are not well explored; questions missed, or suggest areas that could be investigated. The recorder should not be especially obvious to the group but should be able to communicate with the facilitator if required and help them resolve conflicting issues.
At the end of the discussion, the facilitator should sit with the recorder and review the discussion and complete the notes and evaluate how the discussion went. They should then prepare a full report of the discussion using the participant's own words. It is necessary to list the key statements, ideas and attitudes expressed during each topic. These statements are usually coded and written on the left-hand margin while the comments are written on the right-hand side. It may be necessary to formulate additional questions at this stage for those issues that were not yet clear or controversial.
Next, you will look at how you can pre-test your instruments in order to ensure that they are capable of collecting the data you need.

Pre-testing the Instruments

It is very important to pre-test all the instruments you intend to use before they are finally administered. It enables the interviewing team to discern, alter or delete questions which are being misinterpreted or are too sensitive to be asked without offending people. It also gives you the opportunity to discover if the various parts of the questionnaire flow in a logical order.

Points to Look for When Pre-testing a Questionnaire
According to Salant and Dillman (1994), any pre-test aims to answer the following questions:

- Does each question measure what it is intended to measure?
- Do respondents understand all the words?
- Are questions interpreted similarly by all respondents?
- Does each closed ended question have an answer that applies to each respondent?
- Does the questionnaire create a positive impression, one that motivates people to answer it?
- Are the answers which respondents can choose from correct? Are some responses missing? Do some questions elicit uninterpretable answers?

- Does any part of the questionnaire suggest bias on the part of the researcher?
- Is the questionnaire too long?

Procedure for Pre-testing
During pre-testing, you examine individual questions as well as the whole questionnaire critically by:

Asking colleagues to review the questions critically

This helps you to identify if the questions are clear and whether they meet the study objectives.

Pre-testing the questionnaire on people who are very similar to your target group

It is also important to pre-test your instruments on a community that is very similar to the one in which the survey will be done.

Simulating the actual data collection procedure

If for instance you are going to administer a questionnaire, you should give each interviewer/interpreter a copy and ask them to administer it to the group. Each interviewer should pre-test at least one complete questionnaire.

Obtaining feedback about the form and content of the questionnaire

Were any questions misunderstood? Were the directions clear? Was the questionnaire too long or too difficult? How long did it take to fill it out? Was there enough space for the responses? You should leave in each questionnaire more space for answers than is planned for the final one. This gives the interviewer more space to fill in responses to questions which had not been anticipated.
Checking if the questions produce the information we need

Does the question illicit the information that you need?

Trying out your tabulation and analysis procedure

Does the questionnaire yield data that can be analysed in the way that is needed.

Revising

Check the final draft by going over each question. Ask yourself what the information gathered from each question means and whether it will contribute to the study.

SECTION 4: EXECUTION OF THE SURVEY, DATA ANALYSIS AND PRESENTATION

Introduction

Welcome to the fourth section of this unit on community diagnosis. In this section you will learn how to execute the survey and how to analyse and present the results.

Before you proceed, look at the objectives for this section.

Objectives

By the end of this section you will be able to:
- Describe the process of data collection
- Explain how data is analysed
- Describe the various methods of presenting data

Execution of the Survey

This is another important step in the process of community diagnosis. It requires just as much care as the planning stage. It involves going out to the field to collect information from the sample population you have selected. There are three stages involved in data collection.
These are:
1. Interviewing the respondents
2. Data collection
3. Data handling

You will now look at these stages in turn.

Stage One: Interviewing the Respondents
By the time you get to this stage, you have already developed the survey instruments, trained the interviewers on how to use these instruments and even pre-tested them. You do this in order to ensure that the correct standards are adhered to during the actual survey. Once the real survey begins, you should continue to work closely with the interviewers.

Your presence reassures them and they also get the opportunity to clarify issues that may arise. On your part, you get assured that the interviewers are continuing to follow the techniques you taught them.

When the interviewers approach a respondent, they should:

- Introduce themselves by name
- Show their identity cards for the activity
- Show their letter of permission to carry out the exercise
- Explain why they have come and the purpose of the survey
- Establish rapport with the respondent/s so that they can feel at ease with each other
- Ask if it is convenient to interview the person at that time
- Should the person refuse to cooperate, the interviewers should do their best to persuade such a person to agree

If it is convenient to interview the person at the time you have requested, give the client/family time to be comfortable and proceed. If not, ask for a more convenient time when this will be possible.

This must be within the prescribed period of the exercise as indicated in the permit. In which case the interviewer must return punctually as agreed upon with the family or individual.

If the person refuses to cooperate and remains adamant, the interviewers should politely thank the person for their time spent and proceed to the next interview. Sometimes people may refuse to respond to the question raised.

Remember the rights of the individual. The respondent has the right to refuse to participate in an interview or experiment or medication.

There are various reasons why people do not answer questions in a survey. These include:

- If the people were not informed of the survey, its objectives and when it would be performed
- If for some reason the person to be interviewed is temporarily away from home
- Lack of interest in cooperating or active opposition to the survey
- In order to reduce the incidence of such opposition from your sample group, you should always make sure that the community is well informed about the study. If the target respondent is temporarily away from home, the interviewer should make arrangements to return when he or she is in. People who lack interest need a clearer explanation and persuasion so that they can see how they will benefit from the exercise. Activists can be difficult; if they remain adamant just politely thank them and let them free. They are just exercising their rights. If you find that a large number of people in your group are non-respondents, you will need to do a random selection from that group and re-approach them.

  The results you get from the new sample will be representative of the entire non-respondent group. Compare the results with the original sample of all respondents and calculate the difference.

Stage Two: Data Collection

Interviewers should be advised to use a pencil when filling out forms so that it is easier to make corrections. They should not erase a wrong response. If a mistake is made, the incorrect response should be crossed out and the correct response marked above it. Incorrect responses should not be erased because it is possible that if the erasure is incomplete, the response might not be legible or might be confused with a different response. The interviewer should fill in the responses at the time they are given. No response should be filled in afterwards because the interviewer may remember the response incorrectly.

Ensure that every interviewer has all the tools they need to collect data such as tools for anthropometric measurements and laboratory specimen containers.

You should avail a convenient carrier for these tools and check the packs daily to ensure that any specimens collected were handled correctly. It is good to remind the interviewers to recheck their measurements before they leave the client to avoid mistakes. They should also check the forms before they leave the respondent in order to be sure that all relevant information is satisfactory filled in the appropriate space provided.

If the survey involves the collection of laboratory specimens, then you should make arrangements for their safe storage before they are transported to the appropriate place for analysis. Laboratory specimens need special care especially when handling, storing and transporting them because one lapse could cause the loss of an entire day's specimens.
At the end of the day, all the forms should be checked thoroughly by someone other than the interviewer. If data is missing it may be necessary for the interviewer to return the next day to collect it. At this stage it may be possible to begin tallying the results so that when the analysis begins all you have to do is add up the tallies instead of going through all the forms since the first interview
The appropriate time for data collection was already covered in the sub section on how to plan a survey. Can you remember what you covered?

- When the sample population will be available
- When the team will be available
- During an appropriate season when people are not too busy planting
- On days other than public holidays and weekends when people are less likely to be at home

During data collection, it is very important to ensure that there is quality control so that you do not end up with false or misleading conclusions.
To ensure quality data you should:

- Avoid bias when designing the questionnaire as explained earlier
- Provide an instruction sheet on how to ask certain questions and how to record answers
- Select interviewers with care
- Select and train the assistants carefully in all the procedures together with interviewers
- Involve them in the pre-testing phase
- Limit the number of interviews that interviewers can conduct in a day so that they do not become too exhausted
- Identify assistants to carry out quality checks everyday

This is the stage where you check data for completeness and organise it for analysis. The following guidelines will help you.

- Check to confirm that all the forms have been completed satisfactorily
- Ensure that questionnaires are numbered
- Identify one person to be responsible for storing data and specimens securely
- Record forms should be sequenced and stored with clear labels
- Make sure that all the information you need has been collected in a standard way
- Develop an insight into the possible ways of analysing data
- Ensure availability of any resources needed for analysis, such as a computer

Once you have collected the data, it is completely meaningless unless you can extract meaning through analysis.
You will now look at how to analyse the data.

Data Analysis

The data you obtain from the field is known as 'raw data'. In this state, it does not give much information and is therefore difficult to interpret. That is why it needs further work known as data analysis.
Data analysis is the separation and categorisation of numerical data into groups in order to understand its meaning. Statistical methods are used to do this because they:

- Summarise the data.
- Make inferences about the data. This means that data which has been gathered on a sample can be used to indicate what is probably happening to the entire population so as to make judgement about them.

The process of data analysis involves the following steps:

- Data cleaning
- Sorting or tallying
- Coding and entering data
- Analysis of results

These steps are covered in detail in module four unit three on Research in Nursing. You will now look briefly at them.

Data Cleaning

Data cleaning was covered earlier in the sub-section on data handling. Can you remember what was covered? In addition, you will also need to do the following:

- Find 'missing data'. If one question is missing information in the majority of the questionnaires, then you can ignore it from
the study.

- Correct mistakes committed by interviewers after confirming with them, for example, putting a tick against smoker instead of non-smoker.
- Exclude all inconsistent information if you can not verify its correctness.

Sorting and Tallying Data

Once you have collected data from the field, you need to organise it in a systematic manner that facilitates analysis. You do this by sorting and tallying the data.

Sorting is arranging raw data in groups or in a particular order. You should select a system of sorting which facilitates data analysis. For example, if you are collecting data on users of family planning, you may decide to sort your data into two groups, that is, users and non-users of family planning. If your questionnaire is made up of closed-ended questions, such as the yes and no type, then you can assign numbers to these questions. For example, 1 to Yes and 0 to No, and sort them accordingly. On the other hand, if your questionnaire has open-ended questions, then you need to categorise all the responses given and assign numbers to them.

Data which has been sorted or arranged into some order according to magnitude is called an array. The following tables show examples of raw data and arrayed data.

a table of raw data of ages in years of 25 patients seen in a survey.

2	23	28	11	3
15	7	13	8	21
6	15	5	16	13
1	3	2	1	2
27	24	3	6	2

a table of an array of the same data arranged in ascending order.

1	3	6	13	21
1	3	7	13	23
2	4	8	15	24
2	5	11	15	27
2	6	12	16	28

Raw and arrayed data are ungrouped. To help you group data you use a tally sheet.

Tallying is one of the methods used to help you organise data before you analyse it. You will already familiar with the tally sheets you used in the outpatient or MCH/FP clinic.

Tallying is the setting up of classes or clusters which are tied by a slanting stroke. Usually four vertical strokes are made then a fifth stroke is drawn through them to represent the fifth item. Each cluster represents specific identifiable characteristics of the specified data. This data is then presented using a frequency distribution table.

Frequency Distribution Table of the Ages of Patients seen at Health Centre X

Age in years	Tally	Number of patients	Percentage
0-4	IIIII IIIII	10	33
5-9	IIIII II	7	23
10-14	IIII	4	14
15-19	III	3	10
20-24	III	3	10
25-29	III	3	10
Total		**30**	**100**

In the frequency table, you can see how the number of patients has been tallied in the second column.

You will now look at data coding.

Coding and Entering Data

This involves the conversion of data into numerical codes which represent attributes or measurements of the variables. Coding eases the burden of calculation. Researchers recommend that the coding process should start with the preparation of a code book which describes in detail the codes assigned for each response category and item in the questionnaire. When coding data you should include as much information as you can. The use of computers has simplified the process of data coding and entry. Computers save time and increase the accuracy of results.

Analysis of Results

Once you sort and code your data you are now ready to analyse it. There are two types of analysis that are carried out on data.

These are:

- Qualitative analysis
- Quantitative analysis

Qualitative analysis is usually applied on data which can be counted but can not be measured,

such as, colour. It allows you to analyse the information in a systematic way in order to reach some useful conclusions and recommendations.
Quantitative analysis on the other hand, is usually applied to data that can be given a numerical basis or can be measured, fro example, age in years, weight in kilograms.
You will learn more about data analysis in module four unit three on research in nursing.

Data Presentation
Once you have grouped your data, there are many ways of presenting it. You have already covered the frequency distribution table with a tally sheet. The other ways of presenting data are:

- Tabular presentation
- Graphical presentation

All these forms will be discussed in detail in module four unit three on research in nursing.

You will now briefly look at them.

Tabular Presentation
This covers the various tables that are used to present data, for example, frequency distribution table and a contingency table. The presentation of data in a frequency table shows the classes and the frequency of each class.

Table of Weekly Dispensary Attendance

Age	Male	Female	Total	%
0-4	25	25	50	27
5-9	20	25	45	24.5
10-14	15	15	30	16
15-50	15	30	45	24.5
51+	5	10	15	8
All Ages	**80**	**105**	**185**	**100%**

Another type of table is known as a contingency table. It shows how two variables of the individuals in a survey relate to each other.

Graphical Presentation
This type of presentation makes the data you have collected more easily understood at a glance. It emphasises any fluctuations which may be present and tries to make the material as attractive to look at as possible. Graphical presentations are also useful for purposes of forecasting the future magnitude of a series of figures given according to time.

There are various types of graphical presentations, these include:

- Histogram
- Frequency polygon
- Bar graph
- Pie chart
- Maps

Graphs are a very familiar method of presenting information. They are more attractive to the eyes because even without looking at figures, you can easily see and appreciate the rise and fall in the figures presented and can tell when they are high or low. For example, the temperature chart that you maintain for inpatients is an example of a graphic presentation. Making graphs of monthly/weekly clinic attendees, epidemic diseases, hospital referrals or admissions is a useful practice that can help you to assess what you are doing and what needs to be done.

On a notepad write down what conclusions you would draw if the line on a graph:

- Goes up?
- Goes down?
- Remains the same?

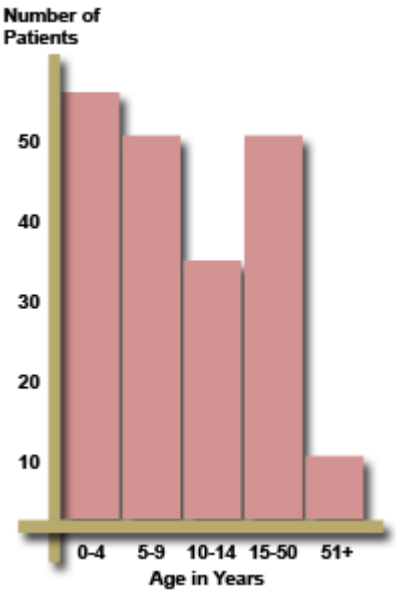
You should have included that a straight horizontal line on a graph indicates that there has been no change in the aspect being measured. When the line goes up, it indicates that there has been an increase for example, more people attending your outpatient services, when the line goes down, it means that the quantity is decreasing, for example fewer people attending your outpatient services.
According to Plews and Onyango (1987), the construction of a good graph requires the following:

- Clear, concise and unambiguous titles
- Clear and concise statement of units in which the figures are measured
- Correct vertical and horizontal scaling
- Statement of units used on vertical and horizontal axis
- A key/legend to explain the various features of a graph, if need be
- Correct graphing according to the scales specified on the horizontal and vertical axes

Some common types of graphs will now be described.

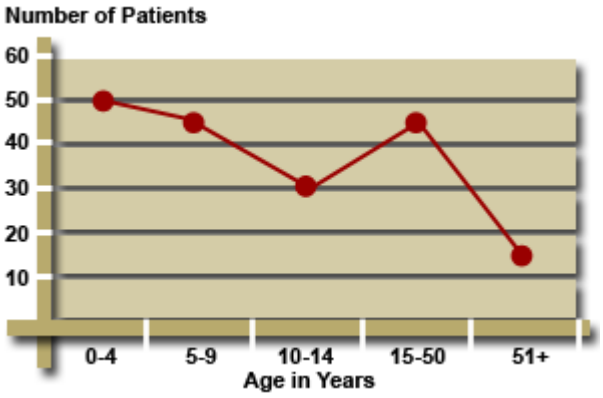
Histogram

This type of graph uses vertical blocks to represent class frequencies in a frequency distribution. You show the classes on the horizontal axis and the frequencies of the classes on the vertical axis. While the horizontal axis need not start from zero, the vertical axis must always start with zero. It is used to illustrate any data where the variable concerned changes with time.



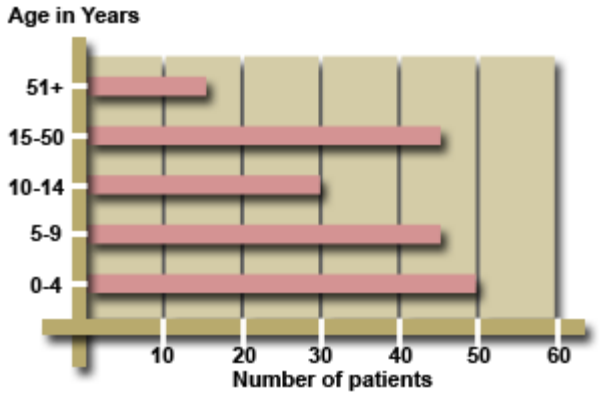
Frequency Polygon

A polygon is a many sided figure. A frequency polygon is derived from a histogram by joining the midpoints of the tops of the rectangles of the histogram in straight lines. The resultant figure does not have vertical bars but is made up of straight lines joining the different points on the graph. For comparison purposes, you can even draw two frequency polygons on the same graph paper.



Bar Chart

This is a graph which comprises a number of spaced rectangles whose length varies with the magnitude represented. The rectangles have the same width and may be vertical or horizontal. They are used to represent a large variety of statistical data, including data that can be represented in other ways. Bar charts can also be multiple, that is, representing two or more sets
of comparable data.



Pie Chart

You will have already come across pie charts in textbooks. It is basically a circle divided into sectors or pieces. Each piece of a pie chart represents a total percentage of a specific group or cluster. A pie chart is especially useful for dealing with data where actual numerical quantities are not so important. For example, when you want to find out what percentage of your population has access to water rather than the actual number. It is therefore used for comparisons based on percentages. For a pie chart to give a good visual impression, you should make sure that the total data is not sub divided into too many separate components. Ideally, the sectors should not exceed seven.

Maps
Maps are another effective way of presenting information. They are used to describe, for example, differences in the frequency of a disease in different areas.

SECTION 5: REPORT WRITING, DISSEMINATION AND COMMUNITY ACTION

Introduction

Welcome to the final section in this unit on community diagnosis. In the last section you learnt how to execute a survey, analyse and present data.

Usually after all the struggle of collecting and analysing data is over, you tend to feel like your job is complete. However, an important and time consuming part still lies ahead. That is, giving feedback, report writing and community action.

Objectives

By the end of this section you will be able to:

- Describe the different types of feedback and their targets
- Explain how to compile a preliminary, non-medical and medical report
- Explain the types of community action needed to implement survey recommendations

Feedback and Report Writing

Feedback means giving comments about how well or badly a person is doing in order to help them do better. It is a form of communication. You will recall that during the planning stage, it

was said that the community will only cooperate if they perceive some beneficial results from their cooperation. So after your survey is done, those in the community who cooperated with you are entitled to receive some form of feedback. They want to know what you found.
When planning feedback you need to consider to whom it shall be given and in what form. This will help you to deliver the message effectively and in a way that it is well understood by the people concerned.
All individuals in the community who are concerned with the health of the people are entitled to feedback. The feedback table below gives a summary of the different types of feedback, who should receive it and when.

Feedback Table

Targets of feedback	**Forms of feedback x= receives feedback**			
	Individual results	Preliminary report	Non medical report	Medical report
Patients population	X	X		
Non medical leadership - Local level - National level		x	X X	
Medical leadership - Local level - National level	X	X		X X
Medical professional				X
Timing of feedback	Immediate	Soon	Delayed	Delayed

You will now look at some of the types of feedback in this table.

Individual Results
The individuals who formed a part of your survey sample as well as those who provided you with specimens and tests deserve to be given feedback on your findings. You should tell them at the time of examination that they will be contacted later if anything abnormal is found. Those who you took specimens from or on whom you conducted tests should be told if anything abnormal was found. When giving such feedback you should be cautious not to arouse anxiety about harmless conditions.

You should only give feedback on those conditions that require treatment. If you diagnose a condition that requires treatment, you should start it at once or refer the person to the nearest health facility for follow-up care. If during the survey you find specific notifiable diseases you should report to the relevant authorities, such as the medical officer in charge.

Preliminary Report
This goes to the community in which the diagnosis was conducted in order to thank them for their cooperation. It is given soon after the field work is completed by arranging meetings for the people and their leaders. This report covers your general impressions of the community's health status as well as preliminary survey findings. Do not give specific information on this day, since analysis will not be ready yet. Give them information on obvious points like disease outbreak, hygiene, sanitation, attitudes, nutrition, practices and utilisation of health services.

You should promise them a more detailed report later. By giving them the findings of the report, you increase their awareness of their real health needs and how these can be solved.

Non-medical Reports
This report is less scientific and is usually produced for non-medical people. It comes out after full analysis has been done and

conclusions and recommendations have been formulated. It is an important report because its message can influence social and political leaders to start doing something about improving the health of the population.
According to Bennett F.J (1979), the contents of this report should cover the following aspects of the survey:

- The reasons for doing the community diagnosis
- The findings which help to define the situation. Here you select only those characteristics which describe the real characteristics of the health situation in this population. Often it is sufficient to describe findings in words.

  However if you feel that tables would be indispensable then they should be short and easy to understand. You can also use the graphical forms which were described earlier. They have been found to be very helpful in conveying survey findings at a glance
- The conclusions and recommendations you make should be of practical significance. You should leave out those that are of scientific or academic interest to be documented in the medical report. This report is a social or political tool to shed light on the improvements that need to be done in the community's health services. So make your recommendations practical.

Communities are made up of people with varying educational levels. Some are illiterate or are of low educational standards. Such people would benefit more from personal contact or a discussion type of feedback. That is why in our communities Barazas are commonly used to communicate matters to people. However, if you are dealing with a literate population you can disseminate the report through the mail or even the mass media that is newspapers, radio and television. Newspapers are a good medium because they have a wide coverage and people from elsewhere might also benefit from the report findings.
Lastly, you will look at the community diagnosis report also known as the medical report.

The Medical or Community Diagnosis Report
This is a detailed scientific report which provides an account of the planning and execution of the survey as well as the results. It should present the data you collected fully and adequately and give accurate interpretations of the analyses. Its dissemination can be done in a workshop setting and tailored to meet the needs of the various levels of health personnel who are invited.
A well written community diagnosis report is made up of distinct sections or components which fall under the following headings:

Title
Use a title that is short and simple and yet informative. The title of your survey report is important because at a glance it gives the reader information about what your survey was about and it also helps the librarian to index the book properly.

Table of contents

This is like a map which helps the readers to locating various sections of the survey report quickly and easily. It often contains chapter headings, main headings and sub headings with their corresponding page numbers.

Lists of tables and figures

This follows the same format as the table of contents and lists the titles of the tables, diagrams, graphs, charts used in the report and their corresponding page numbers.

List of abbreviations and acronyms
An abbreviation is a short form of a word, for example, Tb for tuberculosis. An acronym is a contraction formed by taking the first letter of several words, for example, HIV which stands for Human Immunodeficiency Virus. In this section of a report you give a list of all the abbreviations and acronyms you have used in the document with a full explanation of what they stand for. When using abbreviations in the body of your report, you should take note of the following rules:

- The first time you use an acronym or abbreviation you should write what it stands for in full
- Use only those abbreviations that your audience
  will understand
- Do not abbreviate days of the week or months

Acknowledgements
You should acknowledge all those who made it

possible for you to accomplish this task. In your list include:

- Names of individuals
- Organisations
- Institutions
- Administration
- Community

Introduction

This section gives the background to your study. It seeks to explain why the survey was undertaken and which questions it was designed to answer. It is written in the form of broad and specific objectives which also reflect on the purpose of the study. Usually before embarking on a survey one reviews the relevant literature. If you consulted any literature you should make reference to this fact in this section as it lends support to the arguments you put forward in the introduction

Aims and objectives of the study

Indicate both the broad and the specific objectives of your survey.

Good objectives should be 'SMART':

- Specific
- Measurable
- Attainable
- Realistic
- Timely

Materials and methods

Here you describe your survey design, techniques and the instruments or tools you used to collect the data. In particular, you include information about:

- The sources of the data collected that is the type of records, where they were found, and how complete they were. If the source of data was people, you should describe them and their characteristics, for example, were they from the same village, location.
- How interviewers were selected and trained.
- What percentages of the sample were formed by non-respondents and how their age and sex distribution compared to that of the sample?
- The methods of investigation you used to collect data, such as questionnaire, physical or laboratory examinations. It is useful to describe these in detail so as to guide other investigators who would like to replicate your study.

Limitations of study

This section calls for honesty and openness in admitting the difficulties you may have encountered. It helps other researchers not to make the same mistakes you made. This is the essence of learning and maturity. You are actually taking a step back to ask yourself the question 'If I was to do this survey all over again, what would I do differently?'

Some of the difficulties which are commonly encountered in surveys have to do with:

- Sampling methods
- Standardisation of tests and measurements
- Observation variation
- Incomplete records due to poor supervision

Results/ findings

This section deals with presentation of results in any one of the formats you covered earlier, that is, figures, tabular and graphical formats. It does not matter which format you choose as long as it brings out clearly those characteristics which you think are important. If you want to show the trend in certain age groups or time periods, then you may consider using a graphical form such as a frequency polygon. A list of figures or a table may be indicated if you want to describe in detail a distribution or size of characteristics. However, when presenting figures you should take note of the following:

- Do not use figures with several decimal places unless the precision of the measurement justifies this
- It is misleading to present percentages with one or more decimals if the sample size is small
- It is a good practice to present means and rates together with their standard error

Discussions

This is mainly your interpretation of data, a process in which logical thinking, judgement and common sense all play a major role. You will be asking questions such as how reliable and valid

are the observations, whether the figures are high or low, and if there are associations between variables which may indicate a causal relationship.

When interpreting your results it is often necessary to compare them with and refer to other studies on the same topic. In surveys which cover a variety of independent health problems this section may be combined with that of results.

Conclusions and recommendations

This is your brief summary of the essential findings and careful consideration of how the community health problem you have diagnosed can be reduced and/or controlled. You should also explain the causes of the health problems and how they can be prevented.

You need to describe what the community should and can do to control diseases for all concerned.

References
It is almost impossible to conduct a survey without consulting published and unpublished documents in the community. These could be hospital records, maps and others. You must give credit to authors of any work you quote from or refer to by listing them.

Generally a reference gives the name of the author, the year of publication of the document, the title of the book or paper and the publisher.

Appendices
These are attachments, which you may wish to annex to your report to help readers understand some statements appearing in the body of the report. These may include:

- A copy of the questionnaire used
- Statistical tables from data analysis
- A copy of the map if necessary
- Letters of approval to carry out the study

Once you have produced your reports and given feedback to all the concerned parties, the next and last step in the process of community diagnosis is the action phase. A community survey should lead to community action.

Remember:
To enhance the effect of your feedback, it must be rapid, personal, pragmatic, constructive and tactful.

Community Health Action

A community survey identifies a host of health problems that need to be addressed. It may have revealed a need for greater emphasis on MCH services or environmental sanitation. Therefore, you need to sit down with the community to prioritise and plan what you going to do about the identified health problems. In short, you need to mobilise them to take action.

Mobilse Community Action
You can mobilise the community through a number of interventions, namely:

- Making them aware of their problems and promoting primary health care
- Health education
- Immunisation
- Environmental improvement

You have already covered these interventions in great detail in different units and modules of this course. However, you will now briefly look at them from the perspective of community diagnosis.

Creating Awareness and Promoting Primary Health Care
As you will recall from the lesson on PHC in unit two of this module, the essence of the community based health care approach is to stimulate community interest and participation in health promotive, disease preventive and simple curative activities. For the community to participate effectively they require a number of support structures. These are:

- A multi-disciplinary or inter-sectoral team
  which includes health workers as well as experts from other sectors such as agriculture, water, energy, and so on.
- Establishment of community structures.
- A consensus of opinion between community and professionals. Research has shown that communities have the ability to not only identify their problems but also rank them in order of importance.

The only difference between them and professionals might be the way they determine the cause of the problem. While professionals see causation in scientific terms, communities may see it in terms of evil spirit. If you can succeed in making them see that in addition to

evil spirits poor latrine usage has something to do with the prevalence of intestinal parasites, then your job would be well done.
Structures that are in place to establish care of a community's health include the establishment of health committees as well as the selection of individuals for training as community health workers. The village health committees and community health workers play a very important role in the implementation of activities that have been agreed on. Your role as a community health nurse is to facilitate the process and guide them to work efficiently.

Health Education
Health education is not just about sending out posters and pamphlets to the community. It is about listening and finding out why people do things the way they do. It is about stimulating their interest in their health problems through discussion and sometimes by example. It is also about giving people information and helping them to set priorities and improve their own health.
Health education cannot be prescribed in doses! You will therefore need to target individuals, families and the community at large with health messages using the media that is available and affordable.

Remember:
Health education cannot be handed out to the community; it must be shared with them.
Immunisation

If the results of your survey indicated low immunisation coverage as one of the reasons behind the high morbidity and mortality rates among children, then you need to plan immunisation action. You will need to identify all non-immunised and inadequately immunised persons, and ensure that they receive immunisation. You will also need to ensure that you have a good supply of vaccines and that they are well maintained in order to preserve their viability and potency. Remember for your campaign to succeed you must plan it with community leaders.

Environmental Improvement
Most of the health problems found in our communities indicate the need for environmental improvement. Most surveys reveal need for housing improvement, construction of more latrines, protection of springs, and improvement of food storage. These require major education and motivation campaigns involving village health committees in order to get the necessary improvements in place.

The community must take action and the initiative to bring about the necessary changes. There is also need for intersectoral collaboration in order to bring in useful expertise from other sectors, such as agriculture.

UNIT SIX: SPECIAL HEALTH ISSUES

In this unit you will cover provision of health services for special groups of people.

This unit is composed of 4 sections:
Section One: Individuals and Groups with Special Health Needs.
Section Two: Disaster Management.
Section Three: School Health Programmes.
Section Four: Occupational Health Services.

Unit Objectives

By the end of this unit you will be able to:

- Identify individuals/groups who need special health services in the community and take appropriate action
- Mobilise and sensitise the community to respond appropriately in emergencies and disease outbreaks
- Manage school health programmes
- Identify occupational health hazards in the community and take appropriate action

SECTION 1: INDIVIDUALS AND GROUPS WITH SPECIAL HEALTH NEEDS

Introduction

In this section you will look at individuals and groups with special health needs. You will also look at the needs of people with hearing and visual impairment, children in need, the elderly, chronically ill patients, displaced persons, widows and widowers.

Objectives

By the end of this section you will be able to:

- Define the term disability
- Identify and manage individuals and groups in need of special health services
- Describe services available for people with special health needs

Definition of Disability

In life anything that stops a part of your body from functioning fully is known as impairment. There are many different types of impairments such as motor, sensory, and emotional or intellectual impairment.

How you would define the term 'disability'
A disability is a physical, emotional or mental injury or illness that is severe or permanent, that interferes with an individual's normal growth, development or ability to learn or work.

In this section you will see the words disability and impairment used interchangeably. Most disabilities start at birth or in childhood. Those that start later in life are often as a result of accidental injury. In many cases the loss of a function due to disability need not make a person useless.
Often disabled people have other faculties which they can put into good use and therefore be able to earn a living for themselves and their family. For example, blind people can work as telephone operators, those with disabilities affecting the legs can do any work that requires the use of their hands. In order to help them you will identify their abilities and modify the environment to avoid overtaxing them. You will also provide them with appliances and the appropriate apparatus, in order to develop their potential ability and compensate for the defect.

Types of Disabilities

List down various types of disabilities that are common in the community you serve.
The following are types of common disabilities:

Physical Disabilities

These include:

- Motor defects due to congenital causes such as missing limbs, trauma, cerebral palsy (spastics).
- Sensory defects such as blindness and deafness.
- Chronic illness, for example, epilepsy.

Mental Disability

Due to mental deficiency, these include:
mongolism, birth injuries, meningitis and emotional problems.

You will consider two types of impairments, namely hearing and visual impairment. You will also learn their causes, management, and services available for people with these impairments and how they can be prevented.

Hearing Impairment

What is hearing impairment?
Hearing impairment is a disability that hinders successful processing of sound waves through audition, that is the inability to hear or interpret/perceive sound waves.
Hearing impairment is classified according to the units used to measure the loudness of sound. These units are known as decibels (db). Human contacts and relationships depend on communication by means of speech. A person who has profound hearing impairment cannot converse with others unless they can both use and understand sign language.
Impairment in hearing may also cause changes in personality and attitude, awareness of the surroundings and ability to protect oneself. This calls for a great deal of patience and tolerance from other people when dealing with the patient.
People with hearing impairment try to conceal their disability by developing some defence mechanisms, such as withdrawing from contact with others and displaying unreasonable irritability
and aggressiveness.
It is therefore important for health workers to bear this in mind as they help a person with hearing impairment. Sometimes the person may even reject the help required to facilitate their hearing.
For example, they may refuse to wear hearing aids because they feel it advertises their disability.
It is therefore important to teach family members and the community how to cope and live with a person who has hearing impairment. This is better than educating or training anyone with moderate hearing impairment.

There are two terms used to describe hearing impairment, which are based on time of onset of hearing loss and the functional status of hearing. These are total hearing loss and hard of hearing. You will now look at what each means.

Total Hearing Loss (Deafness)

A person who is born completely deaf and who in the past has never developed speech is described as deaf and dumb (Davies, B.M, 1978).
This person has total hearing loss and the sense of hearing is non functional for ordinary purpose of life. The person is dumb not due to a defect in voice production but because normal speech is only learnt by copying what is heard.
Deafness is classified into:

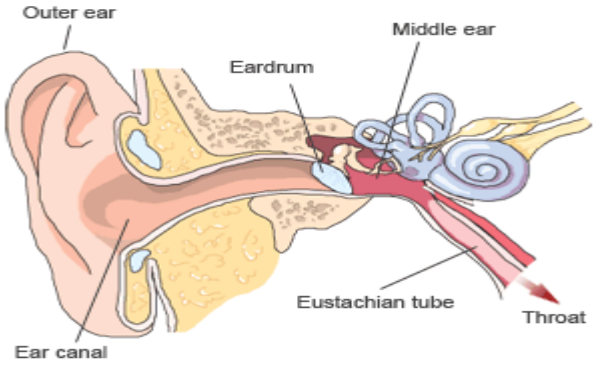
- Congenital deafness, which is loss of hearing before speech is developed.
- Adventitious deafness, which is when one is born with normal hearing, but later suffers some illness or accident causing the hearing to become non functional.

'Hard of Hearing'

'Hard of Hearing' is the term used to describe a person who although has defective hearing, it is serviceable with or without hearing aids.

This term indicates that although the person is deaf the person has normal speech.
Examples are people with:

- Conductive hearing loss
- Sensory hearing loss
- Psychogenic hearing loss



Causes of Hearing Impairment

What are the causes of hearing impairment?
Middle Ear
Diseases or defects that may affect or damage the middle Include

- Tubal catarrh, which is the occurrence of the middle ear being permanently under
  pressure due to malfunctions of the eustachian tube.
- Acute middle ear infections.

- Chronic otitis media which is caused by excessive growth of the cranial bone, thus leaving little room for the ossicular chain (which is malleus, incus and stapes) to operate in. These fail to transmit sound vibrations to the inner ear leading to considerable hearing loss.

Inner Ear

The diseases and defects of the inner ear are the most serious contributors to hearing loss. They affect both perception and the recording of the four parameters of sound loudness, that is, pitch, quality and duration. These may cause other problems apart from serious hearing loss.
Causes of hearing loss in the inner ear include the following:

- Congenital causes due to infections in utero such as german measles or rubella, cytomegalovirus, syphilis.
- Brain damage especially intracranial injury in cases of difficult labour and delivery.
- Neonatal jaundice due to hyperbilirubinemia which can lead to kernicterus. Kernicterus causes brain damage thus interfering with interpretation of the sound wave.
- Acoustic trauma caused by loud environmental noise, which distorts the tympanic membrane making it unable to vibrate.
- Minieres disease which causes a considerable loss of frequency analysis.
- Postnatal incidentals, such as infections due to measles, mumps and meningitis, and the overuse of drugs such as aminoglycosides (especially neomycin),
  quinine, or salicylates.
- Tumours of the auditory nerve such as acoustic neuroma.

Resources Available for the Hearing Impaired

What services are available for the hearing impaired in your community?
Community teachers, family, institutions, special schools and associations are some available resources for the hearing impaired.
In most communities it is possible to find people who have hearing impairment and who can be requested to mentor and train a child with hearing impairment.
It is important to identify and use such persons because they relate easily to the emotions and difficulties the child may be going through. Some may even be trained which would be an added bonus.

Other Families with Hearing Impaired Members
Families with children who have hearing impairment in the same community can come together and form a support group where they share experiences. This serves as group therapy and they learn very well as a group. As a community nurse you can again motivate these families to come together and support each other, as well as support them with information and ideas about prevention, and the different services available for their children.

Institutions for the Hearing Impaired

There are a number of institutions where special education and programmes for the persons with hearing loss take place.
You can find these through the ministry of education in our country and refer our patients to them.

Special Schools

Persons with hearing impairment need special training in special schools where they can learn. In our country there are many schools for persons with hearing impairment.
They assist them to develop skills that make them feel important and useful members of the community. Special schools are largely public institutions run like any other school. Visiting these special schools helps us to understand and appreciate their services to persons with hearing loss.

Associations

In many countries, persons with hearing impairment have formed associations to look after their needs and welfare. Some of them meet to discuss issues affecting them, and arrange for short training courses in communication skills.
The Kenya National Association for the Deaf advocates for the deaf to have equal access to public services such as schools and hospitals.

They also have a job placement activity which helps deaf persons get employment as well as start income generating activities, such as small enterprises of fishing, carpet making, carpentry, sweater making amongst others.

Another NGO known as the Kenya National Deaf HIV/AIDS Education Programme is involved in the reduction of stigma among deaf persons affected and infected by the virus, establishment of deaf-friendly VCT sites, and development of materials for the deaf.
As a health worker it is important for you to know about these associations so that you can refer your patients appropriately.

Management of Hearing Impairment

The effective management of hearing impairment is based on early detection. It is important that you remember that in most cases impairment starts in childhood. Therefore you should ensure that all under fives are properly managed in order to prevent diseases that cause hearing impairment.
The management of hearing impairment starts with assessment which then leads to the choice of an appropriate treatment option, such as surgery, hearing aid, or ear syringing.

What does assessment mean?
Assessment is the process of identifying persons with impairment and quantifying it through reliable tests. In the case of hearing impairment assessment tests are carried out by an audiologist.
Once the problem is diagnosed and the cause and degree of hearing loss is established, then a number of treatment options can be applied depending on diagnosis. However, the process of managing hearing problems starts right from your well-baby clinic, where children under five years of age come for treatment of ear infections, or diseases such as otitis media.
Screening tests also need to be carried out routinely on all the under fives to diagnose and assess if impairment exists. If this is done a child who has hearing loss or a hearing problem will be identified early and treated.

Surgery

This can be performed if the hearing loss is not congenital. Operations can be performed on the tympanic membrane and the ossicles (malleus, incus and stapes).

Ear Syringing
Ear syringing may be done in cases where the hearing problem is due to excessive wax and there is no ear infection. This is mainly in the external ear.

Hearing Aid

These appliances are used to correct the hearing defect in cases of mild and moderate hearing.

Alternative Communication Skills
It is known that the development of speech reaches its peak during the first three to four years and that the optimum period for development of hearing is during the first year.
To give a child with hearing loss a chance to learn words and language, you should advise the parents to train them from an early age.

The child is taught:

- Lip reading to help in communication
- Gestures or actions of the body to express issues
- Sign language
- Integration and rehabilitation

The integration and management of hearing impaired persons should start at home and involve the whole community. This means encouraging the deaf to manage better at home and work in the community.
In the home you need to encourage and educate the family on how to support and live with a hearing impaired person. You should try to introduce them to other families who share the same problem in order to relieve their fears and promote acceptance of the person with hearing loss.
Your role and that of other health workers will be to support the family and the community by providing them with information, equipment and training.
Above all they will also need encouragement to strengthen social integration of the person with hearing impairment.

Prevention of Hearing Impairment

List two ways of preventing hearing impairment.

Your answer should have included any two of these:

- Prenatal labour and delivery services need to be improved to prevent occurrence of hearing impairment. Pregnant mothers should be vaccinated against german measles (rubella). The mother should also be advised to avoid taking drugs unless prescribed by the doctor. She should also have her blood checked for rhesus negative status which brings about rhesus incompatibility. Since deafness can also be caused by complications of labour and delivery, it is very important that you identify early and manage mothers who may present with labour complications. Early diagnosis is very important in order to minimise chances of intracranial injury to the newborn.
- Early diagnosis and treatment of infections and trauma such as otitis media, ear discharge or a foreign body in the ear is very important, so as to prevent complications which may lead to hearing impairment.
- The community should be educated on the importance of identifying these signs and seeking prompt medical advice.
- Avoid drugs which may cause ototoxicity, or use them under medical supervision.
- Avoid excessive noise, which may result to temporally or permanent hearing loss.

Visual Impairment

Visual impairment is the lack or inability to see, which may be caused by diseases or injuries to the eye.
Clarity of vision is called visual acuity and ranges from full vision to no vision.
Visual impairment is a fairly common impairment in our country which needs specialised medical care.

Think about possible causes of visual impairment.

The following are possible causes of visual impairment:

- Trachoma.
- Vitamin A deficiency.
- Allergy.
- Cataract.
- Macula degeneration.
- Some types of cancer such as retinoblastoma and pituitary gland tumours.
- Glaucoma.
- Childhood blindness, for example, congenital cataract and corneal blindness.
- Diabetic retinopathy.
- Disorders of the nervous system such as multiple sclerosis and stroke.
- Refractive errors.
- Ocular complications of HIV/AIDS.
- Accidents which cause injury to the eye.

Services Available for the Visually Impaired

At the Family Level

Normally, activities of daily living such as feeding, socialising, playing, verbal skills, and mobility are learnt at home. A normal child learns how to do every day activities by watching what others are doing and imitating them.
If a child is under five years of age and is visually impaired, then they need special help from the family in order to learn these skills.

The family needs to train the child to recognise common domestic objects by touching. They need to provide the child with toys to play with in a room that does not put the child at risk from accidents.
Parents also need to be educated about the importance of keeping the child's articles and toys in their regular places, so that they can find them easily.
Children who are visually impaired also need more body contact, especially when talking to them to facilitate communication.
When the child is old enough to attend nursery school, the family should recite nursery rhymes and songs with the child, in order to prepare the child for integration into the community, where they will identify with the learning activities of other nursery school children.
Encourage a person who is visually challenged to have contacts relatives and friends to be contactable when the need arises.
The family needs to modify the environment to prevent accidents.
Encourage the person to participate in activities they can perform and enjoy.

Your role is important in providing support and encouragement
to the family and availing them with information on the available resources.

Institutional Level

There are a number of educational institutions and associations that care for visually impaired persons.

Education Institutions: Schools for the Blind

These are special schools that provide special services to the visually impaired. Some of these schools are owned and managed by the government. Others are owned and managed by non-governmental organisations and missions.
You should be able to identify some of these schools in your catchment area. It is beneficial for you to visit them in order to know what they do.
In these schools the visually impaired are taught braille, a system of reading specially developed for blind people which uses small raised marks that they feel with their fingers. Visually impaired persons can start learning from the age of five years.
Braille is also taught to all persons under the age of 50 years who have been blinded after enjoying good sight for many years.
For example, the victims of the 1998 August terrorist bomb blast in Nairobi who lost their sight were trained on how to read braille depending on their occupation. After learning how to use braille, visually impaired persons are able to pursue their studies and careers up to the university level, becoming lawyers, administrators and teachers in society.
In addition, they are taught survival skills and skills of daily living, such as how to get around from point A to B using a cane. Special schools play a very big role in increasing their participation in the community and facilitating their integration.

Educational Assessment and Resources Centres (EARCs)

These are centres which were created countrywide to offer assessment and referral, as well as placement of children in schools which are nearest to their homes.

CBOs/NGOs/Collaborators

These are organisations which look after the interests of the visually impaired. They provide assistance in the form of materials and equipment, education, finances, and provision of guidance for the visually impaired.

Sight Savers International

The headquarters of this organisation is in England. The organisation provides resources and materials to help the visually impaired.
This organisation channels the grants through regional offices in Nairobi to the beneficiaries. The sight savers international is the sponsor of the integrated programmes through the Kenya Society for the blind.

Salvation Army

This organisation collaborates with Thika school for the blind.
Thika school for the blind offers primary and secondary school education for the blind.

Low Vision Project

This project is based in Kikuyu pentecostal church of east africa hospital, and it provides services to people with low vision.

Other Organisations

- Christofell Blinden Mission (C.B.M)
- Sallus Ocullic
- Catholic church

Management and Prevention of Visual Impairment

The management of persons with visual impairment starts with the proper assessment of the condition followed by treatment, integration and rehabilitation.
Assessment can be done either in a hospital or through mobile outreach units including school visits by health workers. Once the problem has been properly diagnosed, then the treatment may include surgery or visual aids, such as the fitting of eye glasses.

If after assessment a person is found to be completely visually impaired, they will need to be integrated and rehabilitated into the community.
The process of integration and rehabilitation once again starts at the family level, and continues into the community through special schools and other institutions for the visually impaired.

Prevention of Visual Impairment

There are a number of measures you can take to prevent visual impairment in your communities.

Prenatal Stage

- Advise pregnant mothers to avoid taking any medicines unless prescribed by the doctor.
- Educate pregnant mothers on the need for proper prenatal care in order to prevent infections, early diagnosis and management of conditions if they occur and their complications.

Administration

Administration of the following measures:

- All primary immunisations should be completed
- Application of tetracycline eye ointments to newborns at birth
- Giving vitamin A capsules to children suffering from measles
- Control of diabetes and the blood pressure

Nutrition

The diet should be rich in Vitamin A and B to avoid changes in the retina, conjunctiva and cornea.

Wearing Protective Devices

In activities that pose a danger of injury to the eye from foreign objectives, for example, hairsprays, ultraviolet rays and bright sun.

Lighting

Adequate and well placed lighting in the rooms to avoid straining of the eyes.

Personal Hygiene

Educating members of the community of the importance of good personal hygiene, for example, a daily bath, keeping eyes clean especially when they are infected, in order to avoid attracting flies.

Early Diagnosis and Treatment

Prompt and correct treatment of all common eye infections and especially trachoma.

Care of Children in Need

A child in need is one who has been abandoned, orphaned, or one whose parents are incapable of looking after them properly. Such a child needs the best possible alternative arrangements for their care in the absence of the parents.

Needs of the Children

- Nutritional needs. Most of these children are malnourished.
- Parental love.
- Lack of education.
- Lack of access to health care. such as AIDS orphans who are themselves infected.
- Security and protection from harmful practices like female genital mutilation, child labour, forced marriage.
- Stigma and discrimination such as those orphaned by AIDS.
- Social burden such as care for the other children or for a terminally ill parent.
- Poverty due to lack of a source of income to care for themselves and the family.
- Inadequate or lack of shelter.

What kinds of services are available for children in need in your community?

Children's Homes

These homes are owned and run by individuals with the help of donors and well wishers. They provide the children with their basic needs and education. These homes are supervised by the department of children under the ministry of social services.

Approved schools, for example Kirigiti in Kiambu, Wamumu in Mwea and many others. These are run by the government.

Remand Homes

These are available in your communities and they are run by social services.

Hospitals
Most of the abandoned children are brought to the hospitals. Here they are cared for and then handed over to the children's department for adoption, or are later taken to homes or institutions.

Integration and Rehabilitation
When these children grow and attend school or acquire some skills they are able to be independent by getting employment or by becoming self-employed. In this way they become useful members of the community.

Reduction of Children in Need

You can reduce the number of children in need by:

- Strengthening family relationships in the community, so that such children are taken care of by their immediate family members, especially orphans. This will provide a conducive environment for the child to grow in.
- Providing family life education to the youth on consequences of pre-marital sex, as many of the abandoned children are as a result of unwanted pregnancies.
- Implementing safe motherhood initiatives in order to prevent maternal deaths.
- Providing family planning services, so that families get the number of children they can manage.
- Providing information to the community members on the services available for adoption. This would help those members in the community who have no children of their own, as well as those with unwanted pregnancies

Care of the Elderly

The ageing process is often defined in terms of physical changes that negatively affect the body's function and appearance. Old age is associated with poor health, poverty and dependency.
In the past, our traditional support systems were so effective that they made the problems of the elderly insignificant. However, today these support systems have disintegrated due to socio-economic changes in our society.

In Kenya, the elderly are defined as persons aged 64 years and above, although the retirement age is 55 years of age. In this sub-section you will consider an elderly person as anyone who has attained the age of 60 years and above.

The number of elderly citizens in this country has been on the increase. This increase would not be of much concern if you already had support structures in place to take care of them. However, as mentioned earlier, these systems have disintegrated leaving them vulnerable to medical and social problems.

Problems of the Elderly

List five problems of the elderly.
The following are problems of the elderly:

- Poverty
- Loneliness
- Poor nutrition
- Physical handicap
- Dental problem
- Mental problems
- Lack of energy to provide activities of daily living
- Inadequate housing
- Chronic illnesses
- Age related changes such as immobility and presbyopia
- Lack of care in sickness

These problems are experienced by the elderly throughout the world, although they may vary in some cases, depending on the kind of support available in the community.

Available Services for the Elderly

At the Family Level

In Kenya most elderly people live with their nucleus and extended family. These are the people who care for them.
As a community health nurse, it is your responsibility to encourage families to care for their elderly persons. You need to educate them on the needs of the elderly, equip them with the necessary knowledge, skills and attitudes to provide effective care.
You also need to educate members of the community on the importance of planning for retirement. The aim for this preparation is to help the elderly persons remain independent and comfortable in their own homes as long as

possible. There is need to discuss the payment of pensions and allowances early for better planning.

At the Community Level
Elderly persons require community health services. It is your responsibility to identify them and make sure they are available and accessible to the elderly persons. Encourage them to join recreation facilities to improve their mobility and to join peer groups to help them psychologically.

During home visiting you should be able to provide direct care to the elderly. Churches also provide spiritual support as well as material support to the elderly persons. The women and youth groups offer different types of care. When these groups visit the elderly they alleviate their loneliness and improve their nutrition status by providing them with meals. They also help them with cleaning, repair work and gardening.
As a health worker, one of your important roles is to become their advocates. You should let their needs be known by the community and motivate them, especially the youth, to have a positive attitude towards care of the elderly, so that you add life into their days.

Institutions for the Elderly
In Kenya, there are a number of homes for the elderly and day care centres.

Do you have any in your district?
If you do not know, then you need to identify these homes.

They provide the following services:
- Nutrition
- Activities of daily living such as personal hygiene
- Treatment of any sickness
- Recreational activities
- Safety and comfort

The best care for the elderly is the one provided by the family.

Hospitals

Geriatric hospitals are well established in developed countries.
In Kenya the elderly do not have any special health services targeting them. In some communities it is commonly believed that old age is a cause of illness. This leads to delay in seeking health care for the elderly.
Another reason why the elderly may delay to seek health care, is that they live far from the health services. As a community health nurse, it is your responsibility to sensitise and encourage community members to seek health care for their elderly persons.

The Chronically Ill

What is chronic illness?
An illness is said to be chronic if it meets one or more of the following criteria:
- Permanent
- Leaves a residual disability
- Caused by non-reversible pathological conditions
- Requires special rehabilitative training of the patient
- Requires long term supervision and care

Examples of chronic illnesses include:
- Diabetes mellitus
- Arthritis
- Hypertension
- Sickle cell disease
- Renal disease
- Heart disease
- Terminal carcinoma and other debilitating diseases
- AIDS

Imposes Limits
The idea of limits is sometimes expressed metaphorically, as living within an energy envelope, having an energy bank account with a very low balance, or seeing available energy as a bowl of marbles, which must be spent very carefully.
Living well with chronic illness means learning to live within limits and learning to manage powerful emotions.

Affects Many Parts of Life

Chronic illness affects many parts of life, such as, the ability to work, relationships, emotions, dreams for the future and personal integrity.

Brings Uncertainty

Chronic illness brings great uncertainty, both on a
day to day basis, as symptoms wax and wane, and over longer cycles.
They may be concerned about their finances, worrying about whether they will be able to support themselves, or whether they can qualify for or keep up with the disability.
When they think about the future, they may worry about how far down they may slide, and about becoming dependent or financially destitute. They may feel at times that they have lost control over their bodies, and over their ability to plan and predict.

Varies Greatly in Severity

Just as chronic illness is comprehensive in its effects, so too is it tremendously varied. Some people have relatively mild cases, while others may be bedridden. Most people are somewhere in between.
There are many different patterns of symptoms. The bottom line is that each person's illness is different.
Adding to the complexity, an individual's illness may vary over time. Some symptoms may disappear, only to be replaced by new ones. Some people may have a relatively stable course, while others may fluctuate between times of severe symptoms and times of remission.

Varies Depending on Life Situation

The financial situations of patients vary enormously.
Some continue to work, have spouses who work, or receive generous disability payments. They may find their financial situation to be similar to what it was before becoming ill.
For others, however, financial pressures can be overwhelming. Some patients have little or no income.
Qualifying for disability can be a long and stressful ordeal. Those with disability may worry about losing it. Others feel forced to work even when their bodies cry out asking for rest.
The quality of relationships may vary greatly too. Some patients receive good support from family and friends.
For others, relationships are a source of great stress. For all, however, chronic illness changes relationships, creating new strains and frustrations.

Will be Affected by One's Response

Chronic illness calls for a different role for patients and doctors than is typically true for short-term illness.
The doctor has limited powers, because there are no cures for chronic conditions and medications often have limited effectiveness.
In chronic illness, much more responsibility falls on the shoulders of patients, the people who manage their illness on a day to day basis.

Available Services for the Chronically Ill

A chronic condition does not only affect the patient, but also all the family members who live with the affected person.
This is because most chronic diseases bring about dependency and an extra financial burden on the family. A number of services are available for the chronically ill at the family, community and institutional levels.

Family

Often, chronically ill patients are taken care of at home by family members. This is known as home-based care which you will learn more about it in the next unit of this module. In order for a family to care properly for a chronically ill patient, they need to be prepared and educated on the requirements.
It is your responsibility to provide them with the necessary information and to follow up on the patient's progress from time to time. This is important as it helps the family and the patient to feel confident in the care at home.

Community

Community Health Workers (CHW), as well as Community Owned Resource Persons (CORPS), can assist the family to care for a chronically ill person at home. This can take the form of medical advice, material support and spiritual support.

Available Services for the Critically Ill

Institutions

Institutions that provide services to the chronically ill include hospitals, hospices, and

support groups depending on the type of chronic illness.
Hospitals admit these patients during the acute stage for management. Once this stage is over, they are then discharged and followed up at the consultant clinics, from where they are given medication to take at home.
Hospices usually take care of terminally ill patients. They teach the patients and their caregivers all issues concerning care, and also make follow up visits at home, where the patients are being cared for.

Management of Chronically Ill Patients

The management of chronically ill patients depends on the stage of adaptation to the illness that the patient is in.
In the first stage, they tend to be in denial and disbelief. During this stage you need to be actively involved in the care of this patient even if they are being cared for at home. Educate the family members to listen to all the expressions of feeling by the patient without criticising them. They should also be empathetic and listen to the arguments without being judgmental.

Patients in the second stage of adaptation to their illness commonly manifest with anger. During this stage the patient develops an awareness of the chronic illness. You should educate the caregivers to exercise restraint and self control.

In the third stage the patient undergoes reorganisation and is nourished by the concept of hope. You should therefore give hope generously within acceptable limits. You should also provide the patient and family with suitable and practical coping methods, and encourage the use of self-help devices if necessary.
Knowing the patient's values, religion and beliefs will go along way in assisting you help the patient.

Prevention of Chronic Illnesses

Primary Prevention

These include:

- Provision of good prenatal, intrapartum and delivery care.
- Genetic counselling is done in cases where there is a genetic risk, for example, in diabetes mellitus and sickle cell disease.
- Discouraging risky habits, such as smoking and over consumption of alcohol, in order to reduce chances of lung conditions, liver cirrhosis and mental disorders.
- Early diagnosis and treatment of these conditions.
- Regular exercises.
- A healthy diet low in calories and animal fat, to prevent obesity, heart and blood vessel diseases.

Secondary Prevention

- Regular medical checkups.
- Screening measures, such as, pap smear, self breast examination. Screening should take place at home, school and community levels.

Tertiary Prevention

Tertiary prevention includes, first aid, treatment and rehabilitation of diseases. It aims at preventing complications and disability.

Displaced Persons

These are people who have been displaced from their communities or even countries.
The displacement of people can be caused by a number of factors, the most common being armed conflict. Natural disasters, famine, political reasons and economic changes are some of the others.

They can be divided into two categories:

- Internally displaced persons
- Externally displaced persons

Internally Displaced Persons

These are people who have been displaced within their country, following ethnic clashes or disasters such as floods and earthquakes.

Externally Displaced Persons

These are people who have run away from their country as a result of civil war or political persecution.
They are also known as refugees. For example in Kenya there are many refugees from neighbouring countries such as Sudan and Somalia.

The government works closely with the United Nations High Commission for Refugees (UNHCR) to settle all externally displaced persons.

List down four problems encountered by displaced persons.

The problems experienced by displaced persons include:

- Housing
- Sanitation
- Water supply
- Lack of inadequate nutrition which may result in malnutrition
- Security risk and human rights violation
- Overcrowding which may cause rapid spread of diseases
- Lack of education opportunities
- Lack of health services
- Emotional needs
- Poverty

Displaced persons tend to develop health problems due to poor living conditions, as well as psychological and physical trauma caused by displacement.

Some displaced persons are separated from their families and relatives and have lost homes, jobs and schools for their children. They need material as well as psychological care. Some may develop antisocial behaviour as a defence mechanism, as they are unhappy with the displacement. It is important that some measures be taken to help them.

Apart from the above problems, people who have been displaced may bring new diseases, such as diarrhoeal diseases, typhoid, measles, meningitis, sexually transmitted diseases, and HIV/AIDS.

Even their animals can bring in diseases such as rabies, anthrax, foot and mouth and brucellosis. So as you can see, they can also pose as a health risk to the community where they settle.

Effects of Displacement of People

Displacement often leads to dramatic changes in the family structure and gender roles, relations and identities.

In conflict situations, many women are suddenly thrust into the role of head of the household because the men are recruited to combat, they stay behind to maintain land, or migrate in search of work.

There is also:

- Escalation in the level of poverty
- Reduction in the level of foreign aid
- Demographic consequences
- Religious effect
- Conflicts between the host community and the displaced group
- Political effect

Services Available

The services available for displaced persons tend to be those provided by relief agencies, NGOs, the government through the provincial and district administration, the church, and institutions such as UNCHR which take care of external refugees.

They provide them with shelter, medical care, food and clothing, and sometimes rehabilitation in the form of teaching them new skills.

Refugees have some sort of international protection. Their needs are catered for by UNHCR and their rights are also protected.

Internally displaced people are still citizens of their country, and are not afforded protection.

The International Committee of the Red Cross (ICRC) protects the rights of internally displaced people. It conducts protection and assistance programmes for these victims.

Management of Displaced Persons

Your role as a community health nurse, will be to work with other health workers as a team, in order to deal with the various problems of displaced people.

There will be a need to set up relief centres which provide the following services:

- Screening and first aid to all new arrivals.
- Food assistance, especially to infants and children, as food is a basic need. The adults also need food for survival.
- Temporary shelter so that individuals can sleep and rest.
- Reproductive health services; antenatal, labour, delivery and post natal, family planning services are also provided.
- Medical care services, where curative care for common diseases and injuries will be provided.
- Immunisation programmes for children and pregnant mothers.

- Health education and community mobilisation.
- Identification and the use of the community health workers in the area is necessary.

As these emergency services are given, the families should be encouraged to settle down, especially if the situation requires them to stay there for a long period. They should be encouraged to start growing their own food and rearing their own animals.

Having looked at the special health services needed by displaced persons, Next you will consider the needs of another group, that is, widows and widowers. Do they require any care and what can you do for them?

Widows/Widowers

The death of a spouse makes one to become a widow or widower and you have many of them in your community. Some of the leading causes of death today in Kenya include diseases and road traffic accidents.

Think of four diseases that are a major cause of mortality in Kenya.

The following diseases are a major cause of morbidity and mortality in Kenya:

- HIV/AIDS.
- Malaria.
- Hypertension.
- Typhoid.
- Diabetes mellitus.
- Heart diseases.
- Diarrhoeal diseases.
- Obstetric complications, such as pregnancy induced hypertension, ante partum haemorrhage and postpartum haemorrhage.

As mentioned earlier, apart from disease, the second most common cause of death in Kenya is road traffic accidents.

The factors that contribute to road traffic accidents include:

- Unroadworthy vehicles.
- Careless driving, usually under the influence of substance abuse.
- Poor enforcement of traffic regulations by the concerned authorities.
- Unskilled drivers.
- Poor roads.

When a spouse dies the effect of the loss affects the entire family. They not only lose the love and care from that parent or spouse, but sometimes also the financial support. Therefore widows/widowers require a lot of support, empathy, understanding, love and care. They need to surround themselves with people who they can trust and rely on.

This tends to be people who have been close, understanding and supportive to the family. They are people whom the family has shared important aspects of their life with, and are referred to as significant others. They include members of the extended family, friends, colleagues, church members, and so on. They help the family to cope with feelings of loss.

As a community health nurse, your role is mainly to counsel the widow or widower, and to support them as they go through the grieving process.

Needs of Widows

- Psychological effects following the death of the husband, such as loneliness, and cultural practices not allowing the widow to re-marry.
- Poverty, due to not having the right to inherit property or have their right enforced, being evicted from their property, no support from family or relatives.
- Basic needs such as food and shelter can not be met due to poverty, resulting from unemployment and illiteracy.
- Support to care for the left children. Children especially girls are in an extremely vulnerable position, due to early marriage and child labour.
- Vulnerable to violence, sexual abuse and rape.
- Exploitation at work place due to homelessness, illiteracy and poverty.
- Love and belonging. Some may be rejected by the family.
- Health needs for the whole family or the left spouse. This is especially so if she was sick, as in the case of AIDS or if both were involved in an accident, which killed one and left the other injured.

- Marriage, especially where men are culturally supposed to marry when their spouses die.
- Intense loneliness due to lack of previously established relationship. This may result in hurried replacement of the wife.
- Severely affected health and well-being because widowers are not able to care for themselves since most of the care was provided by the wife.
- Immense feelings which may result in physical and psychological symptoms such as sexual fear due to loss of a loved one, social isolation.

Services Available for Widows and Widowers

In developed countries there are well established
systems in place for helping widows or widowers.
However in Kenya there are no formal systems, although within many communities there are various support systems which can be mobilised to assist a widow or widower.

The Extended Family Members
In many communities, the traditional support system for a widow or widower is the extended family. They support the widow during the grieving period and sometimes take the responsibility of caring for the family. They also identify ways of assisting the widow or widower and in many cases conduct fund raisings or 'harambees' to help them meet expenses such as hospital bills or school fees for the children. This is a spirit which you need to cherish.

Clan

In certain communities, clans play a very big role in the care of a widow. The clan takes the responsibilities of the children's education, and may even assign individual members of the family, the responsibility over the children, in order to ensure that the burden is well shared out.

Support Groups

Support groups for widows and widowers are common and exist in most of our communities. They come together to share their problems and help each other in solving them. They also contribute money, and sometimes look for donors to help them establish income-generating activities. A good example is the group known as Widows and Orphans of AIDS Kenya (WOFAK).
As a community health nurse you should find out about these groups, so that you can advice and encourage widows and widowers to join them for support.

Institutions

As mentioned earlier, in Kenya there are no established institutions designed to take care of widow and widowers. However, the government has established a system known as the widow and widowers pension scheme.
This scheme pays a pension to the widow or widower as well as allowances for the children. It is important to remember that the widow and widower pension scheme only covers those who are employed by the government. For the unemployed the family and community takes the responsibility.

SECTION 2: DISASTER MANAGEMENT

Introduction

Welcome to the second section of the unit on special health issues. In this section you shall cover disaster management, its elements, as well as disaster prevention, mitigation, response, recovery and development.
In all forms of injury or disease it is possible to apply first aid measures before the actual diagnosis and treatment can be applied. Such measures aim at reducing complications or preventing the injury from becoming worse. The measures may be performed by the victims themselves or by other people who are around the victim. If the measures are conducted in a professional manner then the victim is assured of a good prognosis. The same rationale applies to disaster management.

Objectives

By the end of this unit you will be able to:

- Define disaster
- Describe the causes and effect of disaster in the community
- Explain the Kenya national plan for disaster management
- Describe how to prepare the community for disaster management
- Describe the concept of triaging in disaster management
- Describe the health care activities during disaster recovery

Overview of Disasters

Kenya has had its share of disasters. You will have heard of fires in boarding schools, hotels and slum areas; natural disasters such as droughts, landslides and floods; and disease outbreaks such as cholera, yellow fever and currently HIV/AIDS. All these are different forms of disasters.
Like many other developing countries, Kenya only deals with disasters after they have occurred. Although the people are always ready to act in emergencies and have in the past put up valiant rescue efforts, there is a great need for the government to train different personnel on disaster preparedness and management. The experience of the 1998 bomb blast in Nairobi was a good indicator. Indeed, all communities need to be prepared to be ready for such eventualities.

How would you define the term "disaster"?

A disaster is a catastrophic phenomenon or series of phenomena natural or man-made, that threaten(s) or cause(s) widespread severe injury or loss of life or property or both on a scale sufficient to warrant extraordinary response from outside the community. It can also be defined as a sudden, accidental event that causes many deaths and injuries. Most disasters also result in significant property damage.

What are the Common Causes of Disasters?

Today, forces of nature such as earthquakes, accidents, or even terrorist activities can cause disasters.
The natural causes of disasters include:

- Earthquakes
- Floods
- Hurricanes
- Typhoons
- Tornadoes
- Tsunamis (popularly, but incorrectly, known as tidal waves)
- Volcanic eruptions
- Wildfires
- Landslides and
- Avalanches

What are the Common Causes of Disasters?

Disasters, which are caused by accidents, include those due to plane crashes, sinking ferries, collapsing buildings, bridges or mines as well as explosions and fires accidentally triggered by man.
Thus disasters can be classified into two, namely:

- Natural disasters
- Man-made disasters

Each type of disaster has its own special features. Some disasters can be foreseen several hours, days, months or even years beforehand, for example, hurricanes, cyclones and earthquakes. Others such as a plane crash or road traffic accident occur without the slightest warning.

Effects of Disasters

The most obvious effects of disasters are physical and psychological trauma, sickness and death. These depend on the type of disaster, whether it is an earthquake, fire, drought, floods or a disease outbreak and its severity.
Earthquakes have a high level of mortality as victims tend to be crushed by falling objects. The risk of injury is greatest inside or near dwellings but is very small in the open field. Also, earthquakes, which take place at night are more deadly with larger numbers of injuries such as fractures to the pelvis, thorax and spine. This is because most people are caught sleeping and are oblivious of what is going on. Earthquakes that take place during the day tend to cause injuries of the limbs, collarbone and skull as the victims attempt to flee from collapsing buildings.
Disasters which involve fire, such as explosions or electrical malfunctions tend to cause varying degrees of burns in the victims. The victims may also suffer from suffocation due to smoke inhalation or air pollution as in the case of volcanic eruptions.
For example, in 1985 23,000 people died in Colombia following volcanic eruptions which were accompanied by mudslides and glowing clouds.
More recently you have heard of the "tsunami" tidal wave which killed thousands of people in Indonesia and left many others homeless. The survivors were suffering from varying degrees of bruising, fractures and hypothermia. Although cyclones and hurricanes do not cause high mortality rates like tidal waves, they cause houses to collapse and carry objects in the wind which can cause injuries like fractures, cuts and bruises on the victims they strike.
Drought causes famine that leads to malnutrition, for example, protein calorie malnutrition, kwashiorkor, marasmus and vitamin A deficiency or xerophthalmia.

War can result into either internal or external displacement of people.
You shall now look at the situation analysis for Kenya, that is, the recent history of disasters in the country, the hazard profile and government policy on disaster management.

Situation Analysis for Kenya

Disasters that have hit Kenya in the last 30 years have been caused by different types of hazards, such as, droughts, fires, flooding, bomb blast and accidents in the transport industry. Dealing with some of these disasters has at times required major national and international response and recovery operations.

Recent History of Disasters in Kenya

Year	Types of Disaster	Area of Coverage	No of People Affected
1999/2000	Drought	Widespread	4.4 million
August 1998	Terrorism	Nairobi	214 killed and 5,600 injured
1997/1998	El Nino Flood	Widespread	1.5 million
1995/1996	Drought	Widespread	1.4 million
1994	Ferry accident	Mtongwe channel	270 died
1992	Train Accident	Mtito Andei	31 died, 207 were injured
1991/ 92	Drought	Arid and Semi Arid Districts of NE, Rift, Eastern and Coast Provinces	1.5 million
1990	Fire	Lamu	20 died
1985	Floods	Nyanza/Western	10,000
1984/2001	HIV/AIDS	Widespread and continuing	2.2 million dead by 2001
1983/84	Drought	Widespread	200,000
1982	Fire	Nairobi	10,000
1982	Floods	Nyanza	4,000
1982	Fire	Lamu	4,000
1980	Drought	Widespread	40,000
1977	Drought	Widespread	20,000
1975	Drought	Widespread	16,000
1971	Drought	Widespread	150,000

Hazard Profile
The Kenyan government has identified the principal hazards that need to be addressed in the country.

- HIV/AIDS and disease epidemics
- Livestock and wildlife diseases
- Transport accidents
- Lightening
- Pest invasion
- Drug, alcohol and substance abuse
- Fires

These are:

- Drought
- Floods
- Landslides
- Earthquakesand volcanic activity
- Terrorism
- Civil conflict
- Industrial hazards and pollution

How do Disasters Affect the Development of an Area?

Disasters throw everybody and everything in disarray both at individual, family or community levels. There is loss of life, property and infrastructure. All these cause delay and retardation of development in the area. However life must go on, and so people need to be mobilised to rescue, recover, readjust and reconstruct. In some instances people must start from zero.

There are many lessons which can be learned after a disaster, which if properly used may reduce the impact of damage should the disaster strike again, or prevent the disaster altogether.

Lessons Learned from Disasters in Kenya

Following disasters which have taken place in Kenya several committees have met and discussed information gathered and lessons learned.

They have come up with the following recommendations:

- That disaster management must include all key actors in a multi-agency and intersectoral approach.
- There is need for effective early warning and quick dissemination of information to all actors. A combined effort helps to utilise resources and is more cost effective.
- The disaster management system needs long term funding. This is a state of preparedness for any eventuality.
- The disaster management system needs flexible budgeting and rapid financial disbursement procedures. You need to harness the good will of communities to be responsive to your call when in need.
- The system must facilitate community participation. In the absence of finances the community might be in a position to provide aid in other forms. It is good to have this on record so that they can be called upon when need arises.
- The system must be able to collect, document and disseminate information and undertake research.
- The system must emphasise public education and awareness on disaster management.
- That the government should set aside funds to cater for disaster management.
- That a policy should be formulated to specifically address disaster issues in consultation with experts from within and without.

Kenya National Policy on Disaster Management

In view of the experiences gained and lessons learned during management of various disasters, the government has committed itself and formulated a policy that emphasises proactive and preventive strategies in addressing disaster situations.

The policy outlines the need to reduce exposure of vulnerable communities to risk and promote a sustainable disaster management system. The policy also outlines the goals, objectives and guidelines for disaster management.

Goal

To establish and maintain an efficient, flexible and coordinated system for managing disasters, in order to minimise losses and resulting disruptions on the population, economy and environment.

Objectives

The specific objectives to be met by Kenya are as follows:

- To establish an institutional framework that will manage disasters

- To ensure that institutions involved in disaster management are well coordinated and focused on both risks and
  vulnerability reduction
- To promote the linkages between disaster management and development planning
- To foster partnerships, between the government and stakeholders at all levels, including regional and international bodies
- To promote programmes and strategies that reduce the vulnerability of Kenyans to hazards
- To provide adequate and specific funds for
  disaster management
- To mobilise adequate resources to ensure effective implementation of the policy, subsequent strategies and programmes.
- To promote disaster management culture, training, research, information dissemination, community awareness and preparedness.

Although these are broad objectives for the entire country, they can guide you to plan disaster management strategies at the community level.
Various countries today have set up systems for protecting the civilian population in the event of disasters. Since the August 7th1998 bomb blast, Kenya has also embarked on organising such preparations. A National Disaster Management Authority (NADIMA) has been proposed.

Organisational Structure of the Proposed NADIMA

The government has also come up with policy elements which form the basis of the country's disaster management policy. You will now briefly look at the policy elements.

The Policy Elements

There are four policy elements which underpin Kenya's disaster management policy. These are:

- Prevention
- Mitigation
- Preparedness
- Response and recovery

Prevention

This element focuses on measures aimed at preventing the occurrence of a disaster and minimising its harmful effects on the community, property and the environment.

Mitigation

Mitigation is increasing the population's ability to cope with disaster most likely to affect them.

Why do you think it is important to increase a community's ability to respond to disaster?

This is because in a well organised community, it is easier for you to improve the quality of

outside assistance and reduce the shortcomings that often occur during disaster.

What do you think are some of these shortcomings?

- Lack of background information
- Poor educational requirements
- Provision of inappropriate type of aid

Information systems, risk information, vulnerability analysis, early warning system, advocacy and public awareness, training, resource inventory, public safety and research and development are issues that must be singly addressed under mitigation

Information Systems

The National Disaster Management Authority should generate and collate early warning information from relevant ministries and other sources. This information should be disseminated to users in the government's disaster management network and external networks, right down to the communities.

Risk Information

A disaster management system should be established at all levels to coordinate the collection, collation, analysis and dissemination of risk information.

Vulnerability Analysis

This links directly to mitigation activities and provides the context of understanding the effect of any hazard on the population, property and the environment.

Early Warning System

Provides early warning information on impending disasters and helps to plan for preparedness and response activities. The policy encourages involvement of all stakeholders with regards to information provision, analysis and decision-making.

Advocacy and Public Awareness

This should be undertaken to sensitise the population on the policy and increase people's understanding of the disasters they are likely to face. The policy supports the development of community based disaster initiatives.

Training

For effective disaster management and sustainability of programmes capacity building and training in disaster management will be emphasised. The training includes all people of a community making use of their respective areas
of specialisation.

Resource Inventory

In order to increase the capacity to respond quickly to disasters, a comprehensive and all inclusive resource inventory will be established. The government is prepared to fund research whose findings will be disseminated to users for decision-making and utilised in the development planning process.

Public Safety

The promotion of public safety must be given priority.
The government will ensure adherence to professional and safety standards and ethics.

Research and Development

Research will be funded and findings will be disseminated to users for decision making and utilised in development and planning process.

Preparedness and Response

Think about how you would define preparedness

Preparedness can be defined as the readiness to take action, before, during and after a disaster. To be prepared therefore means to take precautionary measures before an imminent threat or disaster takes place and to help people and institutions respond to and cope with the effects. Disaster preparedness also means improving the quality and effectiveness of the existing community services in order to cope with any eventualities.

A good state of preparedness can reduce the impact of disasters.
A greater number of lives and property can be saved in advance or within the first few hours of a disaster. With proper prior planning many problems of survival and health resulting from a disaster can be dealt with more efficiently.
The government has recommended the following strategies to be put in place for preparedness. They require a comprehensive assessment of risks and vulnerabilities in order to target potential disaster areas with management programmes.

National Contingency Plans

The National Disaster Management Authority (NADIMA) has drawn up plans defining the actions to be taken to prevent and mitigate disasters as well as how to deal with preparedness, response and recovery. The contingency plans are as follows:

Response

In the event of a disaster, the government, community and other partners will direct resources towards saving lives, property and environment.

Recovery

The government in collaboration with development partners will put in place mechanisms to ensure fast recovery and reconstruction after a disaster.

Insurance Initiatives in Response and Recovery

Insurance firms are being encouraged to develop affordable products that can be made available to the society in order to underwrite some of the disaster related issues.

Strategic Food Reserves and Stockpiles

The government intends to strengthen maintenance of strategic food reserves and adequate stockpiles of other basic necessities required in the event of a disaster.

The Disaster Trust Fund

The establishment of a disaster fund to be managed by the National Disaster Management Authority, in order to facilitate immediate disaster response.

Preparing the Community for Disaster Management

While going through the various units of this module, you should note that one of your responsibilities is not only to identify problems and create awareness about them, but also to promote community based primary health care, health education, immunisation and environmental improvement.
You are probably asking yourself the question "How are these related to the prevention or mitigation of disasters?" You will now look at this relationship.

Community Based Primary Health Care

You can encourage your community to set up disaster management support structures within the existing primary health care system. You can adopt a multi-disciplinary approach in which you enlist resource persons from the community or what is referred to as Community Own Resource Persons (CORPS).

Why Should You Use a Multidisciplinary Approach?

This is because each member brings along their specialised skills to mobilise community interest. These people can be called upon in the event of a disease outbreak, floods or other disaster.
Once you identify CORPS you need to obtain a consensus of opinion. This is very important so that you can harness the community's commitment to the proposed action.
As a supervisor and technical expert you should respect their views in order to woo them to respect your scientific input.
This will enhance their participation in the recommendations which you have collectively made.

Health Education

You should motivate and educate community members to adopt and sustain habits that reduce the risk of diseases and accidents. Your

health education should lay more emphasis on problem solving or action oriented efforts. You can help them to identify potential disasters that could happen and ask them to suggest how they can be managed and prevented. Remember to explain to them in simple ordinary terms and encourage them to share the information with others

Immunisation

From your past experience you will agree that respiratory and diarrhoeal diseases are major causes of morbidity and mortality in children. There are effective vaccines against the nine childhood immunisable diseases that manifest with respiratory and diarrhoeal disease complications.

Nine Preventable and Immunisable Childhood Diseases

The nine preventable and immunisable childhood diseases include: poliomyelitis, mumps, diptheria, tuberculosis, pertusis, measles, haemophilus influenza type b, hepatitis b and tetanus.

There are others that often flare up when the general body resistance is low or at times of disaster when hygiene becomes poor. They include typhoid fever, yellow fever, and influenza. Since in most cases only a small number of susceptible children are adequately immunised, there is always a danger of epidemics occurring from such infections. You should, therefore, work towards having high immunisation coverage in order to help the communities mitigate the effects of epidemics.

Environmental Improvement

There are many improvements that a community can make to their environment in order to mitigate the effects of a disaster. These include:

- Housing improvement
- Good latrine construction
- Protection of springs
- Improvement of food storage

You have already covered how these can be improved in earlier units of this module. However, in the context of disaster management, housing improvement is important in areas which are prone to landslides and earthquakes. You should point out that a permanent wall and floor helps to prevent the building from collapsing easily and reduces leakages and vermin. Construction and use of latrines is also important to curb disease outbreaks which are caused by poor excreta disposal. How about improvement of food storage?

You will have heard about the aflatoxin food poisoning that keeps recurring in the eastern province of Kenya due to poor storage of maize after harvest. As a community health nurse, you can team up with other experts to teach the community simple and affordable technologies which can help them prevent such disasters from taking place.

Emergency Response

What is the usual reaction in the event of a catastrophe?

What psychological and emotional reactions occur in people?

You covered this in module one, unit two the section on adrenal glands. If you have forgotten you should go back and review it again.

When disaster strikes, the public reacts with terror and panic. Everybody is terrified and fearful for their safety and that of their family and friends. People tend to help themselves to safety before external help arrives. Panic is most common in crowded places, especially where there are no obvious exit points. Depending on the type of disaster at hand, some people may be buried in debris, as happened during the 1998 bomb blast, or cut off by floods.

After a disaster how would you decide which victims need urgent medical attention?

When disasters happen the health facilities tend to be overwhelmed by casualties. It is easy to get confused and wonder who to attend to and who to keep waiting. Yet it is very important for you to make the right judgment in order to save lives. Fortunately, there is a process that is used to help in this. It is known as Triaging.

Concept of Triaging

Triaging is a French term, coined into an English word. It originated from the army where injured soldiers were evacuated and methodically aligned for treatment.

Triaging is the evaluation and classification of casualties for purposes of treatment and

evacuation, so as to carry out resuscitation, emergency surgery or futility surgery (radical amputation) because of the severe results (intrinsic lethality) of the wounds. This means that through triaging you can establish priorities for treatment and evacuation during a disaster.

Triaging used to be a doctor's domain. However, due to advances in the nursing profession and the gradual expansion of our roles to provision of expert care, today more and more nurses have acquired triaging skills.

In any emergency situation, patients/victims/casualties are suddenly introduced into the emergency care system. You now have regular patients as well as victims of the disaster competing for your attention. Some of the regular cases may also be of an urgent nature. In order to manage this "chaos", you have to quickly create an organised flow of receiving and handling regular patients as well as emergency casualties. Often, the regular patients who do not have medical emergencies usually comply when asked nicely to leave so that you can attend to the emergency cases.

Importance of Creating an Organised Flow

An organised flow shows that people know what they are doing.
It instils confidence in both the workers and victims. The flow seeks to achieve the following:

- Sets the tone and pace of the department
- Assures the patient and their relatives or friends that their medical problems are being given priority regardless of the financial implications
- Guards against denial of immediate care to anyone who requires it

Colours are used in prioritising patients in a disaster scene according to their state and the urgency in which they require care.

Rapid Triage in Multiple Patient Scenes

Rapid Triage

(for multiple patient scenes)

Priority	Color	Condition	Notes
1	Red	Immediate	Life threatening
2	Yellow	Urgent	Can delay up to 1h
3	Green	Delayed	Up to 3 hours
4	Black	Deceased	No care needed.

Notes

- Assessment of patients should be < 1 minute each (Have someone else control bleeding during survey)
- All unconscious patients are Priority 1 - Immediate
- Walking wounded are usually Green - Priority 3
- All pulseless patients are Black - Priority 4

Mentation / LOC Assessment

A - Alert:	able to answer questions
V - Verbal:	resoponds to verbal stimuli
P - Pain:	responds only to pain stimuli. Protect airway
U - Unconscious:	protect airway, consider intubation

Priority 1 - Immediate transport:

Unconscious, disorientated, very confused, rapid respirations, weak irregular pulse, severe uncontrolled bleeding, other signs of shock (cold, clammy skin, low blood pressure, etc)

Priority 2 - Urgent, can delay transport up to 1 hour:

Conscious, orientated, with any significant fracture or other significant injury, but without signs of shock.

Priority 3 - Delayed transport up to 3 hours:

Walking wounded, CAO x 3, minor injuries

Priority 4 - Deceased, no care needed:

No pulse, no respiration (open airway first), obvious mortal wounds (e.g. decapitation).

Goals of Triaging

The goals of triaging are as follows:

- Early patient assessment
- Brief overall patient assessment
- Determination of urgency of need of care
- Implementation of the policy that the most critically ill patient receives priority
- Documentation of the triage findings
- Control of patient flow through the emergency department
- Assignment of care area
- Assignment of care provider
- Initiation of diagnostic measures
- Initiation of therapeutic measures
- Infection control
- Promotion of good public relations
- Health education for patients and their families

You will now look at what you should do to achieve some of these goals

Early Patient Assessment

You need to be flexible enough to adapt to the influx of patients. Spend at least four minutes and four seconds per patient. Although you are expected to be fast, you must be thorough while at the same time you strive to avoid creating a backlog of unserved patients in the waiting area. For a minimum assessment, you must at least do
the following:

- Elicit the chief complaint
- Perform a quick head to toe examination
- Take the temperature, pulse, and BP

Determining Urgency of Need of Care

You should be able to determine who is to be seen first based on the urgency of the condition. In the Military, if severe casualties occur in conditions where transportation is difficult, casualties who are so severely injured that death seems imminent are placed in a delayed category. This may sound callous but after consideration you might see the sense in it.

However, following a disaster the most severe injuries and illness are generally taken in first regardless of the apparent prognosis of the emergency room or department.

Documentation of Triage Findings

Documentation in triaging is very important. Indeed if it is done carelessly it can even change your fate as a professional overnight! You should organise the record sheet/form such that there is space for triage notes in a conspicuous place. Remember that the time spent on important paper work can deny the patients precious time to be triaged. Even their relatives and friends get concerned if the patient stays too long in the triaging area before any treatment is started. You should therefore arrange to speed up this process because early documentation reduces time spent on diagnosis, treatment and discharge.

Triage Notes are Your Primary Form of Communication

Triage notes provide baseline data for the clinician who may care for the patient. Important decisions are based on this information. That is why you must ensure that they are factual, honest and informative.

Assignment of Care Providers

You should plan for the victim's next appointment with a specialist/physician. A physician can do this after ascertaining that the victim is not in immediate danger but requires review later. It can only be done when there is full documentation and the patient has given written informed consent. Usually it is the most senior/skilful health officer who oversees the assignment of duties in the areas of operation.

Initiation of Diagnostic Measures

If the number of patients is low, diagnostic measures can be put in place. Make sure that appropriate approved protocols are in use by all staff and are adhered to.

Qualities and Qualifications of a Triageur

A triageur has specific duties which they are expected to perform. In order to understand them, the following are the qualities and qualifications that a triageur is expected to have:

- A nursing practice license
- At least six months experience in a general emergency unit in the recent past
- Be physically and mentally healthy to meet the demands of the position
- Broad knowledge of patient assessment and care
- Ability to set priorities and determine urgency of need of care
- Ability to function in stressful situations
- Ability to relate to patients, families and co-workers without bias of any kind
- Ability to promote good public relations
- Knowledge, acceptance and adherence to legal aspects of triage
- Ability to accept the responsibility inherent in the position
- A good understanding of the philosophy and objectives of the institution, the emergency department and the triage system

Duties and Responsibilities of a Triageur

These are as follows:

- Assess all incoming patients within five minutes of arrival
- Determine the urgency of need of care and assign urgency ratings
- Designate the appropriate care areas and care providers
- Document initial patient assessment
- Measure and record initial signs wherever possible
- Teach health care to patients, families as time allows
- Take phone calls regarding incoming patients
- Notify other care providers of incoming patients
- Provide immediate care and seek assistance as necessary
- Initiate diagnostic measures as indicated by protocol
- Keep a log of unusual or noteworthy situations, that is, shootings, assaults or unidentified patients and report these situations to the appropriate persons
- Control the flow of patients and visitors
- Advise waiting families of the patient's progress if time allows
- Obtain past history records if needed

- Maintain a balanced caseload in different care areas:
  i) Maintain an awareness of care activity in the care area (for example cardio-pulmonary arrests, delays in care)
  ii) Supervise clinical staff activities

Although in the past any health personnel could be called upon to triage, it has become mandatory that triageurs receive medical education. Nurses of all levels with triaging skills are becoming more and more in demand. If you are an experienced emergency department nurse you may require a short in-service triage course. However, for large evacuations you will require a more intensive course.

How is Triaging Done?

Triaging involves what is known as subjective and objective assessment. That is, carrying out a patient diagnosis. You evaluate or assess the victim using medical knowledge to collect data and make decisions at the same time. As you will recall, one of the steps in patient diagnosis is the head to toe examination. This is done methodically so that you do not leave any part of the
patient out. In triaging the acronym SOAP is used as a useful assessment guide.
It stands for:

S - Subjective assessment
O - Objective assessment
A - Assessment of clinical impressions /diagnosis
P - Plan of care

You will now consider the first two steps of this assessment guide in turn.

Subjective Assessment

This is the evaluation of a patient's illness and health history as the patient sees it. The data you collect is made up of what the patient remembers or the medical history that brought the patient to seek for care. Sometimes you may encounter patients who are hostile, delirious, confused, who do not speak or understand a common language, or are deaf. In this case you should get the information from a close relative or a friend who is agreeable to the victim and understands the victim well.
In such a situation you must document the name of the informer and their relationship to the victim.

When carrying out a subjective assessment you should make sure you cover the following areas:

History of Present Illness or Injury

This helps you to determine the urgency of need for care. Determine the chief complaint and write it in the patient's own words. Summarising what the patient says is often inaccurate and does not provide a good basis for evaluation.

Duration of the Chief Complaint

That is, for how long has this complaint been present?
Here, use calendar days or hours of the clock. They help to determine urgency of need for care or may help diagnosis of the disorder.

Nature of Chief Complaint

This helps to determine the cause of disease or urgency for need of care. You may choose to follow the systems of the body, that is, the nervous system, visual or auditory disturbances, respiratory, cardiovascular,and gastrointestinal.

The most significant symptoms are pain, abnormal bleeding, loss of function, weight loss/gain, fever, weakness or fatigue.
You could analyse each symptom using sub headings.

Analysing Symptoms in Subjective Assessment

You could analyse each symptom using the following sub headings:

Location

Be specific, ask the victim to point at the region of the symptom. Use the known names of the regions of the body including measurements if possible, for example, 2cm to the left of umbilicus. The regions of the body are: anterior, posterior, superior, inferior, medial, lateral, proximal, distal.

Onset

You need to document whether it was abrupt or gradual or during an activity.
What were the circumstances surrounding the onset, that is, what was going on at the time when the complaint was elicited?

Timing

Does the event, for example pain, recur and at what intervals? What other activities are associated with it?

Character

Describe what the victim feels during the pain or event, for example, is the pain radiating, throbbing, tightness in the chest, breathlessness, and so on. Is the pain gnawing or tearing? Is it referred pain? Is there any discharges or abnormal stool?

Analysing Symptoms in Subjective Assessment

Intensity
Does it interfere with the patient's activities of daily living? Does it prevent you from doing any activity? If so, then there is urgency for care, if not the person can be held at the back of the queue.

Aggravating and alleviating factors

These too can help either to identify disease process or specific injuries. Is there anything that makes the symptoms better or worse?

Associated symptoms

These are those that occur simultaneously, that is, bleeding, pain, dysfunction and so on.

Pertinent past medical history

This must be very brief that is why it is called "pertinent''. You should note any chronic illness, surgery, hospitalisation or previous injury to same area.

Allergies
Record the name and nature of the drug.

Medication
Record all current medications the victim may be taking including those that have been discontinued in the recent past. You should also record those that are taken on a regular basis. Record the name of drug, dosage and compliance.
Having looked at the subjective assessment, you will now move on to the objective assessment.

Objective Assessment
This is what you, the triageur, measures and observes in the patient. Before you assess the victim, you should prepare a suitable venue. This should be a room as quiet as possible with no distraction for both the triageur and the patient so that you can both concentrate on the interview. It should be a one-on-one interview unless the patient is unable to express themselves. In this case a member of the family or close friend can do so on behalf of the patient. Before the interview you should, wherever possible, establish rapport and ensure patient's comfort.

Remember:
During history taking use simple terms.
Before you finish with the victim summarise your notes aloud for the victim to hear. This helps to verify that their complaint has been heard and recorded correctly/accurately. Ask the victim to clarify what they mean by the expressions used so that you can add or delete as necessary.

As previously mentioned, the objective assessment of the patient is based on what you observe and measure in the victim. This falls under three categories:

- General appearance
- Vital signs
- Localised examination

General Appearance

This calls for an experienced nurse/triageur. You assess the colour of the skin and mucus membranes, the temperature, hygiene and gait. You should also assess the level of consciousness and behaviour.

Vital Signs
Here, you check for:

- Temperature.
- Heart rate.
- Pulse for: rhythm, volume and rate.
- Respiration: depth and rate.
- Blood pressure for hypertension (mild, moderate, severe, accelerated, malignant) or hypotension. Hypertension is dangerous because it shows that the pressure is insufficient to perfuse the tissues of the body adequately. A previously hypertensive patient with a blood pressure of 200/140 can suffer from hypotension if it drops suddenly to

normal 120/70. However, if the blood pressure of a patient who is warm, alert, active and making urine is 94/60, then this is absolutely normal. There is danger if a hypertensive victim develops tachycardia because this can be an indication of hypovolaemia. Such a victim should have blood pressure checked in both standing and sitting positions. It is important to rule out hypoadrenalism (Addison's disease) malnutrition, cachexia, chronic bed rest and neurologic disorders.

Localised Examination

Extensive physical exam is not required due to the semi private nature of the venue and emergency situation. Therefore, just examine the injured parts. X-rays are permissible if time and facilities allow. When assessing injuries, look out for the following:

Injury to Distal Limbs

Observe for swelling, tenderness, obvious bone deformity, haematoma, ecchymosed type of movement, colour, temperature and neurological status. Document all the findings. There should be a room for immediate attention to obvious amputations as well as severe unstoppable haemorrhage.

Lacerations

Deep major lacerations require immediate attention to avoid permanent functional difficulty and haemorrhage. You should therefore forward the victims to the physician. When assessing lacerations, you must record their location, length, depth, and if any vital structures are involved.

Burns

Use the "Rule of Nines" to estimate the body percentage of surface area. You have already covered this topic in module one, unit five, the section on management of critically ill patients. The other components you should describe when assessing burns include:

- Surface area of the body
- Thickness of the tissues destroyed (that is, 1st, 2nd, and 3rd degree of burns)
- Location of their burn
- Pre existing health status of the patient
- Associated injuries

Types of Burns and Resultant Tissue Injury

The table below will help you to identify the types of burns and resultant tissue injury.

Type of Burn	Skin layers Involved	Appearance
First Degree	Superficial epidermis	Reddened
Second Degree	Partial skin thickness	Blisters
Third Degree	Full skin thickness	Dry hand Charred In elastic

Areas of the Body that Present with Special Problems for Burn Victims

The table below will help you identify the areas of the body that present with special debilitating problems for the victim in the future.

Area	Problem
Hands	Limit the patient's future ability to work
Face	Cosmetic reasons
Perineum	Problems with defecation, micturation, cleanliness
Feet	Immobilise the patient
Neck	May cause airway obstruction

The danger of burns and especially those that cover a large surface area is loss of fluid and electrolytes. This is more serious in the young robust victim than older debilitated patient. Since you already covered burns in module one, unit five, you shall not go into details here again

Eye Injuries

These are important because of their location and sensitivity. You should have the visual acuity of the victim measured using the standard Snellen chart. Depending on your location when you are carrying out the assessment, measuring of visual acuity may be delayed if you do not have the chart near you. You should also look for foreign bodies if the victim has a penetrating wound. If you find a foreign body in the eye cover it with an eye shield and refer the victim immediately to an ophthalmologist. Hyphema or blood in the anterior chamber of the eye needs immediate care. Victims who present with this problem should be positioned with the head

angled at 40° and kept in a dark room. In the case of chemical burns you should irrigate the affected eye with one litre of normal sterile saline as soon as possible.

Illness

Be specific and look out for sore throat, earache, rashes, cellulites, abscess and document them accordingly.

Criteria for Triage Decisions

The table below shows the criteria for triage decisions during assessment.

Presenting Complaint	Observation-quest	Triage Decision	
	At Triage Desk	Emergency	Non Emergency
1. Unconsciousness		X	
2. Motor vehicle accident, major	Ambulance, bleeding, altered state of consciousness	X	
3. Haemorrhage	Major bleeding per mouth or rectum or from injury	X	
4. Burn	> 10% of body-facial > 10% of body – non facial	X	X
5. Head Injury		X	
6. Injury including bruises, bumps, suspected fractures	Ambulance. Altered consciousness, obvious fracture, major bleeding, multiple injuries. No to above	X	X
7. Laceration	Facial, multiple> 4 inches Non facial < 4 inches	X	X
8. Upper respiratory or gastrointestinal infection (cold, flu, intestinal flu, grippe, nausea, vomiting)			X
9. Pain, swelling, soreness			X

Documentation in Triaging

When you were covering subjective and objective assessments in triaging, you looked at the importance of documenting your findings. But what is documentation in triaging? You shall now look at the meaning of documentation in triaging, its principles and some of the abbreviations you can use to refer to the common conditions.

A document in triaging is a brief and accurate patient record which uses an urgency rating in order to help you base your decisions for onward care. Your urgency rating establishes a baseline data on which other care decisions will be made.

Purpose of a Medical Record

The purpose of a medical record is to provide communication between members of the health care team. Such a record should therefore:

- Have complete and accurate data
- Be written in clear concise terms
- Be legible
- Use an institutions protocol data collection tool
- Use SOAP format to elicit both subjective and objective assessment information
- Sign the document using full name and title, for example, H. Khamati, R.N., MBN
- Indicate all the procedures you have carried out

Common Abbreviations and Symbols Used in Triage

The table below shows the common abbreviations and symbols that are commonly used in triage notes.

A	After	NAD	No abnormality detected
ABD	Abdomen	NWB	Non-weight bearing
Acc	Accompanying or accompanied	OD	Right eye
ADL	Activities of daily living	OS	Left eye
Amb	Ambulatory	p	After
Ant	Anterior	PERLA	Pupils equal and react to light
c	With	ppmh	Pertinent past medical history
CC	Chief complaint	Post	Posterior
C/O	Complaining of or complaint	Prox	Proximal
Dist	Distal	PTA	Prior to arrival
DSD	Dry sterile dressing	q	Every
Dx	Diagnosis	RLQ	Right lower quadrant
EOM	Extractor movements	ROM	Range of motion
EOMI	Extractor movement's intact	RUQ	Right upper quadrant
ETOH	Ethyl alcohol	Rx	Prescription
HA	Headache	s	Without
Hx	History	SOB	Shortness of breath
IUP	Intrauterine pregnancy	Sx	Symptom
Lac	Laceration	VD	Venereal disease
Lat	Lateral	>	Greater than
LLQ	Left lower quadrant	<	Less than
LMD	Local or private physician	↑	Increase or increasing
LMP	Last menstrual period	↓	Decrease or decreasing
LUQ	Left upper quadrant		
Med	Medial		

Principles of Documentation

A medical record is a legal document in that it can provide evidence in a court of law if issues of litigation arise against the triageur. The guidelines and laws of how a triaging record should be maintained are usually developed by the institution. It is important to observe these guidelines and laws.
Below is an example of details or information that must be included in a triage record:

- Patient identification
- Time, date and means of arrival
- Patient's history of illness, injury and physical findings including patients initial SOAP
- Emergency care given to the patient prior to arrival
- Diagnostic indications prescribed
- All observations and effect of treatment given
- Accurate accounts of their results
- A discharge summary and any special instructions to the referral unit
- Record of patient's discharge against medical advice

Disaster Recovery and Development

Disaster Recovery

Recovery from a disaster depends on the situation that existed before the disaster occurred. If before the disaster the health status of the community was low, then it will need massive assistance to recover from the disaster.

Post Disaster Health Problems
Immediately after a disaster, it is important to take stock of what is available and reusable. Often people want to re-establish themselves as soon as possible and continue with activities of daily living.
However, some very specific health problems may arise following the disaster. These are:

- Complications arising from injuries sustained during the disaster
- Prevalence of poor sanitary and living conditions
- Outbreak of diseases or spread of old ones that were already there
- Psychological suffering (post trauma syndrome) that befalls the members of the community due to incurred losses and suffering

As a health worker you need to organise yourself urgently and rally up the available community groups and external agencies to help

the community recuperate. Using your knowledge of the community as explained earlier you will be very resourceful in providing relevant information to guide the external agencies like Red Cross, Red Crescent, Medecins Sans Frontiers (MSF), African Medical and Research Foundation (AMREF), Catholic Relief Services (CRS), among others in settling the community.

Activities Connected with Resumption of Health Care

There are a number of activities which are related to resumption of health care during disaster recovery. These are:

- Reopening of health facilities for relative care
- Health education
- Instituting disease monitoring systems
- Conducting a survey to establish baselines for operation
- Resumption of previous health programmes in the community, that is, MCH/FP and so on
- Setting up an office and activities for post trauma syndrome
- Re-establishing CORPS (Community Own Resource Persons) for coordination and consultation
- Drawing an inventory of required materials and supplies
- Liaising with hospitals for onward referral of needy victims for specialised care
- Re-establishing means of communication

Monitoring the Health Status of the Community

Your team of CORPS is very useful in collecting useful data concerning the health status of individuals and other health issues impinging on families. They are well placed to conduct education activities, assist in food resource distribution, and so on. It is extremely important to contain negative propaganda in order to control a situation and avoid panic.

Vaccination

It is extremely important to strengthen the existing routine vaccination practice instead of launching a new campaign.

Nutrition

If previously the nutritional status of the community was satisfactory there should be no alarm during famine. What you should do with the help of agricultural extension staff is to assess the damage to stores of food supplies and take the necessary measures. During famine, the following groups are most likely to suffer more than anybody else and therefore require special attention. These are:

- Infants
- Children
- Expectant and lactating mothers
- Those who are chronically sick
- Elderly
- The disabled

Health Education

This is extremely important especially in conditions where people are living in makeshift temporary shelters. The following is a list of useful topics to include in your health education talks:

- Cleanliness of the temporary dwellings
- Proper waste disposal
- Cleanliness and protection of drinking water and proper disposal of waste water
- Control of parasites and pests
- Control of vectors such as flies, mosquitoes

The public health technician of the area can mobilise volunteers to maintain this.

Mental Health

At the beginning of this section you covered the fact that when disaster strikes, people tend to react with panic, fear, daze and confusion. This is often followed by the urge to act spontaneously in rescue work. It is like the individuals' psychological barriers and defences disappear and are replaced by spontaneous solidarity and an outpouring of emotions. This is a useful reaction because it helps people to "cope" with the situation. Unfortunately, once the adrenaline goes down, this may be followed by depression, lack of confidence, fatigue and passivity. Some people are overcome with fear of the hard times ahead, their losses and fear of favouritism or preferential treatment during relief supplies.

Sometimes disastrous situations improve some

mental disorders. This occurs due to the atmosphere of solidarity and the new wave of intense emotional relationships that develop after the disaster.
There may be cases of insomnia and bed wetting among children, anxiety states or psychosomatic disorders, sweating breathlessness, feeling giddy and some depression. Some people may present with confusion and instability as occurs in head injuries. Fortunately these disappear without treatment in due course.
When confronted by this situation, the local health personnel must try to maintain and strengthen all the initiatives taken by the community. Experiments conducted in the past after disasters have shown that community action influences the state of mind of the population. It also represents an effective means of preventing and controlling reactions of disquiet and depression. In fact, activities to maintain a community's mental wellbeing coincide with the capacity to encourage and stimulate the association of groups with projects aimed at achieving objectives. Such capacity aims at stirring the community to act for itself. This is necessary for any project to succeed.

SECTION 3: SCHOOL HEALTH PROGRAMMES

Introduction

When a child reaches school going age, it is necessary that, the health care that was provided when they were under five years is continued.
School health focuses on ensuring health promotion, conservation, protection and correction of abnormalities of the school population.

A school health programme is an integral part of community health. A school health approach is advocated in the provision of health services as school children are easy to reach, they also disseminate health messages to the larger population.
It is therefore important to consider school health programmes as a priority need of the community.

Objectives

By the end of this section you will be able to:

- Describe how to organise a school health programme
- State the objectives of a school health programme
- Explain how to plan and implement school health services
- State the activities undertaken during a school
  health service
- Evaluate school health programmes

Organisation of School Health Programmes

In Kenya, it is your responsibility as a community health nurse to design school health programmes. In order to organise a practical school health programme you need to involve the rest of the health team members, the school administration and the community.

Who are members of school health committees?

The following are members of the school health team:

- Teachers
- Pupils and students
- Parents
- Community formal and informal leaders
- Community health nurse

To organise a good school health programme, you need to do the following:

- Assess the problems of school children
- Establish practical goals for the school population
- Carry out the needed activities
- Evaluate the process and results of the programs

The whole idea behind a school health programme, is to ensure that the needs of the school child are met.

What are the needs of the school child?
A Stable Home

The home should provide basic needs especially shelter and security.

Proper Nutrition

The child needs to grow well physically and mentally. It is therefore important for the child to take adequate nutrition at least three times a day. The diet should have extra proteins and vitamins to meet there nutritional needs. This will help the child to cope with demands of school life. The meals may be provided at home, school, or may be packed.

Freedom from Fatigue

The child needs to have enough rest at home from school activities.
The evening meal should be taken early so that the child will have enough sleep and rest.

Clothing
This is normally provided as school uniform, which should be clean and tidy. The child needs to wear shoes to prevent injuries and hookworm infestation

Good Sight, Hearing and Speech

Defects of sight, hearing and speech interfere with the learning process of a child. Early detection of all disabilities and referral to appropriate specialist is a very important activity of a school health programme.

Freedom from Infection

All school children should be immunised against childhood diseases. Treatment of common conditions, for example colds, skin rashes, sore throat and cuts should also be given. The treatment could take place in the school clinic or in the local health care facility.

Pure and Safe Water

This should be provided in the school and at home to prevent water related diseases. Adequate sanitation, proper excreta and refuse disposal is important at home and in school.

Clean Buildings

The home and school environment should be kept clean.

Objectives of School Health

The health programmes aim at:

- Promoting and maintaining the health of the school children.
- Promoting positive health behaviour among staff and students.
- Bringing up citizens who understand basic good health habits.
- Ensuring general community health by using the child as a channel for health messages to the family.
- Improving the physical and social environment of the school.
- Providing the following aspects of prevention of disease; Primary prevention, for example eating diets rich in vitamins A and C, iron and protein; Secondary prevention, that is, early diagnosis and treatment; Tertiary prevention which includes rehabilitation.

The following activities are undertaken to achieve the objectives of the school health programme:

- Carrying out observation, screening, physical examination and epidemiological investigations.
- Rendering emergency services and care of a continuing illness.
- Counselling or arranging for counselling of pupils, teachers and other persons in the school population.
- Involving parents, pupils and teachers in planning and conducting health care activities.
- Contributing to the development of a curriculum in health related matters, through clubs such as, biology, mathematics, scout association, Red Cross, social clubs and home science.
- Consultation with teachers and other personnel.
- Referral for specialised/continued care.

Planning and Implementation of School Health Services

The first step in organising a school health programme is to assess the health problems. One way of doing this is by conducting a survey.

Assessing Health Needs

Where can you source information about school health needs in your catchment area?

The Clinic Records

Clinic records from the health care facility near the school. This will provide information about the health problems that are commonly seen among school children who attend the centre.

Reports

Previous reports on school health services at the health centre and at the district level. These reports are given monthly and quarterly.

Health Team Workers

You can hold discussions with the health care teams in your catchment area, to find out health problems of school children and their possible solutions.

Teachers, Students and Parents

Discussions with teachers, students and parents will yield useful information about their problems, and will also give you a chance to explain the importance of school health services.

Personal Observations and Experiences

You can gather a lot of information merely by observing and listening to people, as you make contact and interact with them.

Formal and Informal Leaders

Village leaders usually have a repotoire about the most disturbing health care problems, and can assist you to plan school health services.
Once you gather the information regarding the health needs of school children in your catchment area, you then need to discuss your findings, and plan your programme with stakeholders from the Ministry of Health.
These include the:

- District medical officers of health
- District public health nurse
- Transport officers
- District health administrative officer
- District health education officer
- District public health officer
- District medical records officer

Implementing a school health programme requires quite a lot of resources. You will require funds for equipment, drugs, supplies, fuel and staff. You will also need cooperation from your team members. It is therefore very important for you to carefully identify each member of the team, and discuss with them their roles during the school health services.

Resources Required for School Health Programmes

Like all good programmes, you will require some resources to implement a school health programme.

What resources do you think you would you require for a school health programme?
Money
Funding for school health programmes mainly is the responsibility of the government. Stakeholders also give financial support to the government through procurement of equipment, drugs and supplies, vehicles, training of personnel, supporting advocacy, meetings and development of policies, guidelines and standards.

Manpower
Personnel from the ministry of health and education need to be trained on relevant issues for the implementation process.
More human resources can also be sourced from the community by training the community leaders, and the communities own resource personnel to ensure support and sustainability of the programme.

Materials
Policies, guidelines and training materials, drugs, vaccines, supplies and transport.

Time
Time is required for the planning, implementing and evaluating.
The time for the programmes should not interfere with school activities, and should be convenient for both the implementers and the beneficiaries. There should be sufficient time for the implementation process.

During the planning phase you also need to consider the following supporting activities.
Effective partnerships between teachers and health workers, and between the education and health sectors.

The success of school health programmes demands an effective partnership between ministries of education and health, and teachers and health workers.
The health sector retains the responsibility for the health of children, but the education sector is responsible for implementing, and often funding the school based programmes. These sectors need to identify responsibilities and present a coordinated action, to improve health and learning outcomes from children.

Pupil Awareness and Participation

Children must be important participants in all aspects of school health programmes, and not simply the beneficiaries.
Children should participate in health policy development and implementation efforts, to create a safer and more sanitary environment.
Health promotion aimed at their parents, other children, community members is taught during school health services. Children in turn disseminate. This is an effective way to help young people and the community acquire the knowledge, attitudes, values and skills needed to adopt healthy lifestyles, and to support health and education for all.

Implementing School Health Services

You should start by preparing a work plan together with members of your health facility team. Make sure you allow enough time, depending on the number of

schools to be covered and their health needs.
You should also organise the resources you will need to perform the tasks at hand, so that you and your team can be punctual on the day of the service. Since some of the resources at your disposal will be teachers, pupils and community leaders, remember to promote teamwork during implementation.
Their morale and enthusiasm should be kept high as they participate.

Activities Carried out During School Health Services

Physical Examination

The objective of carrying out a physical examination is to recognise the signs of common ailments, treat the minor ones and refer those which require specialised attention. This examination should be done systematically from head to toe for every child. A cumulative record of a child's history, medical examination and immunisations should be kept for each child.

Head
Tinea capitis(ring worms), hair colour, texture, cleanliness and lice.

Eyes

- Visual acuity.
- Colour of conjunctiva.
- Discharge.
- Pallor would indicate anaemia.
- Yellow discolouration would indicate jaundice.
- Redness would indicate conjunctivitis such as trachoma.
- Check for ulceration and softness, which would indicate signs of keratomalacia (vitamin A deficiency).
- To determine the eye sight. A snellen eye chart is used to check left and right eyes.

Nose
Check for, nasal discharge, deviated septum and polyps.

Ear
Ear discharge or pain, tinnitus and impacted wax.

Mouth
Cleanliness or oral hygiene, smooth appearance, swollen beefy red sores and atrophic papillae.

Teeth and Gums

Dental cavities, malpositioned, molted appearance (fluorosis), bleeding and cleanliness

Neck
Enlarged cervical glands, distended jugular veins and enlarged thyroid gland.

Arms
Absence or presence of B.C.G scar. Weak and tender or swollen arms and presence of oedema.

Hands
Cleanliness.

Nails
If short and clean. Colour: Pallor indicates signs of anaemia.
Shape: Spoon shape indicates iron deficiency anaemia.

Skin
Rashes, cuts, scabies, lack of fat under the skin. Rough and dry swollen.

Body
Tinea corporis, cleanliness and signs of malnutrition.

Legs
Orthopaedic problems, jiggers, injuries, deformities, bowed and knock knees.

Clothing
Cleanliness.

Height and Weight

Screening the children for height and weight to assess their development.

Referral Services
This service is given to children who have ailments needing care outside the school. They are referred to the nearest health facility or hospital, depending on the nature of illness and if it requires to be seen by a specialist.

Inspection of the School Environment
Since the children spend a lot of the time in school, it is important to ensure that their environment is safe and clean.

Location of the School

Surroundings should be clean, free from noise pollution, away from industrial and other waste or
swampy area.

Sanitation

The school should have a good water supply, clean and enough latrines, and solid waste disposal systems. There should be separate toilets for female and male students. The environment should be clean and well maintained.

Playground

It should be dry with no potholes or stones to prevent accidents.

Classroom
This should be clean, well ventilated with adequate lighting. It should not be overcrowded and the students should be able to hear the teacher and see the black board from where they sit.

Furniture
The seats should be simple and not attached to each other so that the pupils can move them. The children's feet should be able to touch the floor when they are seated.

Promotion of Proper Nutrition

This consists of the importance of eating a balanced diet
and good feeding habits, if there is a feeding programme
observe the following:

- Methods of cooking and storage of food
- Personal hygiene of food handlers and children
- Cleanliness of the utensils
- Cleanliness of the kitchen
- Screening of the food handlers

Sharing Health Messages

You should identify and plan to share the appropriate health messages with the school population. The health messages shared should include, prevention of common health problems,such as, sexually transmitted infections, HIV/AIDS, skin conditions amongst others.

Promotion of Personal Hygiene
This is done by advising the children to do the following:

- Taking a daily bath
- Brushing teeth after meals
- Washing of hands before eating and after visiting the toilet
- Keeping the hair and nails short and clean
- Wearing clean clothes

Record Keeping

It is important to record every health activity that you undertake.
This applies to school health service activities. These records are used for evaluation.

The records should reflect:

- The number of schools covered.
- The number of pupils treated and types of ailments
- The number of pupils referred
- Activities carried out
- Health messages shared
- Information on the environmental health
- Effectiveness of the school health services

Evaluating School Health Services

When you started planning your school health services, you formulated objectives. It is important to find out whether you have achieved them. This is where you start when evaluating your school health services. You should also ask yourselves the following questions:

- Did you follow the work plan?
- Were the services geared towards meeting the priority health needs?
- Did you carry out all the necessary activities during the school health services?
- How effective were the services you provided?

You can use the following steps to evaluate your school
health services.

Gathering Information

This is done using the same sources that you used earlier during planning.

Analysing Information

Compare the work actually done with what you had indicated in your work plan.
For example,

- How many schools were included in your plan and how many actually received the services?
- What is causing the difference between planned activities and the actual work done?

Identify Areas Needing Improvements

You can gather this information from your analysis once you identify the type or nature of improvement needed, you will then need to decide your course of action.
It might be that you will need to change the roles and activities of the team.

Take Corrective Action

Make a list of things that should be done and then go ahead and do them.

SECTION 4: OCCUPATIONAL HEALTH SERVICES

Introduction

You are now in the last section of unit six. In this section, you will cover occupational health services. Health is a basic human right. You should therefore endeavour to provide health services such as promotive, preventive and curative care, to all people, of all ages, wherever they live and work. There are groups, however, who for various reasons need special health services. In this section, you will examine the health services needed by workers.

Objectives

By the end of this section you will be able to:

- Describe occupational health
- Describe the aims and objectives of occupational health services
- Describe occupational health hazards and their management
- Describe the function, duties and role of an occupational health nurse

Concept of Occupational Health Services

At independence, the government identified health as one of the basic needs and an essential precondition for the overall economic development and social progress of this country. Primary Health Care should therefore be available to everyone. But, as you know, some groups of people are at higher risk than others of becoming ill. That is why you will examine health services for special groups, such as occupational health.

What is occupational health?

Occupational health is the physical, mental and social well being of a person in relation to their work and working environment, as well as their adjustment to work and the adjustment of work to them. People at work are an important group to be considered in planning health services.

Get a paper and pen and write down three reasons why workers require special health services.

- At work, people often come together in large numbers that can be conveniently cared for at a single service point.
- At work, healthy people can be exposed to health risks.
- They may work in very isolated areas where no other health services are available.
- When an employment group is considered as a unit, sickness caused by certain occupations can be identified and prevented.
- Illness among workers creates a loss to both individual and national productivity. Thus every effort should be made to decrease the chances of workers becoming sick.

Occupational health is also concerned with the following:

- The effect that work may have on health that is in causing injury or disease
- The effect that injury or disease may have on ability to work
- The effect of hazardous industrial fumes or toxic wastes, which pollute the air, sewers and rivers.

The first occupational health services were started by large companies for workers in dangerous jobs such as mining, large tea farms or factories. Then it was referred to as industrial medical services, because it was concerned with the treatment and prevention of injuries and special diseases, for workers in mines and factories who contracted things like lung diseases due to dust inhalation.

Gradually the aims have been broadened to cover workers in all occupations including:

- Agriculture
- Transport
- Commerce

The care offered to workers includes promotive, preventive and curative services for all diseases whether they arise at work or at home. In this broader context, occupational health is concerned both with the effects that work may have on health as well as the effects of health on work.

Effect of Work on People's Health

Work can have both negative and positive effects on people's health.

Physical Injuries

The use of new tools and machines, for example, a wood maker may lose a finger in a circular saw if not well trained. There is a risk of health problems from fumes, dust, noise and extreme temperatures.
Work can have both negative and positive effects on people's health.

In developing countries, occupational health services are not yet well established. This is because of many factors ranging from shortage of occupational health personnel to affordability of the services by the companies. However, more and more companies are today providing their workers with occupational health services.

Chemical Injuries

Risk of poisoning from chemicals, for example pesticides.

Diseases

Infections, for example, anthrax due to poor handling of animals or animal products. Other diseases like cancer may result from exposure to toxic substances.

Emotional Injuries

Stress related effects from work environment or people.
In developing countries, occupational health services are not yet well established. This is because of many factors ranging from shortage of occupational health personnel to affordability of the services by the companies. However, more and more companies are today providing their workers with occupational health services.

Philosophy of Occupational Health

The guiding philosophy of occupational health services is based on the belief that the health and safety of the worker and workforce is the concern of the employer, employee and the nation at large. This should be reflected through:

- The promotion and protection of workers throughout the working community
- Respect for workers' rights and adherence to principles of self determination and non discrimination in the receipt of quality healthcare while protecting
  employee confidentiality
- Dynamics of the work environment and diversity of the workers population
- Employer and employee responsibility for health and safety
- The benefits of the occupational health services to the worker population and company
- Collaborative multidisciplinary relationships that support and enhance worker's health and safety
- The relationship of the occupational health and the community

With the philosophy of occupational health services in mind, it is important to design occupational health programmes just the same way programmes are designed for other special groups. In Kenya, the community health nurse carries the responsibility of organising practical occupational health programmes. It is therefore your responsibility to carry out these activities at the different levels of the health system, from the provincial down to the community level where industries, factories and farms are found.

Which actors would you involve in your occupational health programmes?

- The health team
- Employers
- The employees
- The community's formal and informal leaders

Aims and Objectives of Occupational Health

The practice of health care provision among people at work has much in common with the practice of any other type of medicine. Indeed, nearly all kinds of health staff deal with workers in one way or another. However, there are special aspects of medical care provided at the work place which are important and unique for working groups.

Aims of Occupational Health Services

- The promotion and maintenance of the highest degree of physical, mental and social well being in all occupations.
- The protection of workers in their employment, from any risk factors adverse to health.
- The protection of workers in their employment from risk resulting from factors adverse to health.
- The placing and maintenance of the worker in an occupational environment

adapted to their physiological equipment.

The aims of occupational health look at the adaptation of work to a person and each person to their job.

Objectives of Occupational Health Services

There are three main objectives which occupational health services are set to address. These are:

- Primary Prevention
- Secondary Prevention
- Tertiary Prevention

Primary Prevention

In the context of occupational health, primary prevention anticipates problems and tries to avoid them before they occur. Promotion of good occupational health involves the following:

- Good construction of machines and buildings.
- Training of the workforce on how to work with machines.
- Proper utilisation of protective, safety equipment and clothing.
- Good personal hygiene and health.
- Adequate rest when working with machines.

Primary prevention is also concerned with preventing and dealing with the following:

- Wounds and cuts caused by machines and tools.
- People falling over equipment or equipment falling on people.
- The effect of a toxic substance entering the body through inhalation, skin or eye contact.
- Increased risk of any of the above because of the employee's own poor personal habits, attitudes or physical condition.

Occupational health strives to ensure that employers and employees take the necessary precautions when working in areas with special hazards. There are a number of hazards that can occur in the workplace which can be easily prevented or managed if the right systems are in place.

Ways in which these hazards can be prevented.

- Accidents from toxic gases, for example, carbon monoxide. These can be prevented or managed easily if gas detection warning systems are installed. Oxygen cylinders with reducing valve masks and bags should be readily at hand, preferably in the supervisor's office.
- Risk of liquid or chemical burns. In this case plunge baths or showers should be sited alongside the working area.
- Deployment of vulnerable groups, such as the elderly, hypertensives, diabetics, or epileptics away from areas where they can easily injure themselves. Care should be taken to ensure that such groups are not deployed in areas where in the event of sudden illness they can injure themselves or jeopardise the safety of others. The workplace should have employees who are trained in first aid and are familiar with the treatment of such illnesses.
- Injuries caused by equipment or materials at the workplace. A first-aid box or cupboard should be provided and maintained according to the standard by a responsible person. There should be a system in place that ensures immediate treatment of all injuries anticipated at the work place and referral for further management.

Occupational health workers need to know the treatment of minor injuries and illnesses common in the working environments.

Another important activity which contributes significantly to primary prevention is good record keeping. Good record keeping provides useful and easily retrievable information on the health of the individual and of groups of workers. A record of preplacement examination gives a baseline of the worker's health.

Preplacement Examination

This is the medical examination that is done before a person is employed. Routine medical examinations are one of the essential cornerstones of occupational health services. They can be of value to the worker, their employer, their fellow workers and the community. There are two main types of medical examinations:

- Preplacement examinations
- Routine, periodic and special examinations

Objectives of Preplacement Examination

- Determine suitability for a particular job.
- Detect untreated pathological conditions and 'asymptomatic' disease.
- Provide a baseline record against which any future findings or routine examinations can be compared.

How do the results of the preplacement examination assist both the worker and the organisation?

The results enable the occupational health worker to advise the personnel department on the suitability of the applicant for the particular job. The applicant also benefits in the sense that the examination could discover a medical condition they were not aware about and be able to seek early treatment for it. In addition, a well run preplacement examination programme may help to reduce a high labour turnover, absenteeism, injury and illness thus increasing productivity.

Secondary Prevention

This objective concentrates on three types of screening:

- Screening of employees at risk of a particular hazard.
- Regular screening for non occupational illness during employment.
- Screening of the working environment to check that recommended preventive measures are put in place by employers, to be used by employees.

For prevention - be observant. Study the workers and their environment.

Once an employee has been recruited, it is the responsibility of the enterprise or organisation to maintain a persons health through two separate but complementary methods. These are:

- Maintaining a safe and healthy environment. if necessary, through sampling and measuring exposure to physical or chemical agents.
- Periodic medical examinations.

Periodic Medical Examination

This is an effective method which enables the occupational health worker to stay informed about the health of individuals and groups, and at the same time detect adverse trends which may be caused by work. Periodic physical examinations are essential in the early detection of intoxications and other effects of occupational hazards, for early management.

The maintenance of a safe and healthy work environment is crucial for enterprise. Thus investigation, control and evaluation of the working environment together with medical surveillance are the cornerstone of a good occupational health service. Remember that the average worker spends at least one third of their day at the workplace, where they may be exposed to many factors that could adversely affect their health. Therefore, it is the responsibility of the occupational health worker to identify such exposures and to assist with their control through routine and special surveys of the working environment. General surveys should be performed by occupational health workers accompanied by members of the health and safety committee at least once every six months. The use of a standardised design format should assist one to capture and cover all the areas of importance.

Designing an Environmental Inspection Tool

When designing an environmental inspection tool you need to include specific issues to meet the particular situation. These include:

- Statutory regulations which are applicable
- Personal information of all employees including their sex and age
- General condition of the buildings
- Welfare services in place
- House keeping and any components that elaborate the details
- Hazards anticipated
- Safety measures in place
- Medical and nursing services in place
- Action recommended

Tertiary Prevention

Tertiary prevention includes the whole spectrum of healthcare from first-aid to treatment and rehabilitation. However, the main emphasis is placed on first aid in order to minimise complications and disabilities.

Almost all occupational diseases can be prevented because they have specific known causes. It is, therefore, important to:

- Be observant.
- Make simple epidemiological studies of workers and their environment when an occupational illness and injury occurs.
- Have good knowledge of dangerous chemicals and dusts so that you can identify an occupational risk before it happens.

Occupational Hazards

.

An occupational hazard is any condition of a job that can result in illness or injury, a source of danger, a possibility of incurring a loss or misfortune. The types of occupational hazards are categorised according to the agents, which cause the hazard or disease. Therefore, occupational hazards can be classified into five categories:

- Physical Hazards
- Chemical Hazards
- Mechanical Hazards
- Biological Hazards
- Psychosocial Hazards

Physical Hazards

Physical hazards are any hazard associated with a reagent that could cause physical harm, included but not limited to corrosive properties, flammable or explosive hazards. This category includes exposure to hot, cold, light, noise, vibration and ultra violet light. Each type of exposure will be considered in turn.

Hot and Cold

The effects of exposure to heat range from burns, heat stroke, and heat cramps, while the effects of exposure to the cold include erthrocyanosis, immersion foot, frost bite, vaso constriction and hypothermia.

Light

The effects of poor illumination result in eye strain, headache, eye pain, lachrymation congestion around cornea and eye fatigue, and blurring of vision.

Noise Pollution

Auditory effects leading to temporary or permanent loss of hearing.

Vibration

It has been proven that continuous vibration hinders the proper function of blood vessels. In turn this may produce injuries to joints, elbows and shoulders.

Ultraviolet Radiation

This occurs mainly in welding work causing intense conjunctivitis and keratitis (welder flash). Occupational hazards may occur in the following ways:

- Contact
- Inhalation

Contact

Chemicals in the work place can cause one or more of a variety of toxic effects. (A toxic compound is one that causes illness or death). Toxic chemicals include teratogens systemic poisons, mutagens, carcinogens, or behavioural toxins according to the nature of damage caused. The damage can be apparent immediately or later after some years and symptoms may be obvious or subtle. Frequent skin contact with chemical substances can lead to occupational dermatitis, eczema, ulcer, and cancer.

Inhalation

Inhalation of dust is responsible for dust allergy, anthracocis, silicosis, asbestosis, cancer of the lung, siderosis. Inhalation of gases may cause asphyxia due to carbon monoxide and cyanide gas. Presence of metal and other components may cause toxic effects to body organs.

Biological Hazards

Workers may be exposed to infective and parasitic agents at the place of work. This can result to infection with diseases such as brucellosis, anthrax, hydatidosis, tetanus, encephalitis, fungal injection, and HIV infection.

Mechanical and Electrical Hazards

Machinery including its parts, tools, objects and materials used are often a source of mechanical hazards leading to injuries. Machinery, along with power supply systems, can also create electrical hazards, leading to severe or fatal accidents.

Psychosocial Hazards

Psychological hazards effect the mental and physical well being of people. The most significant psychological hazard in the workplace is occupational stress which results from negative harmful stress or distress. The more obvious forms of stress are severe stress reactions from exposure to trauma or violence at

work. This is often referred to as critical incident stress. Occupations that see and work with trauma include the paramedical and health care professionals, community care workers, police and prison officers.

Common Methods of Dealing with Hazards

When a hazard has been detected, the preventive measures to be adopted depends on the nature of the hazard or harmful substance and its route of absorption into the body. The common methods of dealing with hazards are as follows:

Remove the Hazard or Toxic Substance from the Work Place

The best preventive measure is to get rid of the substance, chemical or machine altogether and find a less dangerous alternative.

Reducing Exposure to the Hazard

- Sucking or blowing away the dust or fumes from the place where they are produced.
- Wetting a substance that gives off dust when cut or worked on dry, this is common in wood industries where there is a lot of drilling and grinding.
- Carrying out a process entirely in a closed system of tanks and pipes or in a closed room or space.

General Ventilation

The ventilation of work rooms is improved so that the atmospheric contaminants and heat are removed or reduced. This is mainly achieved by installing wide windows and ventilators in areas of work and ensuring that there is enough operating space for the workers.

General Cleanliness

General cleanliness is a very important method of dealing with certain hazards and harmful substances. Good factory cleanliness reduces exposure, encourages tidiness and safer methods of working.

Personal Hygiene

It has been documented that good washing habits can greatly protect workers from hazardous substances. Thus good washing facilities should be available so that workers may wash dirt and chemicals off their hands before eating. Where the work is very dirty, or irritant chemicals are used showers should be provided in changing rooms.

Protective and Safety Equipment

Protective clothing should be worn all the time in order to protect oneself from health hazards. However, it has been observed that in practice it is difficult to get workers to use protective devices regularly. Therefore it is better to try to eliminate hazards by other means. Examples of protective clothing include:

- Rubber gloves
- Goggles to protect your eyes and face during
  surgical procedures
- Respirator or masks
- Aprons and gumboots

Accident Prevention and Promotion of Safety in Working Places

An accident is defined as an unexpected and unplanned occurrence, which can lead to bodily injury. Although it is an unexpected and unplanned occurrence, situations in which accidents occur generally can be foreseen. For example, a sharp bend or curve on a road can be identified so that motorists can avoid overtaking and over speeding at that point. Thus by identifying these situations, many accidents can be prevented, before they occur.

Functions and Responsibilities of an Occupational Health Nurse

Occupational health is one of the responsibilities of a community health nurse. In the communities where you work, there are small scale industries using machinery and toxic substances such as insecticides. You therefore need to be aware of these hazards and harmful substances, and be prepared to advise workers, managers and development committees on health matters. The responsibility starts and stops with you as there is often no local occupational health service in the community.

Functions of an Occupational Health Nurse

The occupational health nurse looks at the health of a worker from two angles: health in relation to their occupation and the health care of non occupational illness and injuries.

Therefore, the functions of an occupational health nurse include the following:

- Physical and psychological assessment of workers to facilitate proper selection and placement
- Prevention of occupational and non occupational illness
- Provisions of treatment
- Fostering a high level of well being of the workers

Responsibilities of an Occupational Health Nurse

These include the following:

- Participating in the health assessment program that is, both preplacement and routine medical examination of workers.
- Keeping a continuous watch on working conditions, equipment and materials for safety precautions and possible dangers. Counselling workers regarding personal and family health problem.
- Cooperating with management in the application, enforcement and training on the use of protective measures.
- Giving advice on environmental sanitation and safety education activities.
- Carrying out nursing administrative duties, which assure the efficient management of the occupation health services.
- Maintaining simple records on which to base surveillance, prevention and control of occupational illness or accidents.
- Evaluating health programme and activities.

Bearing in mind the responsibilities of the occupational health nurse you covered previously, occupational health nurses have four major roles in occupational health programmes. These are:

- Professional Role
- Environmental Role
- Managerial Role
- Educational Role

Environmental Role

An occupational environment is the combined effects of external conditions and influences which prevail at the place of work and have a bearing on the health of the working population. For example in industry, the worker interacts with three different types of agents:

- Physical, chemical and biological agents, for example
  Physical - heat, cold, radiation
  Chemical - toxic dust liquids and gases
  Biological - viral, bacteriological, rickettsia
- Machines and electricity
- Fellow man

One of the roles of the OHN is to periodically assess the environment and all the facilities in the organisation in order to detect and appraise health hazards and therefore maintain a healthy working environment.

In addition to the agents mentioned, the OHN also assesses the optimum condition of work such as lighting, ventilation temperature, humidity and cleanliness of all areas in the organisation to prevent contamination.

These assessments in conjunction with the knowledge of plant process, modes of transmission of causative agents and conditions for optimal work output, give baseline information which enables the individual to make recommendations to management for preventive corrective measures.

To provide a safe environment in the occupational setting, particularly in industrial setting, it is recommended that:

- Working hours should be organised in such a way that they allow the worker to have breaks in between.
- Periodic inspection of the plant be carried out to check on ventilation, cleanliness, dust gases, light, sanitary facilities.
- Periodic medical checks up of the workers be undertaken to detect any signs
  of sickness.
- Precaution be taken to prevent accidents by the workers and also by the management, through supply of protective devices and institution of precautionary measures in the handling of machines and other hazards.
- Adequate lighting and ventilation should be provided in order to avoid hazards like eye defects, accidents, minor ailments.
- There should be proper washing facilities to maintain cleanliness and prevent infection.
- Workers should be given health educated safety, prevention of health

hazards and need for regular medical check up.

- Proper measures must be taken for the promotion of mental health and prevention of mental illness.
- Health education should be a component of the total health programme.

Managerial Role

Occupational health nurses work closely with management. Their role is to report and give recommendations on unsafe and hazardous conditions as well as the health condition of employees.

There is close interaction between an industry and the community where it is located. Workers bring their knowledge skills, attitude and personal problems to the work setting and these may influence work productivity. In addition they also bring illnesses which may affect others in the organisation. It is therefore the role of the OHN's to manage this interaction between the industry and other organisation and community resources, such as, social, health, or welfare systems, in order to meet the overall health needs of the workers. It may involve setting up a referral system to arrange care for workers and their families or it may involve compiling data on absenteeism owing to illness to be used in calculating illness rates for the community.

An OHN also takes part in planning, formulation and implementation of policies related to the health and welfare of the workers in the organisation.

Educational Role

Occupational health nurses are expected to play a vital role as advisors, counsellors, educators, environmentalist, hygienist, rehabilitators, researchers, safety experts and supervisors.

Health education is essential for the promotion of optimal health for workers and their community. The OHN should plan, organise, and implement health education programmes for the workers and their community members.

The following topics should be included in your health education talk during occupational health services:

- The effects of work on health and vice versa.
- Importance of periodic examinations related to identified risk.
- Monitoring of the environment and development of control methods.
- Disaster planning.
- Health supervision of welfare facilities.
- Rehabilitation and resettlement.

UNIT SEVEN: HOME-BASED CARE

In this unit you will focus on Home-based Care (HBC). You will look at the concepts and principles of HBC, the principles of infection prevention and control, the types of patients that require HBC, the components of HBC, community mobilisation, community resources and the referral network for HBC. This is what will constitute the sections in this unit.

This unit is composed of seven sections:
Section One: Concepts and Principles of Home-based Care
Section Two: Principles of Infection Control and Prevention
Section Three: Patients for Home-based Care Services
Section Four: Components of Home-based Care
Section Five: Community Mobilisation
Section Six: Community Resources
Section Seven: Referral and Networking for Home-based Care

Unit Objectives

By the end of this unit you will be able to:

- Describe concepts and principles of home-based care
- Describe the application of the principles of infection prevention and control during home-based care
- Describe the major components of home-based care
- Describe the management of various patients requiring home-based care
- Describe the process of community mobilisation
- Describe the community resources needed for effective and sustainable home-based care
- Describe an effective referral and networking system

SECTION 1: CONCEPTS AND PRINCIPLES OF HOME-BASED CARE

Introduction

In the last two decades, there have been dramatic changes in the health needs of our populations due to the rise in non-communicable diseases, terminal illnesses, injuries leading to disability and HIV/AIDS. These changes have led to an increase in the need for long-term care and the need for care to manage everyday living.
To meet this challenge, the Ministry of Health (MoH) has had to adopt a different approach to health sector policy and health care services. It has adopted the home-based care approach.
In this section, you shall look at the concepts and principles of home-based care.

Objectives

By the end of this section you will be able to:

- Describe the concept of home-based care
- Describe the major components of home-based care
- Explain the rationale behind home-based care
- Describe the objectives and principles of home-based care
- Describe the advantages and disadvantages of home-based care to different sections in society
- Explain the roles of the various players in home-based care
- Describe the relationship and functions of the care team and the HBC services

The Concept of Home-based Care

You will start by trying to understand the meaning of home-based care.

How would you define home-based care?
Home-based care is the care of persons with chronic or terminal illnesses extended from the hospital or health facility to the patients' homes through family participation and community involvement within available resources and in collaboration with health care workers.

It is a holistic and comprehensive care which relies on collaboration between the hospital, the family of the patient, and the community, in order to enhance the quality of life of the patients and their families. In home-based care, the care of the patient is extended from the

hospital or health facility where they are initially seen to their homes. This therefore implies that these patients require certain services. These services form the components of home-based care.

Components of Home-based Care

There are four components of comprehensive home-based care.

Clinical Care
Clinical care comprises early diagnosis, rational and targeted treatment and planning for the care of persons suffering from chronic or terminal and debilitating illnesses. The patients who are assessed and referred for home-based care need the continuum of care extended rationally. If a patient has not been well diagnosed and treated, don't you think the purpose and spirit of home-based care would be defeated?
Can you think of reasons why a patient may not receive good quality home-based care? One reason is that complications may arise from the disease that the patient is suffering from. When a patient is well diagnosed and rationally cared for at a health facility, it is easier to anticipate and plan for complications and how to manage them.
There are four components of comprehensive home-based care.

Nursing Care
Patients for HBC need nursing care to promote and maintain good health, hygiene and nutrition. As a community health nurse, it is your responsibility to provide this care and extend it to the home. By training family and community members, it is possible to extend the continuum of care to the home. Do you think this is possible? What do you think happens to all those patients who are discharged from hospital with residual effects of diseases and complications? Somehow, their families, friends and community provide some form of nursing care. In home-based care, care is extended by contributing skills together with other professionals and also training family and community members to give care to those that require it.

Counselling and Psychospiritual Care
The main aim of providing care to people with chronic and terminal illnesses and injuries is to prolong their life and make it bearable. This cannot happen unless there is positive living and decisions are made on the basis of informed choice. Counselling and psychospiritual care reduces stress and anxiety for both the patients and their families. It also helps individuals to make informed decisions on say HIV testing, planning for the future, making behavioural changes and involving sexual partner(s) in such decisions.

Social Support
On many occasions when patients are discharged from health facilities, you fail to realise the network of social and support services that they can benefit from. Patients with chronic and debilitating conditions need information and referral to support groups such as church organisations, youth groups and other social organisations. They also need to be referred to welfare services provided by social workers, children's department and other services, which may be provided by various governmental and non-governmental organisations. These individuals also need to be accepted by society and get involved in community activities depending on their capabilities.
These individuals and their families may also require legal advice and material assistance. You should never forget that these services compliment the care that is given in your health facilities.
These components will be revisited in further detail in another section that will focus entirely on them. Having briefly learnt about the components of HBC, move on to look at a summary which lists the areas in which HBC services are provided.

These areas are:

- Nursing care (personal and general hygiene)
- Nutrition
- Advice and promotion of positive living habits and behaviour
- Support through counselling and links with other services
- Treatment of the specific disease-related conditions and complications
- Physical therapy, vocational and occupational therapy

The concept of HBC, as you may have realised, does not just address any disease condition but is intended for debilitating diseases that make patients unable to care for themselves. In HIV/AIDS for instance, you do not provide HBC to those who are HIV positive but to those with advanced AIDS illness. HBC concerns those who are sick but still able to care for themselves as well as those who are bedridden and unable to care for themselves.

So far you have looked at the definition and components of HBC. Before you go further, first ask yourself the following questions. Why HBC? Why can't patients for HBC stay in the health facility and be cared for by trained health care practitioners? What these questions are really seeking is the rationale behind HBC

Rationale for Home-based Care

You are probably well aware of the big problem presented by HIV/AIDS to the health care services in this country. Demand for health services has increased due to the growing numbers of individuals who have become ill as a result of HIV infection. This has resulted in an increased workload and congestion of health facilities.

Hospital bed occupancy rates have increased with over 55% of beds occupied by People Living With HIV/AIDS (PLWHA). Apart from HIV/AIDS, other chronic diseases such as cancer have made people require long-term care.

In addition there are other reasons why the home-based concept has been adopted. It has been noted that:

- People with AIDS and other debilitating illnesses are discharged from health institutions where there are trained professionals and sent home to be cared for by untrained relatives with no professional back-up support. HBC will train HBC providers to offer continued quality services and also coordinate services between the community and health facility after discharge.
- HBC helps reduce the stigma attached to some chronic diseases as the providers are knowledgeable of the diseases, which assists them to change their attitudes toward the disease and the patient.
- People with chronic debilitating illnesses, for example HIV/AIDS, need continuity of care to prolong their lives and reduce their suffering.
- Health institutions have many limitations such as shortage of health workers, few hospital beds and a shortage of other resources.
- HBC offers support that will enable the patient to extend their productive lives for many years.

This has meant that many patients may have failed to get the care that they deserve.

Objectives and Principles of Home-based Care

The main **objectives** of the Home-based Care program are:

- To facilitate the continuity of the patient's care from the health facility to the home and community.
- To empower the patients, the family and the community with the knowledge needed to ensure disease prevention, care and support-related to the chronic illness.
- To enhance the functioning of critical system and process to enable accessible, effective and sustainable HBC.
- To streamline an appropriate structure for the patient referral from the institutions into the community and from the community to appropriate health and social facilities.

- To establish appropriate structures and systems for management, coordination, networking and resource mobilisation.
- To articulate policy and advocacy positions that yield clearly defined roles and responsibilities, build strong leadership support and help reduce stigma.
- To establish systems to facilitate provision of a comprehensive continuum of care that meets priority needs of infected and affected people.

To ensure that the foregoing benefits are realised, HBC should be regarded as a holistic system of care with provisions for the following principles.

The **principles of home-based care** include the following:

- Ensuring appropriate, cost-effective access to quality health care and support to enable persons living with chronic illnesses to retain their self-sufficiency and maintain quality of life.
- Encouraging the active participation and involvement of the patient and their family.
- Fostering the active participation and involvement of those most able to provide support to the community at all levels.
- Targeting social assistance to all affected families especially children.
- Caring for caregivers, in order to minimise the physical and spiritual exhaustion that can come with the prolonged care of the terminally ill.
- Ensuring respect for the basic human rights.
- Developing the vital role of home-based care as the link between prevention and care.
- Taking a multi-sector approach to care and support.
- Addressing the reproductive health needs of persons living with chronic illnesses.
- Instituting measures to ensure the economic sustainability of home care support.
- Building and supporting referral networks/linkages and collaboration among participating entities.
- Building capacity at the household, community and institutional levels.
- Addressing the differential gender impact of the HIV/AIDS epidemic and other chronic illnesses and care for the patients.

Advantages and Disadvantages of Home-based Care

Many authors agree that HBC has a positive impact on the social, economic, psychological and physical wellbeing of the patient, family, community and the general health care system.

The Patient

The following are the advantages of HBC to the patient:

- The patient is cared for in a familiar environment. Such a patient usually suffers less stress and anxiety compared to the one in hospital, clinic or nursing home. When people are in a familiar environment their illness is more tolerable.
- When the patients are in their homes, they continue to participate in family matters. Those who are heads of their families continue doing so and can be consulted on various family issues. It is quite difficult when one is in hospital or a clinic to make a decision about, for example, which goat to sell in order to pay for school fees or which part of the farm should be tilled.
- When the patient is at home close to family members, friends and relatives, there is a sense of belonging. This is not the case if one is in a hospital setting where the caregivers are strangers who keep changing with every shift.
- When the patient is in close contact with familiar people they are likely to accept their conditions and illnesses. The acceptance contributes to quicker recovery or, in the case of HIV/AIDS, it may assist in better management of the syndrome.

The Family

- Care given in the home can be less expensive than that in the hospital. You are aware that patients will pay for bed charges, food and other items, which will normally be available and shared at home.

- Caring for sick people at home prevents separation and holds family members together. You will no doubt have heard of patients being divorced or separated because of illness. Others get into adulterous relationships because their spouses are not at home. This can be prevented through home-based care.
- When family members are given education and information on diseases, it helps them to understand these diseases better and accept the patients.

The Community

- Training in home-based care helps community members to be aware of the various illnesses affecting members of their communities. As always there are myths, misconception and beliefs especially in relation to chronic illnesses, for example, HIV/AIDS and epilepsy. An informed community counteracts these myths and beliefs and is therefore able to actively participate in prevention efforts.
- It's cheap. The cost is shared as members contribute for upkeep and the costs of going to visit a person in hospital are reduced.
- Community cohesiveness is maintained. This ensures that the community is able to respond to other members' needs.

The Health Care System

- HBC reduces the pressure on hospital services and hence the health system. Therefore hospitals have fewer patients to attend to and thus are able to provide quality services to those patients who require short-term care.
- Reduces cost of outreach/mobile clinics.

Disadvantages of HBC

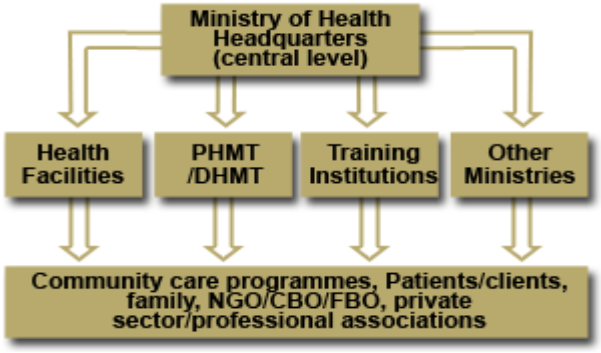
- Expensive especially in poor resource countries. It involves training of the care providers, availability of equipments and supplies and management of the systems.
- Sustainability may be hard especially where the community does not see the importance, where the resources are poor or there is no motivation for the providers.
- Requires leadership support and adequate structures at various levels, which limits ability to achieve greater coverage, effectiveness and sustainability.
- It requires related systems in other areas, for example planning and budgeting processes within MoH, technical support system, networking to facilitate skills transfer, psychological and spiritual support.
- Affected by other external factors like poverty, hunger, stigma, denial and community expectations.

Key Players/Providers of Home-based Care

Who are the key players/providers in HBC?

- The patient
- Family members and other caregivers
- HBC team
- Health workers
- Community and community organisations
- Government
- NGOs

All of these providers have a role to play in the delivery of HBC. Some aspects of the roles are unique to the specific players, but others may overlap to some extent. Every function is important, and none should be thought inferior to the others, because they all make vital contributions to the total HBC system.



Now you will look at each player individually and consider their role.

Role of the Patient

The patient is one of the main players in home-based care. When the patients are not very sick, they may provide their own care. However, in some cases they are too sick and require somebody else to care for them. Their role in HBC is to:

- Identify the primary or alternative caregiver.
- Participate in the care process, but not passively, especially in making decisions on own welfare.
- If possible, give consent on caregivers and where the care will be provided, for example, home or hospital especially during the terminal phase of the disease.

Role of Family Members and Caregivers

The sick person's family members, relatives, friends and other caregivers play an important role in the provision of home-based care. Their role is to:

- Learn to accept and adjust to the situation, including that of the terminally ill with AIDS.
- Collaborate with other care providers, for example, religious institutions, support groups, health and social institutions.
- Be able to volunteer or agree on other possible caregivers that could be involved in providing the services in the family. This becomes shared responsibility on issues of referral and networking.
- Learn to consult with the patients on matters concerning them.
- Involve the patient in all care activities and any other family activities without discrimination.
- Emphasise the need to prepare for death as inevitable and sensitise the patient about the importance of ensuring the continuing care of family members who are left behind.
- Encourage and help the patient to write a will.
- Remember that being present is a major support.

As a community health nurse you need to provide education on home nursing skills, counselling, as well as information on psychosocial and material support, patient caregiver interaction and communication.

Role of Home Care Team

Home care teams are supervised by a medical or social work professional, and may be associated with a local health centre or community organisation. They are organised to provide a variety of services to patients and their families. The community health worker is a key member of this team.

The home care teams should be able to:

- Manage patient's disease-related conditions.
- Provide home nursing care.
- Arrange voluntary counselling and testing services for HIV.
- Provide supportive counselling.
- Refer the patients for further specialised care such as treatment, radiotherapy, counselling, and emotional/spiritual support.
- Educate patient/family/community on related diseases.
- Arrange spiritual/pastoral care.
- Mobilise resources for support of the programme.
- Train the caregiver on all HBC services.
- Provide facilitative supervision to the caregiver.
- Train the patients on how to care for themselves.

Role of Health Workers

The health facility plays a very important role in the provision of HBC. Having gone through the last three modules of this course, you are well aware of the important contribution made by health workers in the delivery of health care in Kenya. These institution-based trained health

workers include nurses, clinical officers, physiotherapists, nutritionists, doctors and many others. Their role is to:

- Initiate, inform and create awareness of the HBC process by recruiting the patients to the programme, identifying needs at various levels, and preparing the patient for discharge home.
- Prepare and educate the family caregiver for the caring responsibility at home.
- Make initial diagnosis, institute relevant nursing and medical care, help identify psychological and social needs.
- Initiate referral and networking systems, which may change over time as the patient's condition and needs change.
- Care for the terminally ill depending on their wish.

Role of the Community

- Accept the situation of the patient and learn to collaborate and work with existing agencies (such as religious groups, women's groups, and other social and health agencies) around to meet the needs of those infected/affected.
- Prepare a 'memory book' to provide their children with family history and a tangible record of caring.
- Encourage the patient to write a will.
- Identify own spiritual/pastoral needs.
- Be open to the caregiver and share any worries.
- Take personal responsibility to prevent further transmission of infections like hepatitis and HIV.
- Advocate for behaviour change.

Role of the Government

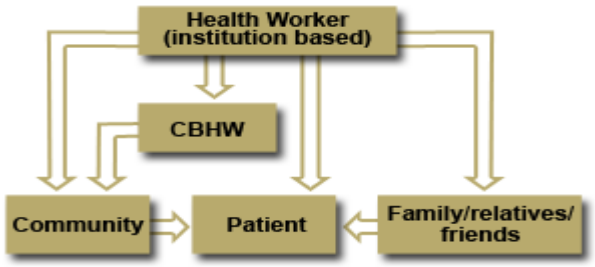
- Create a supportive policy environment
- Develop policies and guidelines
- Develop and maintain standards
- Provide/coordinate training
- Provide drugs, equipments and supplies
- Help in the formation of support groups, which in turn would lobby and advocate for the rights of the patients

The illustration opposite shows the relationship and functioning of the care team and HBC services.

In order to succeed in your role in HBC, you need to cooperate with the other providers of HBC in your community. You must link the patient to the available support services right from the beginning when you identify that the patient needs HBC.

Now move on to look at the process of linking patients to support services.

The illustration opposite shows the relationship and functioning of the care team and HBC services.



In order to succeed in your role in HBC, you need to cooperate with the other providers of HBC in your community. You must link the patient to the available support services right from the beginning when you identify that the patient needs HBC.

Now move on to look at the process of linking patients to support services.

The process of linking patients to support services involves:

- Assisting patients and their families to identify the support that is needed
- Identifying groups/agencies/individuals that can provide the support
- Informing patients about the existence of the individuals, agencies and the services that are offered
- Introducing the identified agencies and individuals to the patients and their families
- Helping patients to evaluate the individuals and agencies and allowing them to work with those who meet their needs
- Helping them set up home visits and transportation if needed
- Following up to ensure that there is coordination of services

As you will have seen, providing HBC is a challenging task. One of the biggest challenges is related to the risk of spreading infection to the patient or acquiring infection from patients. In the next section you will look at how you can protect yourself from infection by adopting effective infection prevention measures.

SECTION 2: PRINCIPLES OF INFECTION CONTROL AND PREVENTION

Introduction

In this section, you shall revisit the principles and techniques of infection prevention, which you learnt in unit two of module one on general nursing.
Specifically, you shall apply the knowledge and skills you learnt in that unit to the provision of HBC. Before proceeding, move on to look at the objectives for this section.

Objectives

By the end of this section you will be able to:

- Describe the disease transmission cycle
- Explain infection transmission in the HBC setting and its importance
- Describe standard precautions for minimising risk of infection transmission

As mentioned, you have already covered most of these objectives in module one, unit two, however, revise them again in the context of HBC.

Overview of Disease Transmission

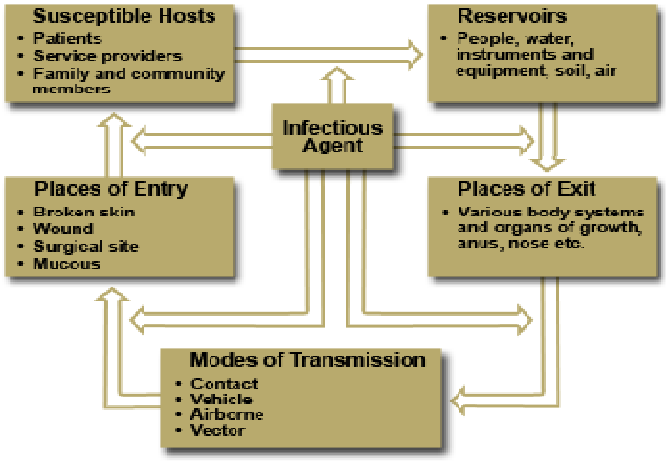
As you already know, micro-organisms are found everywhere in the environment - on people, animals, plants, soil, air, water and so on.

What do you call the micro-organisms which are present on peoples' skin, respiratory, intestinal and genital tracts?
They are called **normal flora**

Micro-organisms which are associated with disease are called pathogens. All micro-organisms can cause infection or disease. They do this when:

- Normal flora is introduced into an area of the body in which they are not normally found
- Pathogens are introduced into the body
- Micro-organisms are introduced into the body of a person who is immuno-compromised and thus susceptible to infections

In the case of HIV/AIDS, cancer and other terminal illnesses you can see that all the three situations are critical during HBC.
The graphic opposite is a presentation of the disease transmission cycle.



Infection Transmission in the Home-based Care Setting

Infection transmission in the HBC setting can take various forms.
A patient can transmit an infection to a caregiver, a caregiver can also spread infection from one patient to another. Caregivers can cross-infect their family members and the community and, if the caregiver has an infection can also transmit an infection to the patient. Finally there can be self-infection.
You will now look at how each of these modes of transmission work.

Transmission from Patients to Caregiver
This occurs when the caregiver gets exposed to the patient's infected body fluids (blood, semen or saliva) or contaminated air through:

- Not using gloves or other available plastic waterproof material while handling soiled linen, blood and other body fluids.
- Attending to a patient while having open uncovered cuts, wounds or abrasions.
- Inhaling contaminated air, which may cause infections, for example, acquiring chest infections such as tuberculosis while caring for a patient.
- Splashing infected body fluids, for example, blood on mucous membranes like on eyes or nose while attending childbirth by an HIV-positive mother.

HIV/AIDS and hepatitis B are two diseases that are commonly transmitted by this method.

Transmission from Patient to Sexual Partner(s)
Being HIV-positive does not mean the person is no longer capable of having a sexual relationship or in need of sexual satisfaction. In the early stages of HIV infection, the person has minimal or no signs of the disease, so is still capable of passing the infection sexually to any sexual partner(s). This form of infection can be prevented by:

- Educating the infected person on the infection including mode of spread and all known preventive measures.
- Stressing total abstinence (primary or secondary) as the primary preventive measure.
- Urging People Living with Aids (PLWHA) (who are not able to abstain) to have only one sexual partner, with whom they must use condoms consistently and correctly to prevent re-infection and spread of the disease.

Transmission by Caregiver from One Patient to Another
This occurs when the caregiver does not wash their hands before and after caring for different patients. It can also occur through the use of surgical instruments, needles, syringes and other equipment that has not been well processed, that is decontamination, cleaning and/or sterilisation.

Transmission from Caregiver to Own Families and the Communities
Caregivers can cross-infect their family and the community in several ways:

- When caregivers do not wash their hands after leaving the health facility or patient's home.
- When medical waste such as bandages and drug administration sets, are not well disposed.
- When caregivers wear contaminated clothes.
- When caregivers acquire an infection from a patient and spread it to their families who in turn spread it to others in the community.

Transmission from Caregiver to Patients
This occurs when the caregiver infects the patient. In many cases, the patient may have lowered immunity as a result of HIV infection or cancer treatment. If the caregiver is sick with any infectious disease, it is safer to have another care provider take care of the patient during the period of the illness.
Common infectious diseases include the following:

- Common cold or flu.
- Diarrhoeal diseases.
- Skin conditions such as scabies.
- Typhoid.
- Chest infections like bronchitis, pneumonia and tuberculosis.
- Fungal infections, especially those affecting the skin.

In order to break the cycle of disease transmission, appropriate infection prevention practices should be followed in HBC.
Proper use of these practices:

- Prevents post-procedure infections in patients
- Provides safe and high quality services
- Prevents infections in service providers and support staff
- Protects the community from infections that originate from health facilities and other patients
- Decreases the incidence of drug resistant strains of micro-organisms
- Decreases costs associated with health care

Remember:
The purpose of infection prevention is to minimise post-procedure infection and prevent transmission of infections to patients, health workers, family and community members.

After completing the next checkpoint question, you will then move on to take another look at the standard precautions that are necessary for minimising the risk of transmission of infections.

Precautions for Minimising Risk of Infection Transmission

Why do you think these precautions are referred to as 'standard'?
They are referred to as standard because they should be followed routinely all the time. All

health workers are expected to follow a set of clinical practice recommendations in order to minimise the risk of exposure to infectious and emerging diseases such HIV and hepatitis.

What are some of the precautions?
Did your list include the following precautions:

- Washing hands.
- Wearing protective devices like gloves, eye shield, boots, face shields and gowns when appropriate.
- Processing instruments and other items used in procedures correctly.
- Preventing injuries with used sharp instruments.
- Maintaining correct environmental cleanliness and proper waste disposal practices.
- Handling, transporting and processing used/soiled linen correctly.

Now briefly go through the first three standard precautions, both to remind yourself as well as to learn how you can implement them in the HBC environment.

Hand Washing and Use of Gloves
Having practiced as a nurse, you should know by now that hand washing is the most important way of reducing the transmission of micro-organisms.
Scientific evidence shows that hand washing reduces the risk of micro-organisms and also reduces mortality and morbidity associated with these micro-organisms.

Hand Washing and Use of Gloves
When should caregivers wash their hands?
List six appropriate times for hand washing.

- Immediately after arriving at the workstation or home
- After coming into contact with equipments used for patient care or contact with the patient's body fluids and/or mucous membranes
- Before and after examining a patient
- Before and after putting on gloves for procedures
- Before and after every procedure
- Before leaving the home or at the end of the work shift

As you will probably recall there are four different types of hand washing. You will have been practising all these methods in your clinical setting.

List four types of hand washing.

- Routine hand washing using plain soap and running water
- Hand washing with antiseptic and running water
- Alcohol hand rub
- Surgical hand rub

Hand washing techniques and policy statements were also covered at length in module one, unit two. If you have forgotten the details, review that topic again.
In the home care environment hand washing with plain soap and running water for 10-15 seconds is enough. Antiseptics are not necessary. If there is no tap or running water, the caregiver can use a 'leaky' tin or ask somebody to pour water for them.
Remember to teach your patients, their families and community members proper hand washing procedures. Also, teach them to use small pieces of bar soap, how to keep the bar soap dry (not moist) and how to avoid wet hands during procedures. If water is not available, then alcohol hand rub can be used. You can prepare the following hand rub solution at the health facility and supply your patients:
2ml of glycerine or propylene glycol or sorbitol and 100ml of 60-90% alcohol.

Remember:
Plain water removes 50% of transient micro-organisms, while soap removes 80-90% of micro-organisms.
Gloves provide a strong barrier against micro-organisms. They can also protect us against hazardous chemicals. In the home care setting, caregivers should always wear gloves to prevent direct contact with body fluid. If gloves are not available, they can use plastic bags.
They should also protect their feet when cleaning body fluids spilled on the floor. Remember, the use of two pairs of gloves at the same time (double gloves) is not recommended because one may slip off. It is also not cost effective

Antiseptics and Disinfectants
In HBC, it is very important to use the correct procedures for processing instruments and the other items that are used. Now consider the use of antiseptics and disinfectants.

Can you remember how antiseptics and disinfectants are defined?

As a reminder, it was said that antiseptics are agents used on the skin and mucous membranes to remove or kill micro-organisms without causing damage and irritation to the skin or mucous membranes.

Disinfectants are chemical agents used to kill micro-organisms on inanimate objects, for example, instruments.

List six antiseptics commonly used in your practice and at home.

Your answer should include the following antiseptics:

- Alcohol (60-90% ethyl isopropyl)
- Chlorhexidine (hibitane, hibiclens, hibiscrub savlon)
- Hexachlorophene
- Iodine (including tincture of iodine)
- Iodophors (solutions that contain iodine in a complex form, for example, betadine)
- Para-chloro-meta-xylenol (dettol)

Antiseptics should not be used on inanimate objects such as instruments and surfaces.

Antiseptics should only be used for the following purposes:

- Surgical scrub.
- Skin, cervical and vaginal preparation before clinical procedures.
- Hand washing in high-risk situations especially before invasive procedures.

There are two types of disinfectant:

- Low-level disinfectants which kill most bacteria and some viruses.
- High-level disinfectants which kill bacteria, viruses, fungi and some but not all bacterial endophores. These can be used to process instruments.

Some common high-level disinfectants are:

- Chlorine
- Glutaraldehyde (cidex)

Common low-level disinfectants are:

- Phenols (for example, carbolic acid (lysol)
- Quarternary ammonium compounds (for example, benzylkonium chloride)

Before you use any of these disinfectants and antiseptics always read the label.

You should also assist your patients to choose cheap but effective chemicals for use in the home environment. They should not be contaminated and they should be well labelled to avoid accidental poisoning.

The advantages and disadvantages of the various chemicals that have been covered are explained in detail in module one, unit two. Review them again so that you can support other caregivers effectively.

Preventing Injuries with Sharp Instruments

List six ways of preventing injuries from sharp instruments.

Your list should include the following ways of preventing injuries with sharp instruments:

- Handle hypodermic needles, syringes and other sharps minimally after use.
- Do not recap needles.
- Do not bend, break or cut instruments before disposing.
- Dispose all sharps in a puncture resistant container.
- Always wear utility gloves when disposing sharps containers.
- Try the hands-free technique when passing sharp instruments to others. This is done by placing the sharp in a container, for example a kidney dish, alert your colleague who will then pick it up from the kidney dish. The container is referred to as a 'safe zone'.
- Dispose the puncture resistant container when ¾ full by incineration or burning.

Processing Equipments

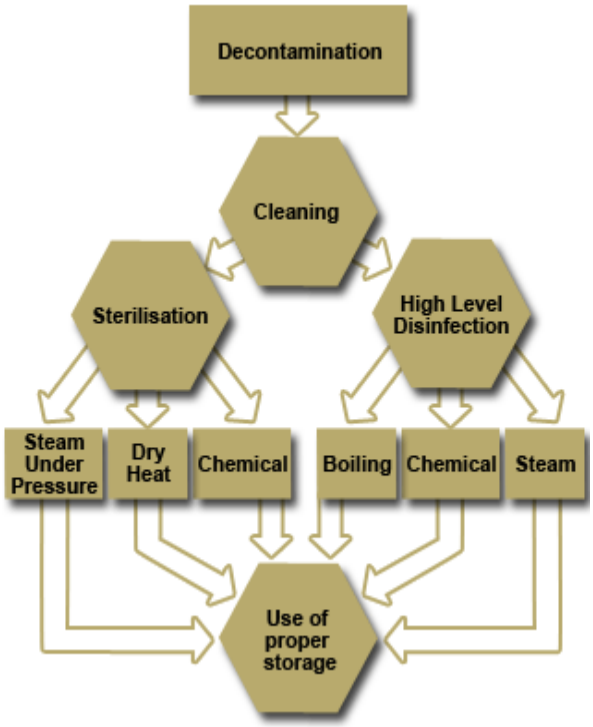
To protect yourself and your patients, it is important to focus on:

- Destroying as many harmful micro-organisms as possible early in the processing.
- Preventing body fluids from coming into contact with the skin and mucous membrane.

You will do this through:

- Decontamination, that is, making instruments and other items safe for handling by soaking them in 0.5% chlorine for 10 minutes.
- Cleaning with a brush, detergent and water.
- Sterilisation or high-level disinfection.

Review the diagram opposite. It gives you the steps to follow in the processing of instruments. Although some of the steps may not be appropriate in HBC, you can still identify the most appropriate or even better, ask the patients to bring their equipment to the health facility for processing.
Finally, before this section is concluded on infection prevention, think how you can carry out sterile procedures at home with minimum risk of introducing infection, that is, the aseptic technique.



Aseptic Technique
In the home of the patient, it is important to differentiate between places where procedures can be done and where they cannot be done. Ideally there should be two separate corners: one for carrying out clean procedures and storing sterile items and the other for dirty items where decontamination takes place. This kind of arrangement ensures that only sterile surfaces or articles touch other sterile surfaces or articles in that home. Remember that whatever is sterile for one patient can only be used for that patient alone. Also when handling sterile fluids, they must be poured from a point high enough to prevent accidental touching of the receptacle.
When providing HBC or teaching others to do it, you must assess the patient using the nursing process. This will enable you to know how to advise them, and what cost-effective means are available to institute all the infection prevention measures that have been covered. For instance, some patients may have cupboards and fridges to keep their food in while others may not. Some patients may have piped water while others may not. A careful assessment enables you to apply all the knowledge you have learnt in general nursing, reproductive health and community health to care for your patients. This will prevent the unnecessary transmission of infection.

SECTION 3: PATIENTS FOR HOME-BASED CARE SERVICES

Introduction

In this section, you will learn how to manage diseases that may require HBC. You will look at diseases such as HIV/AIDS, cancer, some chronic medical and surgical conditions which can be managed at home.
Many conditions require HBC but not all will be covered in this section. However, the principles of management that will be described here apply to all diseases and conditions.
Do not hesitate to evaluate your patients together with other members of the health care team in order to determine who needs HBC.
Before proceeding, move on to look at the objectives for this section.

Objectives

By the end of this section you will be able to:

- Describe basic facts about HIV/AIDS
- Explain the management of AIDS-related conditions in HBC
- Describe basic facts about common cancers and HBC management for cancer patients
- Describe basic facts about terminal illnesses, injuries and their management

Home-based Care for HIV/AIDS Patients

HIV is now the fastest growing threat to economic, social and human development in Africa. Since you had already covered this topic in unit six of the Reproductive Health module, in this section you are quickly going to revisit the facts and then look at the management of common AIDS-related conditions at home.

What is HIV/AIDS?
HIV stands for Human Immunodeficiency Virus, while AIDS stands for Acquired Immune Deficiency Syndrome. The HIV virus causes AIDS by reducing the ability of the body to fight infection.

How is it transmitted?
There are three modes of transmission of the HIV:

- Sexual - unprotected sexual intercourse (vaginal, oral and anal) with an infected person. This is the most common mode of transmission in this country.
- Contact with infected blood or other body fluids. Transfusion of blood products from an infected person/donor. Use of contaminated instruments such as needles, syringes, knives or blades. These instruments may have been used for circumcision, skin piercing, scarification, drug abuse and other traditional practices like female genital cutting.
- From an infected mother to a child in the uterus, during labour and delivery or during breastfeeding.

What are the three phases of HIV/AIDS?
HIV/AIDS progresses through three main phases

Phase 1
Phase 1 is when HIV is present in the body but laboratory tests can not detect it. This phase lasts for up to six months and includes the entry

Phase 2
Phase 2 is the detection stage, when laboratory tests can detect the presence of HIV. However, no signs or symptoms are present at this stage. It can last from two months to several years. It is also referred to as the HIV positive phase. It comprises the seroconversion stage and the asymptomatic seropositive stage.

Phase 3
Phase 3 is the phase when the person shows signs and symptoms of AIDS and develops full blown AIDS. It is also called the AIDS phase.
AIDS, as you know is not transmitted by casual contact, (holding hands, hugging, kissing, sharing food or drink.) You should therefore show affection to your patients and their families.
You are probably aware that in this country there is Voluntary Counselling and Testing centres (VCTs). You should encourage your patients, friends and family members to visit the VCT and find out their HIV status.
Counselling and testing has three steps:

- The test decision or pre-test counselling
- The test which is done by a finger prick to collect a few drops of blood
- Post-test or results counselling

Even when caring for people living with HIV/AIDS you should maintain utmost confidentiality of your patients' conditions unless

they desire that others know. You should however recommend testing for partners of HBC patients.
People living with HIV/AIDS need to receive education on how to protect themselves, and their partners, through either abstinence or using condoms consistently and correctly and having only one sexual partner.
Now move on to look at the major and minor signs of HIV/AIDS in adults and children

Common Signs and Symptoms of HIV/AIDS
The presence of at least two major and two minor signs is enough to diagnose AIDS in a child, in the absence of other known causes of immunosuppression. In the adult, the presence of at least two major signs and one minor sign are enough to diagnose AIDS.

Major and Minor Signs of AIDS in Adults
Major: Unexplained 10% weight loss in less than one month
Persistent diarrhoea for over one month
Fever for over one month
Minor: Cough for over one month
General pruritic dermatitis
Recurrent herpes zoster
Oral thrush: candidiasis
Generalised enlarged lymph nodes
Disseminated progressive herpes simplex

Major and Minor Signs of AIDS in Children
Major: Weight loss or slow growth
Chronic diarrhoea for over one month
Fever for over one month
Minor: Recurrent common infections, for example, tonsillitis, otitis media, laryngitis
Generalised lymph node enlargement
Generalise dermatitis
Oral thrush
Cough for over one month
Confirmed maternal HIV infection
You will now learn about AIDS-related conditions and their management. Since you have already covered this in module two, unit five, in this section you will look in detail at management in the home-based care setting.

AIDS-Related Conditions and their Management
Home Care Kit
Before you start caring for PLWHAs or teaching their families and the community how to care for them, there are certain materials and supplies that they should have. The caregiver should have a community volunteer kit while the patient should have a patient primary kit.

The Caregivers Kit
A caregiver should have what is called a 'community volunteer kit'. It has the following items:

Medications:
- Aspirin/paracetamol
- Anti-malarial tabs
- Anti-worm medications, for example, albendazole
- Multivitamins
- Piriton
- Iron and folate tabs

Besides these, the caregiver should have a reference book, writing materials, a register/diary and teaching materials

Supplies
- Gloves
- Soap
- Toilet paper
- Scissors (small)
- Razor blades
- Waste disposal bags
- Jik
- Surgical spirit
- Plastic apron and plastic sheets
- Condoms

The Patient Primary Kit
The patient also needs to have a primary kit. This kit is restocked by the community based health workers when they visit the patient. The primary kit comprises:

Supplies:
- Gloves
- Soap, toilet paper, vaseline and talcum powder
- Bucket with a lid
- Basin
- Mosquito net (impregnated with insecticide)
- Nail cutter
- Scissors (small)
- Waste disposal bags
- Cotton wool
- Gauze
- Bandages
- Mackintosh (2m)
- Jik

- Bed sheets
- Good comfortable mattress
- Condoms
- Wooden spatula

Medications

- Paracetamol
- Albendazole
- ORS (Oral Rehydration Salts)
- Multivitamins
- Tetracycline skin ointment
- Gentamycin eye drops
- Calamine lotion
- Savlon
- Dettol cream
- Nystatin oral drops
- Antimalaria tabs
- Iron and folate tablets
- Antihistamine (for example piriton)

After you have seen the kind of supplies and medications that should be available in both the patients and caregivers kits, move on to look at the management of specific conditions that affect PLWHAs.

AIDS-related Conditions

Home caregivers need to recognise early and manage common illnesses related to HIV/AIDS in the home environment. You will now look at some of the most common illnesses in PLWHAs starting with skin conditions.

Skin Problems

About 90% of people with HIV infection will develop at least one skin problem in the course of the disease. These skin problems can be due to:

- Fungal infections: ringworm, cryptococcus.
- Bacterial infections: impetigo, folliculitis, abscesses.
- Viral infections: herpes zoster/simplex, warts, molluscum contagiosum
- Parasites: scabies, body lice.
- A typical presentation of dermatoses including psoriasis, pruritic papular eruptions and seborrheic dermatitis.
- Allergies to drugs, the sun, x-rays and eczema.
- Tumours such as Kaposi's sarcoma or lymphomas.
- Trauma as a result of injury or scratching with dirty nails.

Skin Problems

In order to minimise skin problems and treat them properly, you need to teach the caregiver the following simple measures:

- Keeping skin clean - washing with soap and water.
- Keeping nails short to avoid damaging the skin during scratching.
- Using flat part of hand to rub if itchy, not the nails.
- Cooling the skin with water or fan in cases of severe itching.
- Applying lotions for example, calamine lotion to skin rashes, painful and weeping lesions.
- Using any local herbal remedies that are effective.
- Applying petroleum jelly (for example, vaseline) or glycerine if the skin is dry.
- If it is a child or a mentally confused adult, put gloves or socks on their hands to prevent skin damage due to scratching.
- Washing open sores with clean water and soap, keeping them dry and applying gentian violet solution.
- Rubbing pressure areas to improve circulation.
- Keeping pressure areas dry.
- Frequent turning of the patient.
- In the case of patients with incontinence, cleaning the skin in the area with warm water and dry it to avoid skin irritation.

Tiredness and Weakness

Tiredness and weakness are common problems for patients with HIV/AIDS. Some of the causes of tiredness and weakness include poor nutrition, depression, anaemia, respiratory disease and other AIDS-related illnesses.

What advice would you give to a patient who is suffering from tiredness and weakness?

Your answer should include the following:

- To rest
- To reduce activities that make the patient tired or to make it easier, for example, instead of washing while standing, the patients could sit
- To perform simple exercises
- To take a well-balanced and adequate diet

- Use of support, for example, a cane or crutches
- Use of energy drinks and food

You should teach the family how to help the patient in some of these activities. For example, they can support the patient while they are getting in and out of bed, while going to the toilet and in many other activities.

They can also be taught to give the patient simple exercise and massage. They should seek medical help when these simple measures do not work.

Sore Mouth and Throat

Candidiasis is a very common problem among PLWHAs. It can lead to patches in the mouth and difficulty in swallowing. Other problems which interfere with eating and swallowing are: herpes simplex in the mouth, malnutrition which causes cracks and sores in the oral cavity, Kaposi's sarcoma and dental problems.

You should teach the patient, family and caregiver the following simple measures on how to manage this condition:

- The patient should rinse the mouth with warm, salty water
- The patient can suck a lemon and apply gentian violet in the mouth
- The patient should eat soft foods as tolerated
- Use of straws for liquids and soups
- Eating of cold foods, drinks or ice to numb the mouth

Pain

Pain can be caused by many factors in a patient with HIV/AIDS. It can present in the form of joint, chest, muscle and headaches, or just generalised pain. It is important to understand the main cause of the pain, whether it is due to an infection or ectopic pregnancy, and treat it immediately.

How do we manage pain in PLWHAs?

There are a number of things you can do to manage pain in PLWHAs:

- The patient can take an analgesics like aspirin or paracetamol.
- Caregivers can gently massage the area while talking to the patient to distract them.
- They can assist the patient to change position in bed and keep the patient's environment quiet and calm.
- In the case of chest pain, you can apply a warm compress to the area where the discomfort seems to be centred.
- If there is pain following a cough, you can hold a pillow or hand tightly over the area that hurts when coughing.
- Use distractors like TV, radio, interesting stories.

Fever

Fever, as you have learnt from previous units, is a symptom of various illnesses. It makes the patient very uncomfortable and can be dangerous, especially in small children. Fever may cause loss of body fluids and it may also lead to delirium and convulsions, which can cause brain damage.

Fever may be associated with any of the following conditions:

- AIDS-related opportunistic infections such as pneumonia and tuberculosis.
- Diseases like malaria, measles and meningitis.
- Infective diarrhoea.
- The HIV infection itself.

In the home setting you can manage fever by:

- Checking whether the patient has a fever by either using a thermometer if available, or placing the back of your hand on the patient's forehead and the back of the other hand on your own forehead to compare the two.
- Lowering the fever by removing the patient's clothing and exposing them to a fresh air breeze.
- Cooling the skin by bathing the patient with lukewarm water or wiping the skin with wet cloths.
- Give antipyretics, such as aspirin or paracetamol.
- Giving plenty of fluids such as water, juice and soup to replace the fluid that is lost through sweating, in order to prevent dehydration.
- If the person is weak they should be turned, cleaned and observed for dehydration.

Can you remember the signs and symptoms of dehydration? You can refresh your memory by revising the relevant section in unit three of the module on General Nursing.

Always advise the caregiver and patient to seek treatment for the cause of the fever.

Nausea and Vomiting
Nausea and vomiting although frequent can sometimes be short lived. They are brought about by HIV infection, drugs, opportunistic infections and food poisoning. The family and the patient should always watch out for dehydration.
Oral Rehydration Salts (ORS) and weak tea can be taken in addition to small frequent meals. If certain smells and odours make the patient nauseated, they should be kept away from the patient.

Chronic Diarrhoea
A person has diarrhoea if:
- Their stools are frequent (three or more in a day)
- Change in character, amount and consistency of the stool

Chronic diarrhoea occurs in two forms among those with HIV/AIDS. There is the persistent form which lasts for less than two weeks and the acute form.
The most common causes of diarrhoea are infection, side effects of drugs and food poisoning.

How would you manage diarrhoea in the home setting?
Your answer should include the following simple management procedures:
- Give more fluids than usual, especially those that the person finds favourable: such as, unsweetened juices, porridge, soup, water and ORS. Correct dehydration by giving plenty of fluids after every loose motion passed.
- If the patient is a child who is breastfeeding, continue to breastfeed the child to avoid malnutrition. If the mother is HIV-infected, adhere to the current instructions on how to feed such a child.
- In case of vomiting or loss of appetite, feed the patient frequently with small amounts of food that form a balanced diet and that is easily digested.
- After the diarrhoea stops, give an extra meal each day for two weeks to help regain the lost weight.
- Prevent dehydration by early recognition and treatment.
- Care for the perianal area to avoid skin break down.
- Maintain infection prevention practices when caring for the patient and also advise the patient on this practice.

Remember:
The cause of diarrhoea must be established as you provide these measures.

Coughing and Difficulty in Breathing
These are caused by TB, pneumonia, bronchitis, heart problems, asthma and common cold among others. It is important for patients to be investigated because some of the diseases are contagious. Patients should drink lots of fluids especially if there is fever. They should also sit up in bed if possible and turn frequently. When coughing, they should cover their mouths with a piece of paper or cloth which can later be burnt.
Testing should be done to find out the main cause and paracetamol or aspirin taken for fever. When there is difficulty in breathing, the head of the bed should be elevated to assist the person to sit up in bed. Difficulty in breathing can be very frightening and so it is important to talk to the patients and soothe them.

Confusion, Fear, Anxiety and Depression
HIV infection can cause psychological effects, especially if the person is not properly counselled to cope with the situation. It can also cause mental confusion or dementia and peripheral nerve damage.
Mental confusion can be due to the direct effect of the virus on the brain, head injury, or severe depression. Depending on the degree, this can be a serious disability. Patients can present with inability to concentrate, loss of memory, slow thinking, poor short-term memory and personality change. In late stages, about half develop motor dysfunctions like weakness of one part of the body, tremors, inability to walk and incontinence of stool and urine. In anxiety and depression, patients have feelings of nervousness, fear, sadness and hopelessness.
Some of the physical and mental symptoms of anxiety are:
- Lack of appetite.
- Feeling short of breath.
- Shaking, sweating and feeling faint.
- Palpitations, tingling sensations.
- Insomnia, difficulty to concentrate.
- Feeling out of control, worried and irritable.

Signs and symptoms of depression are:

- Feelings of hopelessness and helplessness.
- Sleeping too much or too little.
- Eating too much or loss of appetite.
- Withdrawal from normal activities.
- Comments about wanting to commit suicide.

The home-care for patients who have fear, anxiety, depression and confusion comprises:

- Keeping loose and dangerous objects out of the reach of the patient.
- Helping the person to stand and walk about.
- Ensuring the person is always accompanied.
- Keeping medicines out of the way.
- Ensuring that the patient rests, eats properly and is well groomed.
- Spiritual guidance from friends, counsellors and religious persons.
- Encouraging peer contact and identifying community persons and groups dealing with PLWHAs.
- Discouraging use of recreational drugs.
- Letting the patient know that their feelings are normal.
- Communicating unconditional love by the family and friends.
- Assisting patients to plan their daily, weekly and monthly activities.
- Assisting patients to relax and teaching them that feelings of depression and anxiety are normal.

Now move on to briefly learn about home-based care for a child with HIV/AIDS.

Caring For the Child with HIV/AIDS

Children with HIV/AIDS present with the same problems as those found in the adults. They however may not be in a position to easily communicate how they are feeling.

Therefore you should teach the family to:

- Maintain good personal and general hygiene.
- Have the child immunised as required.

more information.

Immunisation according to Kenya expanded programme on immunisation guidelines include:

Birth	BCG* vaccine and OPV (birth or within two weeks)
Ages 6, 10, 14 weeks	DPT, hepatitis B, H. influenza type B, OPV
Age six months	Begin vitamin A, continue every six months to age five
Age nine months	Yellow fever* and measles vaccines

** BCG and yellow fever should not be given to children with symptoms of HIV/AIDS. However, because most infants who are HIV-infected are asymptomatic at birth, when BCG immunisation occurs, and that will have unknown HIV status, the birth BCG immunisation should be given.

- Vitamin A supplementation. *more information.*

Vitamin A Supplementation

Preventive Schedule:

Infants 6-12 months:	100,000 IU
Children 1-5 years:	200,000 IU every six months

- Love the child and show them that they are loved. However, treat the child normally.
- Promote health. *more information.*

Promote health by:

Treating infections that may present in a timely manner.

Identifying non-specific symptoms that could be related to HIV infection.

Providing HIV testing.

Providing multivitamins, in accordance with Kenya guidelines.

Providing cotrimoxazole preventive therapy (as per 2004 Kenya National clinical manual for ARV provider for prevention of pneumocystis pneumonia and other bacterial infections).

Assessing and support the mother's infant feeding.

Monitoring growth and assess causes of growth failure.

Screening for TB and treat if indicated.

Recommending use of insect treated mosquito bed nets.

Treating anaemia as indicated based on Kenya guidelines.
- Allow other children to play with the sick child.
- Teach the older children good personal hygiene.
- Hold children who are bed ridden on the lap to prevent pressure sores.
- Ensure the child is not wet for long periods.
- Avoid wiping their buttocks, instead pat them dry.
- Use simple lotions for skin care.
- Observe the child for infections, dehydration, pain and other symptoms, and seek specialised care immediately.
- Counsel the mother and other caregivers on infant feeding, nutrition, ARV therapy and other care.

Patients with HIV/AIDS may require antibiotics, anti-retroviral drugs, antipyretics for fever, diarrhoea, skin conditions, mouth and genital problems. They may also require nutritional supplements at home. You should ensure that the patients and caregivers are taught how to prepare, take, and store the medications. Inform them about the side effects and adverse reactions of the drugs. The patient should only take the drugs that have been prescribed by a qualified
health worker.

Having covered the HBC management of patients with HIV/AIDS, now move on to take a look at the management of cancer patients.

Home-based Care for Patients with Cancer

When talking about cancer, you should remember that there are several types of neoplasms (new growths). Neoplasms can be either malignant or benign.

The table opposite shows the difference between malignant and benign tumours.

The term cancer is commonly used to refer to malignant neoplasms.

Cancers affect various organs and tissues in the body. There are skin cancers, oral cancer, lung cancer, colon and rectal cancer, pancreatic cancer, prostate cancer, bladder cancer, leukaemia and lymphomas, ovarian cancer, breast cancer, uterine cancer, cancer of the cervix, the stomach, lungs and prostate among many others.

Benign	**Malignant**
Encapsulated	Invasive
Non-metastasising	Metastasising
Well differentiated	Frequently undifferentiated
Slow growing	Often rapid growing

What are some of the effects of cancer on a person?

Your list should include the following effects of cancer:

- **Metastasis**. This is when the tumour grows and spreads beyond its primary site. This has an effect on other organs, which are affected by the growing tumour.
  It alters the function of the organs or the tumour puts pressure on the surrounding tissues.
- **Paraneoplastic syndromes**: These are effects which are systemic and unrelated to the location of the tumour. They are caused by substances produced by the tumour, for example, hormones, cytokins. They include anorexia, wasting, fever, hypercalcaemia, inappropriate secretion of antidiuretic hormone and clotting abnormalities, among others.
- **Tumour changes**, whereby cells change in character and start secreting hormones (ectopic hormones).
- **Pain** due to growth of tumour on non-expandable spaces, pressure on nerves or tissue.

These effects produce certain signs and symptoms in the patients.

List down the signs and symptoms of cancer

Now compare your list with the following:

- Anorexia, nausea and vomiting
- Fatigue
- Fever and night sweats
- Anaemia
- Difficulty in swallowing
- Vaginal bleeding
- Pain
- Wasting
- Enlarged lymph nodes
- Masses felt at specific organs
- Nutritional deficiencies

The signs and symptoms of each type of cancer are covered in module one, unit three.

The diagnosis of cancer is done through the following tests:

- Biopsy.
- Imaging.
- Special tests for enzymes, hormones and other tumour associated molecules.

Remember that all cancer should be classified in order
to determine the extent of illness and assist in management.
Various classifications are available.
Read and acquaint yourself with at least one classification system for all cancers.

Cancer Prevention
Cancer prevention aims at ensuring that there are fewer cases of cancer. Cancer prevention measures are divided into three: primary, secondary and tertiary.

Primary Prevention
This involves asking people to stop smoking, drinking excessive alcohol, decrease their fat intake, limit exposure to the sun in fair skinned people, and to limit exposure to carcinogens among people who work with chemicals and in industries. In addition, it involves protecting people from:

- Exposure to ionising radiation which can lead to cancer of the thyroid.
- Developing atrophic gastritis and pernicious anaemia which can lead to cancer of stomach.
- Early sexual activity and multiple sexual partners which can cause cancer of the cervix.

Secondary Prevention
Secondary prevention is done by identifying individuals with cancer before signs and symptoms develop. This takes the form of early screening for breast cancer, pap smears for cancer of the cervix, and bimanual/digital examination for prostatic cancer. Pelvic exams and endometrial tissue sampling are also important.

Tertiary Prevention
Tertiary prevention involves early and quick treatment before the effects of the cancer become widespread and unmanageable.

Home-based Care for Cancer Patients
The overall aim of cancer management is to control the malignancy and extend the life of the patient or cure the cancer.
Once cancer is diagnosed, several options are available which include:

- Surgery
- Radiation therapy
- Chemotherapy

These options may be used individually or in combination. You will probably have nursed patients undergoing some of these treatment options. You have also covered the actual management of various types of cancers in the previous module.
At this point you must be wondering whether all cancer patients need home-based care. Some patients may require long term treatment while others may present too late for a complete cure to occur. It is this latter group that requires HBC.
As mentioned on the previous page, once cancer is diagnosed, several options are available.

Surgery
Surgery can be a form of prophylaxis. For example, patients with a history of breast cancer may choose to undergo mastectomy instead of waiting to suffer the effects of cancer. It may also be done for palliation, that is, to control difficult symptoms that could arise later. Patients who have undergone surgery may take time to heal and instead of staying at the hospital for long periods, the justification and rationale for HBC to nurse them at home can be used.
Patients who have undergone surgery may suffer from pain at the surgical incision, altered nutrition and a decrease in self-image due to removal of an organ or structure from their body such as a breast. Other more acute problems, such as infections and bleeding, can be managed at the health facility in the immediate post-operative period.

Radiation Therapy (Radiotherapy)
This is the use of high energy ionising radiation to kill tumour cells. It can be used singly or in combination with other treatment options. Radiotherapy may be given over a period of time with varying side effects. These effects can be managed while the patient is at home.
Patients who are on radiotherapy may have bone marrow depression, frequent infections, skin changes such as drying, allopecia, nausea and vomiting, diarrhoea, anaemia and taste alterations, among others.

Chemotherapy
Various drugs and drug combinations are used in the treatment of cancers. You will have come across some of these drugs. They include vincristine, bleomycin, doxorubicin, cytarabine, methotrexate and mitomycin. These drugs have many side effects. These include: bone marrow depression, nausea and vomiting, stomatitis, alopecia and problems affecting fertility, kidneys, lungs and nervous system.
The management of these effects require HBC services.

What HBC measures can be instituted to help cancer patients?
Home care measures that should be instituted include:

- Pain management. This was covered in the section on palliative care in module one unit three. Review it again to better understand pain management in cancer patients.
- Close monitoring of the patient by relatives, friends and caregivers, in order to detect complications of surgery, radiation and medication.
- A nutritious and appetising diet. Certain foods may be removed from the diet such as spicy, dry food, alcohol and hot liquids. The patient should take small frequent meals which are high in calories and protein.
- Good personal and general hygiene need to be practiced in order to reduce the risk of infection.
- Patients with radiation implants should be cared for in separate rooms to protect other family members from radiation. Body secretions should be handled carefully. Precautions should be taken in patients with isotope administration. The caregivers should observe the following radiation precautions:
  - Principle of time, which says that exposure to radiation is proportional to the time of exposure.
  - Principle of distance, that is the nearer to the emitting source the higher the dose.
  - Principle of shielding, whereby one uses materials which decrease transmission of radiation.
- Pregnant mothers and children under 18 years should not visit those with radiation implants.
- Careful observation, good disposal of waste and labelling should be undertaken.
- During and after chemotherapy, minimise stimuli from noise, light and odours (especially food).
- Teach the patient relaxation techniques.
- Provide counselling, spiritual care, emotional support and close observation.

Patients with terminal cancer may present with depression, fear, anxiety, fever, skin problems, diarrhoea and vomiting. You should be able to use the same management protocols that were mentioned while learning about management of AIDS-related conditions in the home environment.

HBC for Chronic/Terminal and Medical/Surgical Conditions (1 of 3)

Generally speaking, many patients with medical and surgical illnesses may require HBC. However, in this sub-section you shall only cover issues related to their management in the home environment.

Medical and Surgical Conditions that May Require HBC

- Spinal injuries and paralysis
- End stage chronic obstructive pulmonary disease
- Chronic renal failure
- Liver cirrhosis
- Patients with ulcerative colitis, Crohn's disease or cancer of the bowel with ostomies for faecal diversion
- Chronic hypertension
- Diabetes
- Age-related body system changes
- Patients with amputations
- Patients with mental illnesses
- Gout
- Arthritis
- Parkinson's disease
- Epilepsy
- Multiple sclerosis

As you have just seen on the previous page, the list is quite long and all the conditions have not been exhausted. Since you have previously looked at these diseases already, you will now broadly look at the areas of care that are needed for these conditions. These are:

- Comfort and pain management
- Personal and general hygiene
- Medications, their administration and safety and management of their side effects
- Activities of daily living for the patient, for example, elimination, eating, reproduction and others
- Alleviation of fear, anxiety, depression and general psychological care
- Nutrition
- Physiological and spiritual integrity
- Security and safety

This means that all measures to provide comfort should be instituted in the home. These include positioning using assistive devices for example crutches, and walking canes providing rest and other measures to relieve pain which have already been covered.

The patient's hygiene is also very important and should not be neglected. If the patient requires assistance to feed or bathe, they should be given that assistance. If the patient requires assistance in elimination, they may require bed pans, urinals or catheterisation. Some patients may require to be taught how to inject themselves with insulin and other drugs.

The patient should not be neglected and if bed ridden they should be free from pressure sores. They should be loved and assisted to maintain physiological integrity through skin care, good nutrition and close observation. Infections should be prevented at all costs.

The spiritual and psychological care of the patient is another important area.

SECTION 4: COMPONENTS OF HOME-BASED CARE

Introduction

You are now half way through this unit on home-based care (HBC). As you may have realised you are revisiting most of the content you covered in earlier modules, and applying what you learnt earlier in the provision of home-based care.

You should now be able to identify patients for HBC in your health facility and to prepare their families, relatives, friends, community members and caregivers.

In this section, you will take a detailed look at the components of HBC which were mentioned in section one.

Objectives

By the end of this section you will be able to:

- State the various needs of HBC patients and their families
- Describe how the HBC components assist in meeting patients' needs
- Describe medication, follow-up and counselling for HBC patients

Home-based Care Needs

HBC needs can be identified as those specific to the patient, to the family and to the community within which the patient lives. These needs may be physical, spiritual/pastoral, social or psychological and may vary from person to person, and from one community to another.

These needs should be identified when a patient is being enrolled into a HBC programme, for example, while still in hospital, so as to ensure proper planning and integration of activities.

Early identification also ensures adequate resource mobilisation and the sustainability of activities initiated.

Needs of the Patients

Physical Needs

- Drugs for treatment.
- Clinical care including medication and regular
  check ups in case of the onset of new symptoms to ensure immediate management.
- Clothing, housing, food, fuel/energy, water,
  education for children and income.

- General nursing care to meet Activities of Daily Living (ADL), like toilet needs, observation of vital signs, care of wounds, personal hygiene and comfort.
- Nutritional needs, that is, provision of a balanced diet, which is affordable and locally available.
- Physical therapies to include exercise and massage.
- Information, Education and Communication (IEC), including up to date, accurate information on the illness and safer sexual behaviour, on writing a will and on preparing for the eventuality of death.
- IEC on how to take prescribed drugs, prevention and care of the patient's illness.
- Security and safety measures.

Spiritual/Pastoral Needs

Strengthening existing faith and helping the patient in spiritual growth boosts the spiritual aspect of life.
This plays a great part in encouraging the person to have a positive view of life and to forgive others and themselves for any misconceptions and liabilities.
The patient will therefore be able to:

- Accept forgiveness by others
- Forgive others
- Have reassurance that God accepts them
- Allow religious groups to offer support
- Have freedom of worship according to faith, which should be respected by the health worker and the care providers
- Call a religious leader of choice for sacraments and fulfilment of other needs

Social Needs

The patient and especially PLWHAs need company and association without stigma or discrimination. Family and community members should facilitate recreation and exercise at clubs/groups of their choice. People living with chronic illnesses need to be considered as people of value and having rights to be respected. They should not be cut off from activities they enjoy, for example, political rallies, church/mosque/temple and spiritual gatherings.
The social needs of patients living with chronic illnesses include:

- Respect and dignity
- Love and acceptance from others
- Company of those around them
- Source of income/income-generating activity
- Right to own, inherit and bequeath property
- Confidentiality regarding their condition by all who know about it
- Help with the activities of daily living

Psychological Needs

Love, encouragement, warmth, appreciation, reassurance and help in coping with the disease are the most important psychological needs.
Religious groups, volunteer groups and other related support groups can all play a part in meeting these psychological and counselling needs.
They can:

- Instil hope so that the patient can continue with their daily activities as long as possible
- Maintain confidentiality and unconditional acceptance and love
- Provide supportive counselling to live positively

If you look closely at these needs, you will find that they fit into Maslow's hierarchy of human needs, which you covered in module two. In short, HBC must be holistic, encompassing all the aspects of human living.

Needs of the Family and Caregivers

Families and caregivers also have physical, psychological and social/spiritual needs that must be met in order to maintain family solidarity and well-being.

Physical Needs

The physical needs of the family are more or less the same as those of the patient except for personal needs that are specific to the patient's condition.
Family members of PLWHAs will need proper STD/HIV/AIDS education and demonstrations on the care they will be expected to provide. Because the burden of caring for someone who is very ill or dying is constant and heavy, the family may also need help with household, farm or other chores.

Psychological Needs

The families of people who are terminally ill and especially PLWHA need a lot of support, encouragement and acceptance from community members so that they may be motivated and encouraged to care for the patient without fear of being isolated.
They should be adequately prepared for:

- The deterioration and eventual death of the patient.
- How to give un-smothering love and acceptance.
- Where and how to meet others who are going through the same experience of caring for a chronically sick person. This gives the family members a sense of hope and a drive to go on.
- The importance of observing confidentiality, for example, keeping matters relating to the patient in confidence.
- The very real possibility that they themselves may need to seek counselling to help them cope with the situation.

Social and Spiritual/Pastoral Needs
Families don't stop being members of the community when someone gets illnesses like cancer and HIV/AIDS.
More than ever, such families need:

- Respect and help with activities of daily living when the need arises.
- Acceptance of the patient and enabling them to socialise and interact in the community.
- Solidarity with the patient and the family.
- Spiritual comfort, including taking the initiative to involve the family in spiritual growth through worshipping and praying together.

Needs of Orphans

Orphans have a number of needs too.
These include:

- Acceptance by those around them resulting in a sense of belonging
- Basic needs like food, shelter, clothing, education and love
- Legal interventions in cases of property inheritance
- Protection from exploitation
- Health care

Having looked at the needs of various groups involved in HBC, you will now proceed to look at the components of HBC, and how you can meet the needs of the patients starting with nursing care.

Basic Home Nursing Skills

When individuals fall sick, both the body and the mind can be affected. This affects their ability to carry out routine activities. Nursing care in the context of home-based care applies at all levels, from the health institution down to the family, depending on the individual needs of the patient. Since you qualified as a nurse, you have had a lot of time to learn and practice basic nursing skills.

How would you define nursing?
Nursing is the art of assisting individuals to do those things that they would do on their own if they had the strength, knowledge or will.
Nursing care can be provided to a sick person in hospital or at home.
Since you have already covered fundamentals in nursing practice in module one, you need only review some of the nursing procedures in this section.
If you have forgotten the basic nursing skills, refer to unit two of module one.

What are the components of nursing care?

The components of nursing care are:

- Activities to ensure good personal hygiene.
- Care for the patient's environment.
- Infection prevention.
- Physical therapy.
- Pain management.
- Administering drugs as per prescription to ensure compliance.
- Maintaining the nutritional status of the patient.
- Observing of patients to detect problems like dehydration, dyspnoea, dysphagia, oedema or fever. Related conditions that need attention include:
  - Diarrhoea and vomiting, which may easily lead to dehydration.
  - Pain and discomfort.
  - Chest problems like chronic coughs, colds and infections.
  - Skin conditions, for example, bed sores.
  - Nausea, mouth and throat infections.
- Taking the patient to the hospital or health facility when the need arises.
- Reassuring the patient at all times.

Since you have learnt and practiced these basic skills in your work as a nurse, you need only look at the general guidelines. If you have forgotten these basic skills, refer to the Nursing Council of Kenya (NCK) procedure manual and update yourself. You will now look at some of the basic nursing skills that are needed in the HBC setting.

Bed Bath

Some of the patients for HBC may be too sick to provide their own hygiene. They may therefore require to be bathed in bed. The caregiver requires equipment and supplies, such as, gloves, plastic/polythene paper, a large basin, a face flannel, warm water, bath towel, soap, a container for dirty linen, scissors/razor blade, comb, chair, clean linen and clothes.

1. Prepare the resources, patient and yourself.
2. Assemble your equipment and supplies.
3. Explain the procedure to the patient.
4. Explain the role you want the patient to play.
5. Bath the patient as per the recommended procedure for bed bath in the procedure manual.
6. Clean the materials used.
7. Dispose dirty materials, or wash and hang to dry.
8. Store away the reusable.
9. Remove the gloves.
10. Wash and dry the hands.

Although this sounds easy, as it's what you have been doing, you will now need to teach this to the other caregivers who have not received training in nursing skills.

Mouth Care

Mouth care is intended to promote salivary flow, keep one healthy and the mouth clean. It also maintains freshness of the mouth.

For mouth care, the caregiver or patient requires gloves, three small cups, toothpaste or salt water or baking soda. Glycerine or vaseline, cotton wool balls, a container for used swabs, toothbrush or stick, plastic paper, a spoon/fork or stick for swab and a padded spoon for those who are unable to keep their mouths open.

You follow the same steps as those outlined in bed bath, that is:

1. Prepare the items, the patient and yourself.
2. Clean the mouth. If the patient is able, provide the toothbrush and toothpaste and a cup with water for rinsing the mouth and a container to spit into. If the patient is unconscious or conscious but weak then assist as per the recommended procedure in the procedure manual.
3. Clear used items and dispose of those that are not reusable.

Nail Care

Unclean nails can transmit infection from food to the mouth or they may scratch and transmit infection to the skin. The main aim of nail care is to keep nails short and clean so as to reduce the collection of micro-organisms and prevent self-injury. The caregiver requires a nail cutter, scissors or a razor blade, water in a basin, a piece of cloth or a towel, nail brush, vaseline or lotion and soap.

You should proceed as follows:

1. Prepare the patient by explaining the procedure and obtaining permission to continue.
2. Wash each hand and finger, scrubbing the nails with a brush, rinse and dry the hands.
3. Trim the nails, apply vaseline or lotion and move to the next hand and to the toes.
4. Upon completion you should clean any equipment used, wash your hands and dry them.

Hair Care

Hair care is intended to keep the hair clean and to avoid the scalp itching. You should use the same materials and steps as those described earlier when covering Bed Bath. You require a patient's towel or clean cloth, soap or shampoo, a comb or hairbrush, water, a basin and a stool.

Proceed as follows:

1. You should gather your equipment and supplies and explain to the patient what you want to do.
2. Place the patient's head near the bed edge and wash it with soap or shampoo.
3. Rinse the hair, dry and comb it.
4. Clean and disinfect your equipment.

Care of Pressure Areas and Pressure Sores

Some of the patients who require HBC are bedridden and therefore at risk of developing bed sores. The objective here is to prevent the development of pressure sores around the protruding bony parts of the body in a patient who is unable to move out of bed, as well as minimise the risk of infection and promote healing.

List the steps you would take to prevent pressure sores in a bedridden patient.

Measures of preventing pressure sores are:

- Getting the patient out of bed as much as possible
- Turning the patient every two to four hours
- Attending to pressure areas by massaging areas of prominent bones with soap and water
- Using soft bed sheets and changing the bedding whenever wet
- Straightening the bedding often
- Putting cushions under the body to keep the bony parts from rubbing together
- Holding a bedridden child on someone's lap as often as possible

You will also require the following resources for pressure area care:

- Gloves or plastic/polythene bags to use as gloves if patient is soiled or has wounds
- Stool or chair
- Container of warm water
- Basin or similar container
- Plastic or polythene paper
- Soap
- Patient's own towel or a clean cloth
- Body powder (if possible)
- Vaseline or lotion
- Toilet paper and a receiver
- Clean linen
- Container for soiled linen
- Material for treatment of sores

Once you have assembled all your resources, you should explain the procedure to the patient and examine the areas to check if pressure sores are forming.

Place the plastic paper or towel under the part to be treated first. Then with soapy hands you should gently massage each area in a circular movement and for long enough to stimulate good circulation of blood (count to ten as you massage each part) then rinse and pat dry. Apply powder and/or vaseline and ask the patient how they feel.

Remember to clear the materials used and to clean the equipment. Also change or straighten the underlying bed cloth as necessary and remake the bed so that you leave the patient comfortable. Lastly wash and dry your hands.

If the patient has pressure sores, in addition to the previous steps, you should dress the pressure sore by:

- Dipping a small piece of cloth into the soapy water and clean the sore.
- Wash around the edge of the sore first, then wash from the centre out to the edges until it looks clean. If possible use separate pieces of cloth for each wiping.
- If the wound has pus or blood in it, cover with a clean piece of cloth or a strip of cloth (torn as a bandage) after cleaning; leave it loose and change it everyday. If the sore is dry, leave it exposed.
- Raise the area with the sore as often as possible to relieve it from pressure of the bedding (this can be done by changing the patient's position in bed).

Some home treatments, such as pawpaw, honey and sugar, are very useful in the treatment of sores.

Home Treatment for Pressure Sores

Papaya	This fruit contains chemicals that help make the old flesh in a pressure sore soft and easy to remove.
	• Soak a piece of cloth in the 'milk' that comes from the trunk or green fruit of a papaya plant. • Pack this into the sore. • Repeat it two or three times as necessary.
Honey and Sugar	This mixture will kill germs, help to prevent infection, and speed healing.
	• Mix honey and sugar into a thick paste. • Press this deep into the sore and cover with a clean cloth (molasses or thin pieces of raw sugar can also be used). • Clean out and refill the sore at least twice a day. If the honey or sugar mixture becomes full of liquid from the sore, it will feed germs rather than kill them.

General Care of Wounds and Sores

General wound care is provided to promote healing.

The requirements and procedures are the same as those for pressure sore care. However, the caregiver may utilise dressing solutions prescribed and obtained from hospitals/health institutions.

More importantly, you must observe infection prevention procedures by:

- Protecting hands with gloves or plastic bags
- Rinsing soiled items in cold water, and then pouring this water into the toilet/latrine
- Soaking soiled items in jik 1:6 concentration for ten minutes
- Putting soiled clothing into a container with soap and pounding them vigorously with a stick
- Boiling the soaked linen for ten minutes
- Rinse and then dry in the sun

While handling sores, wounds, abscesses and boils, you should be careful with the handling of body fluids. The fluids include blood, pus, urine, vomitus, stool, sputum, saliva, vaginal fluid and semen. These fluids can be found in beddings, bandages, clothing, sanitary pads or cotton wool.

Other Tasks

Always use gloves and other protective materials. If the items are reusable, make sure you decontaminate, clean them and sterilise them. You should teach all caregivers how to prepare decontamination solutions such as jik. If the items are not to be reused they should be burned, buried or disposed of in a pit latrine.

Other chores which you need to undertake for HBC patients include:

- General house cleaning and clearing of the compound.
- Ensuring a constant supply of clean and safe drinking water as well as water for other purposes in the home.
- Good food storage and food security.
- Proper waste and garbage disposal and the control of vectors to diseases such as malaria, typhoid, shigellosis, amoebiasis and even plague.

One of your biggest roles in the provision of basic nursing care for HBC patients is training of the family members, volunteers and community based health workers on how to carry out the different activities.

Nutrition for Home-based Care Patients

It is almost impossible to put too much emphasis on the importance of good nutrition in the management of HIV/AIDS and other chronic sick patients at all stages. Good nutrition is essential for the wellbeing of the individual. Attention to nutrition should begin as soon as the person is diagnosed with a disease.

The patient should be informed very early that eating well means more than just having a full stomach; it means eating the right combination

of foods to provide the nutrients the body needs to function properly. Sick people have an even greater need for a well balanced diet than healthy persons, but with proper nutrition, they can generally stay healthier longer.

Components of a Balanced Diet
Foods can be divided into three basic categories, with each playing its important role in nutrition.

Body Building

These are foods that support the function and formation of general structures of all tissues, including muscles, bones, teeth, skin and nails.

They include animal products like meat, fish, milk, chicken, eggs and plant proteins like beans, peas, groundnuts, green grams, lentils, sim-sim (sesame).

Energy Giving

These are foods which provide the body with energy.

They include starchy foods like potatoes, yams, cassava, bananas, sugar, wheat, rice, maize meal, bread, chapati, pasta, as well as fats and vegetable oils.

Protective
They provide vitamins and minerals that are key in strengthening the immune system.

They include fruits like oranges, pineapples, pawpaw, mangoes and greens/vegetables, like carrots, tomatoes, all local green leafy vegetables, cauliflower, cucumber, eggplant (biringanya) and cabbage.
In addition, water and minerals like iron and calcium are essential to good nutrition. Water is necessary for bodily functions and to prevent dehydration. Minerals are necessary elements of the blood, bones, teeth, and body processes.
Examples of foods that are rich in iron are fish, meat, and dark green leafy vegetables. Calcium is derived from milk, groundnuts, and eggs. Other important minerals like potassium, selenium, zinc, and magnesium are vital for survival.

Why is a well balanced diet important?
A well balanced diet is important for:

- Repairing worn out body cells
- Providing energy
- Protecting the body against infection
- Improving the wellbeing of the patient
- Stimulate appetite

In general the foods should be familiar, that is, what the family uses daily, is available and accessible. There are a number of factors that may influence the nutrition of HBC patients. It is important to be aware of them so that you can assist the patient accordingly.

In most cases, people with some chronic illnesses like HIV/AIDS need food supplements.

Factors that Influence Nutrition
People living with HIV/AIDS and chronic diseases like cancer and diabetes have many questions about their diet.
Loss of appetite or difficulty in eating can be very distressing for the sick person, making them feel helpless and ineffective. The loss of weight can cause much fear.
All the foods the family is familiar with can be combined to meet the nutritional requirements of the patient and hence allay the fears and answer their many questions.

What factors can influence the nutrition of a HBC patient?
Several factors may influence nutrition. These include:

- Cultural beliefs, taboos and practices relating to foods.
- Economic status of the family and community.
- Natural climatic changes like drought and floods.
- General conditions of the patient that decreases the food intake: mouth sores, lack of appetite, pain when swallowing, nausea, abdominal pain, diarrhoea, neurological diseases/anorexia.
- Factors that increase the metabolic demands: fever, acute illness and HIV-infection itself.
- Side effects of drugs used by the patient, for example, gastrointestinal intolerance, nausea, dyspepsia, vomiting and diarrhoea. Major side effects like pancreatitis and hepatitis.

- Dietary restrictions due to the illness or the drugs the patient is using.

What can you do to improve the nutritional status of a HBC patient?
Though it is difficult to overcome some of the economical and environmental barriers, you can take the following actions to improve the nutritional status of the patients:

- Assess the nutritional status of all patients.
- Identify patients who require more extensive nutrition management.
- Identify 'high risk' signs and symptoms to patient's nutrition.
- Work with the patient to develop an individualised nutrition care plan and implement it.
- Improve food intake by diagnosing and treating any signs and symptoms that interfere with food intake.
- Counsel patients about which foods to eat.
- Educate AIDS patients on ART and drug-food interactions.
- Identify other sources of nutrition supply to the patient, for example, if possible income generating activities, support from the community members, link with programmes that provide food to patients with chronic illnesses.

High Risk Signs and Symptoms
You should train all caregivers to look out for the following high risk signs and symptoms and take the appropriate action immediately.

These are:

- Appetite loss (for a long period of time, for example, several weeks)
- Weight loss of more than 5-10% of the body weight in less than two weeks (except in diabetes)
- Diarrhoea
- Pain when swallowing (odynophagia)
- Difficulty swallowing (dysphagia)
- Dehydration
- Clinical signs of nutrient deficiency
- Loss of muscle mass

Common Nutrition Problems
The most common problems associated with poor nutrition are:

- Severe weight loss as a result of poor appetite leading to failure to meet dietary requirements. This can be overcome by encouraging small, frequent feeds.
- Anaemia due to poor dietary intake or lack of iron in the diet. It may be as a result of infections such as malaria, hookworm or other parasite infestations that destroy red blood cells.
- Skin conditions due to lack of vitamins in the diet, for example, scurvy and pellagra.
- Failure to thrive or maintain a reasonably good level of health.

Common Feeding Problems in HBC Patients
During certain illnesses, such as HIV/AIDS, patients may have extra difficulty eating or may need to eat different types of food. The following advice needs to be given to maximise food intake.

Diarrhoea (Loose Bowels)

- Eat soft mashed foods that are easy to chew and swallow
- Eat small meals, five or more times a day
- Drink a lot of fluids to prevent dehydration (water, tea, uji, juice, home made rehydration solution)
- Eliminate dairy products to see if they are the cause
- Decrease high fat foods

Sore Mouth and Throat

- Eat soft mashed foods
- Avoid citrus, tomatoes and spicy foods
- Avoid sugary foods and milk
- Eat food at room temperature or cooler

Fever and Loss of Appetite

- Choose locally available high protein food and fruit juices
- Eat small portions of preferred soft foods with a pleasant aroma and texture throughout the day
- Eat nutritious snacks whenever possible
- Drink liquids often

Nausea and Vomiting

- Eat small nutritious snacks during the day
- Eat tosti and other plain dry foods
- Avoid foods that have a strong aroma
- Eat simple boiled foods, for example, porridge
- Drink liquids often

Fat Malabsorption

- Eliminate oils, butter and margarine and foods that contain or are prepared with them
- Eat only the leanest available meat
- Eat fruits, vegetables and other low fat foods

Fatigue and Lethargy

- Ask for assistance from a family member, friend or neighbour to assist
- Set time each day for eating
- Eat slowly
- Eat fresh fruits that don't require preparation

Severe Diarrhoea

- Drink liquids frequently, dilute fruit juices

Seek help when the patients are not able to eat enough to maintain their strength.

Nutritional Advice for Diabetic Patients

Studies have shown that many complications of diabetes can be prevented or delayed through effective management. This includes lifestyle measures such as a healthy diet, physical activity, the avoidance of being overweight and obesity and not smoking.

Diabetes therapy is not only about lowering blood glucose levels, but also about the overall reduction in the risk factors for diabetic complications. This includes the control of blood pressure and blood lipids. Thus diabetic patients require lifelong care and management.

Diabetes education plays a key role in empowering people with the knowledge and skills to manage their own condition effectively. In order to prevent or delay complications, people with diabetes may have to modify their lifestyle.

People with type 2 diabetes often require oral drugs, and sometimes insulin to control their blood glucose levels. People with type 1 diabetes require insulin to survive. Although insulin has been designated an essential drug by WHO, it is not yet universally accessible to all those who need it in many developing countries. In some of these countries people with diabetes die because they cannot get the insulin they need to survive.

Several approaches have been tried to prevent type 1 diabetes but none of them have been known to work. The prevention of type 1 diabetes remains an objective for the future.

However, simple lifestyle measures have been shown to be effective in preventing or delaying the onset of type 2 diabetes.

Increased Physical Activity

It is estimated that currently 60% of the world's population do not do enough physical activity, with adults in developed countries most likely to be inactive. Studies have shown that just 30 minutes of moderate exercise a day, five days a week, is enough to promote good health and reduce the chances of developing type 2 diabetes.

A Healthy Diet

Eating between three and five servings of fruit and vegetables a day and eating less sugar and saturated fats has been shown to be important in maintaining appropriate weight, and therefore lowering the risk of type 2 diabetes.

Weight Loss

More than one billion adults worldwide are overweight, at least 300 million of whom are considered obese. It is estimated that well over half of all cases of type 2 diabetes could be avoided if excessive weight gain in adults could be prevented.

Non-Smoking

People with diabetes are at greater risk of dying from coronary heart disease, stroke and peripheral vascular disease than people without the condition. Smoking increases the risk even further.

For both types of diabetes, nutritional advice is necessary.

The main aim is to keep the glucose levels under control.

The patient with diabetes needs to be given the same advice mentioned above for preventing type 2 diabetes. It is important to understand that people with diabetes have the same nutritional needs as anyone else.

In addition to exercise and medication (insulin and oral diabetes pill), nutrition is important for good diabetes control. By eating well-balanced meals in the correct amounts, a person with diabetes can keep the blood glucose level as close to normal (non-diabetes level) as possible.

Clinical Care

Clinical care in the context of HBC is the continuation of medical care in the home.
The idea is to ensure the continuity of the care and treatment the patient was receiving from the health facility. This is referred to as the continuum of care. It is collaborative care provision by the health care workers, the family members and the community.
The objectives of clinical care are as follows:

- Ensuring early detection, treatment of opportunistic infections and other complications that occur as a result of chronic illnesses.
- Reducing the suffering from conditions associated with the chronic illness like HIV/AIDS infection, cancer, diabetic, hypertension and other chronic illness.
- Protecting the patient against further infections especially during a long hospital stay.
- Preventing transmission of infections from the patient to the health workers, relatives and friends and vise versa.
- Ensuring that drugs prescribed to the patient by the clinician are administered at home according to the regimen of intake.

The following table is a summary of some symptoms that people living with HIV/AIDS may present with. Some of these symptoms may also be found in patients with other chronic illnesses. Also included is the care and medicines they may receive. This is adapted from Lamptey, P. et al, 1990, the handbook of AIDS prevention in Africa, AIDSCAP/FHI, Virginia. You can look for this book and read it further. These symptoms may appear in other HBC patients as well.

Symptoms, Care and Treatment in PLWHAs

	Symptoms	Care	Medicines
1	Cough/difficulty in breathing/chest pain	Physical therapy, treatment for TB and pulmonary infections. Drink a lot of fluids, postural drainage.	Depend on the diagnosis. Antibiotics like cotrimoxazole adrenaline, cough syrup, analgesics, anti TB
2	Diarrhoea	Nutritional support, treatment for infections, skin care around the anus and buttocks, fluid replacement	Septrin, flagyl/ORS
3	Weight loss	Nutrition support and care	
4	Vomiting	ORS, oral care, fluid replacement	Antiemetics, e.g. stemetil
5	Pain	Dietary changes, comfort measures like distractive activities, position change	Analgesics, antacids
6	Immobility, weakness	Family assistance with daily activities, skin care, nutritional support	Crutches, a wheelchair, walking skills
7	Fever/night sweats	Treatment for infections, comfort measures like turning the patient and keeping the patient clean and dry, increase fluid intake	Antipyretics

Besides medical treatment, physical exercise is important for

home-based patients. It makes muscles well toned. In addition, physical therapy helps in:

- Improving blood circulation and prevention of clot formation
- Improving digestion
- Prevention of joint stiffness and muscle wasting
- Preventing of secondary infections, for example,
  hypostatic pneumonia
- Relaxing the patient

Several exercises are available for you to choose from and apply to the patient or teach the caregiver.

Counselling and Psychospiritual Care

Counselling helps people to understand and deal with their problems and communicate better with those around them.
You have already learnt about communication and counselling in module one on general nursing.
You should utilise the knowledge, skills and attitudes you acquired in that unit to care for HBC patients.
Psychospiritual support is also an effective means of helping patients to cope with their feelings. Spiritual concerns about impending death may give rise to an interest in spiritual matters and a search for religious support.
Spiritual care may take various forms. These may include praying together, reading from the scriptures of the Koran or bible, etc.
In the context of HBC there are several types of counselling:

- Pre and post-test HIV counselling (Voluntary Counselling and Testing)
- Behaviour change counselling
- Group counselling
- Family counselling
- Supportive counselling
- Crisis counselling
- Psychological trauma counselling
- Spiritual/pastoral counselling
- Death and bereavement counselling

The objectives of counselling and psychospiritual care in HBC are to:

- Control the spread of HIV/AIDS through information dissemination, promotion of safer sex, advocacy for behaviour change and encouragement of better health
  seeking behaviour.
- Help the patient to come to terms with the illness and to adopt a positive living attitude.
- Help the patient make well informed decisions, for example, about sex and sexuality.
- Offer psychological and spiritual support to patients and their families.
- Help patients to assess and talk about what their life has meant to them through their belief systems, whatever they may be.
- Help patients accept the need to talk to family members about their condition and future plans.

A good counsellor must have the following tools (basic counselling skills) to be effective:

- Self-awareness
- Communication (verbal and non-verbal)
- Active listening
- Attending skills
- Paraphrasing
- Reflecting feelings
- Questioning
- Clarifying
- Summarising

In counselling, the focus is the person, not the disease. You should be able to listen actively and respond with empathy. Because of the feelings that your patients may have, you should be able to influence your patients to be religious. This gives peace to the mind. Forgiveness and reconciliation replace anger and guilt. You can invite spiritual persons to come and talk to the sick person.
Many illnesses cause emotional, physical, and psychosocial pain and stress.
You have already covered some of the stages of stress.
These include:

- Shock, fear and denial.
- Accepting, withdrawal, depression, suicide.
- Accepting help, making plans about self and family.
- Becoming ill and weak.
- Anger, despair and/or sadness.

Counsel your patients and provide them with the basic physical needs which you have already covered. If possible provide material support or invite those who are able to provide the support.
While communicating, you should be aware that this is a two way process.
It should involve a response from the patient.

You should be able to persuade, inform and assist the patient to take action.

Social Support

You have already learnt that to be able to take care of anxiety, anger, guilt or distortion in imagination, the patients need assurance and acceptance by their families and the community.

How can you show your patients that you have accepted them?
Patients should be included in day to day activities.
They should eat with the family, eat out in restaurants, go to social events, and celebrate events. Let the patients belong to clubs, groupings
and other social structures. Those who are able to work should be encouraged to do so. Those who want to take over responsibilities should not be denied the chance.
When patients have a terminal illness they should be assisted to prepare for their deaths with good psychospiritual care and support. Many patients can live fulfilling lives and die peacefully. Patients should be given the opportunity to write their own will.
You may be confused and wondering why all these things are done for patients who are already out of hospital and dying anyway. You need to remind yourself that when you provide services that meet patients needs, you help them to:

- Meet material/physiological needs
- Provide a sense of belonging
- Reduce anxiety
- Improve on relationships
- Ensure a high quality of care

This ultimately contributes to a patient's quality of life.

You need to refer back to unit three of module one where you can read more about palliative care. This kind of care can be extended to the home.

More specifically read about pain management.
While providing HBC, ensure that you do not suffer from burn-out.

SECTION 5: COMMUNITY MOBILISATION

Introduction

Providing HBC is a difficult job. If you find providing care in the health facility draining, just imagine how it must feel for families who care for their loved ones at home.
This is why everybody in the community must be involved and taught how to provide HBC.

Objectives

By the end of this section you will be able to:

- Define community mobilisation
- Explain the importance of community mobilisation
- List factors that can hinder community mobilisation
- State key community mobilisers
- Describe the process of community mobilisation
- Describe community mobilisation, involvement, partnership, ownership and sensitisation

What is Community Mobilisation?

It is the process of getting the community incorporated to fully participate in the programmes for the purpose of ownership and sustainability.
HBC is provided to patients in their communities. Communities are therefore required to initiate and sustain activities, which support it.
The community must participate and get involved in the decision making process, planning, organisation, implementation and monitoring of activities associated with HBC.

Importance of Community Mobilisation

List three reasons why community mobilisation is needed?
The importance of community mobilisation is to:

- Prepare the community for participatory action.
- Create awareness about their health problems, causes, prevention and care required.
- Identify problems together with the community and seek means of solving them.

- Gather information about the community's beliefs', feelings, myths and misconception of their problems.
- Identify available resource and how the resources can be used to solve the problems.
- Establish relationships within the community.
- Ownership and sustainability of the programme.

HBC has the following advantages:

- It helps to counter the stigma (like for PLWHA and what their families face), so that they can live without fear or discrimination.
- It involves the patients to fully participate in their care, thus helping them to 'live positively'.
- It can increase community awareness and thus helps prevent the further spread of infections like HIV.
- It facilitates the mobilisation of local resources, and it brings the community together in the care of the patients, and their dependants.
- It leads to community empowerment, ownership and sustainability of the services.

List three factors that can hinder community mobilisation.

Factors that can hinder community mobilisation are:

- Lack of involvement in problem identification
- Lack of appropriate information
- Lack of resources
- Resource mismanagement
- Insecurity
- Lack of social structure
- Communication barriers
- Poor health
- Lack of ownership and sustainability
- Lack of interest
- Poor infrastructure
- Lack of knowledge of other partners
- Social differences (religious, education, cultural, economic, political, tribal)
- Poor leadership
- Man made or natural disasters
- Poor timing

Possible solutions are:

- Training and skills development.
- Provision of relevant Information, Education and Communication (IEC) materials.
- Involvement of target group to design appropriate information.
- Encourage Income Generating Activities (IGA) and skills development.
- Identification and use of appropriate communication channels/methods.
- Ensuring participation and involvement from the beginning.
- Community sensitisation and mobilisation in all activities.
- Putting in place mechanisms for disaster preparedness.
- Proper planning, monitoring and evaluation of activities.

Community Mobilisers

Community mobilisers are resource persons or groups who you can work with in order to promote home-based care activities.

List three community mobilisers in your catchment area who you can work with.

Your list should have included some of the following
individuals or groups:

- Local administrative officers and leaders such as chiefs, assistant chiefs, councillors and area members of parliament.
- Leaders of various programmes, for example, district AIDS control committee.
- Religious leaders.
- Organised groups, for example, religious groups (women's guild), youth groups, women groups (the Maendeleo ya Wanawake organisation).
- Community based health workers.
- Community Own Resource Persons (CORP), for example, traditional birth attendants and traditional healers.
- Other ministries workers like social workers, school teachers.
- Patients themselves.

Mobilising the community for HBC services can be done through a variety of ways.

List five methods of mobilising the community.

Some of the ways of mobilising the community are:

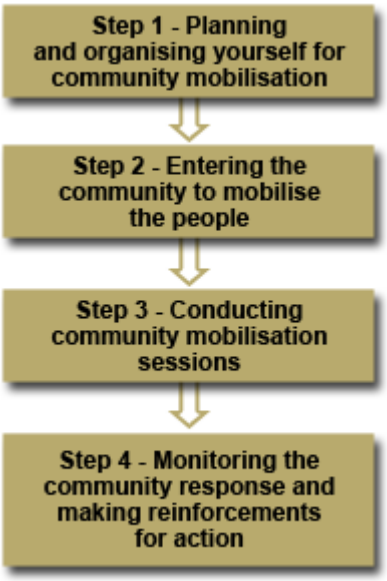
- Meeting at specific prefixed times.
- Existing committees, such as the village development committee.
- Home visits to groups and individuals.
- Announcements at church, mosque, temple, and school.
- Group community talks.

It is well understood that to be effective at mobilising the community, you should start from the top. This gives the leaders their recognition and also allows them to use their influence to get the people together.

The Process of Community Mobilisation

There are four steps involved in community mobilisation.

These are:



Step 1: Planning and Organising Yourself for Community Mobilisation

The first step in community mobilisation is to plan and organise yourself for the exercise.

This you do by:

- Knowing about and believing in HBC so that you can explain it well to the people in the community.
- Knowing the community leadership and those who can influence the acceptance and implementation of HBC services.
- Preparing yourself psychologically, emotionally and physically for involvement/commitment to work with PLWHA and chronically sick patients. Most of them are people who are coping with a terminal illness.
- Identifying resources and preparing them for community mobilisation according to the rationale and objectives of HBC services. Making arrangements such as the venue (according to the plan or process you have decided on, which can be home visits, community gatherings, or church/mosque/temple meetings).
- Sending out information to the relevant persons involved, for example, to the leaders, depending on where you have decided to begin mobilisation.
- Confirming appointment date and time, being on time and not keep people waiting.

Step 2: Entering the Community to Mobilise the People

As a community health worker, you are already well known.

Because you have been working in the community, this may not be a complicated step. Nevertheless HBC is a different activity from your normal duties, so take care to plan carefully.

Depending on the mode, venue and type of group or individual you have decided to mobilise, it is important to note the following. Remember to show respect to the community and individuals and be willing to acknowledge and deal with the different feelings about HBC services.

Step 3: Conducting Community Mobilisation Sessions

- Greet people according to their culture.
- Find out what they know about HBC. Do not assume that they do not know anything; they could have experiences that may be useful for the programme.
- Give correct and complete information about HBC services.

- Allow the group/individual to express fears, make contributions and suggest approaches. Together with them make practical agreements on the way forward.

Step 4: Monitoring the Community Response and Making Reinforcements for Action

The fourth and final step involves monitoring the community response and making arrangements for action.

This you do by:

- Watching for signs of acceptance of HBC, for example for PLWHA:
  - Community asking for more information about HBC.
  - Community taking interest in supporting the activities for PLWHA.
  - People volunteering to act or work with the community health workers.
  - People voluntarily seeking assistance to take care of PLWHA.
- Acknowledging the positive responses, and finding out more about the reasons for negative responses, in order to clarify issues and further enlighten those concerned.
- Finally, giving feedback to the relevant persons concerned, such as your immediate supervisor, the community.

Community Sensitisation and Motivation

The first and second steps in the process of community
mobilisation are to organise yourself to enter the community and to mobilise people.

You cannot succeed unless you get people to understand what HBC is. These are the people who will act as advocates of HBC. Community members must clearly understand both your role as well as theirs, otherwise they will view you with suspicion.

The members must also know the importance of their actions.

They need to understand what they stand to gain from the process in the short and long term. If people do not understand their role and why they should participate they may withdraw, causing the initiative to die out immediately when you leave.

Community based health activities, for example, HBC can die out if there is no motivation.

You can work around this by:

- Identifying traditional beliefs, which are interfering with HBC
- Explaining the disadvantages of not participating
- Countering negative attitudes by some people by involving their friends and relatives
- Seminars and workshops for the leaders
- Helping plan for trips for staff from the health facility

Failure of activities can also occur due to problems of:

- Transport
- Punctuality and poor management
- Inaccurate orders for supplies and inadequate equipment
- Long distances between facilities and communities resulting in less contact and communication
- Communication barriers
- Natural and man-made calamities, for example, bad weather and famine making some communities shift from one area or shift their attention
- Lack of teamwork
- Poor referral system

You can work round these problems by:

- Planning good orders and requisitions for supplies for HBC.
- Being punctual when required.
- Having mobile clinics and using local leaders to pass on instructions and other correspondence.
- Having frequent meetings, discussions and involvement among health facility staff, community members and other stakeholders.
- Establish a well structured referral system.

Besides this, when sensitising the community, you can give out handouts; attend barazas, go to schools and churches, use film and other media and make public announcements through radio programmes about the diseases to ensure adequate knowledge and motivation.

Community Involvement, Participation, Ownership and Sustainability

When you start a programme such as HBC in the community,
you must incorporate the community right from the start to fully participate in the project for the purpose of ownership and sustainability.

If they understand the project and its importance well, they will make it their own. They will know that HBC is intended to help them and their families.
When this happens the community will feel motivated and willing to invest their energy and resources, to continue with the project.

SECTION 6: COMMUNITY RESOURCES

Introduction

In this section you will look at how to identify and mobilise community resources.

Objectives

By the end of this section you will be able to:

- Describe the types of resources available in your community for HBC
- Identify their sources
- Explain how you would mobilise these resources for HBC
- Describe the importance of appropriate technology in HBC

Resources Needed for Home-based Care

To effectively provide HBC, there are certain resources that are needed. These resources can be broadly classified into four categories or the 4Ms.

- Money
- Materials
- Minutes (Time)
- Manpower

Money

Money is an important resource in the provision of HBC.
Diseases like AIDS and cancer are long, expensive and debilitating illnesses. They eventually render the affected and infected incapable of participating in gainful employment. Yet they need money to pay for services or to buy goods such as food, clothing, drugs and other materials. They may also need to pay for health, legal and other services.
In the HBC system, money can be provided by the family, the community, the government or through insurance. It is unfortunate that many insurance organisations discriminate against patients with terminal illnesses. However you should work hard at sensitising the community about the needs of the patients and how they can
be met.
In Kenya, raising money through Harambee is common and community members can come together to raise money to pay a hospital bill, buy a wheelchair or crutches. Whatever the source, your role is to sensitise members and patients on the need for the funds, and the likely sources of the funds.

Materials
Many illnesses that require HBC tend to render the affected persons incapable of meeting even the most basic material needs of everyday life. For instance a PLWHA may become too weak to fetch water or firewood, or run errands and do shopping.
Food production may be affected due to frequent sickness from opportunistic infections. Thus, the material resources required to assist can be in the form of food, cooking fuel (for example, firewood), water, or money for drugs and other purposes.
These materials may or may not be readily available.
Within communities, the materials can be bought by individuals, communities or families. They can also be donated by organisations. Some non-governmental organisations may be willing to donate the materials or money to procure them.
Some of the materials can also be obtained from the hospital.
Right now there is a cost sharing policy in Kenya. You therefore need to explain to your patients how they can obtain these materials to avoid disappointment.

Minutes (Time)
Caring for people who need long term care, can be time consuming and emotionally draining. The caregiver may have little time left to attend to other important aspects of everyday life, like working on the shamba (farm), going to work, school, or running errands.
The constant demands can be very stressful.
Time is one of the most essential resources known to man. To be able to accomplish tasks, time is essential.

How do you create time?
Make time by planning ahead and organising your activities to fit into the allocated time schedules, being punctual, being specific, restricting activities to those planned for, involving more people to cut down on time required for one activity.
Being present is a major source of psychological and moral support. Friends and relatives should understand the importance of sparing time not only to help out as needed, but also just to be with the patient and the family members.

Manpower
Manpower is another important resource, which is often overlooked. These are the individuals who voluntarily spare their time to assist the patients, their families and children.

List four people who can assist the patient in HBC.
The following people can be counted as human resources:

- Health workers at all levels.
- Family members, relatives and friends.
- Community leaders/organised groups (e.g. In Kenya, Maendeleo Ya Wanawake Organisation leaders).
- Spiritual, political, and administrative leaders/groups.
- Community volunteers including students from neighbouring institutions.

These people can provide a variety of services. It is important for you to understand what service each person can provide so that you can refer the patient appropriately.
In the later stages of a disease such as AIDS people become too weak to support themselves. This condition calls for continuous assistance from relatives and friends.
A volunteer care provider also needs continuous support from the community, morally and materially.
Having seen the different types of resources you require to support HBC, you will now look at their sources and how to mobilise them.

Sources of the Required Resources

As you can see, resources are required at every level of the HBC continuum. The players at each level are expected to contribute to the fullest extent possible.

Individual
From the individual:

- The home environment.
- A home care kit (depending on specific needs).
- Time to devote to care and support.
- Sharing of information and experience as well as advocating for behaviour change.
- Cooperation and openness so as to share responsibility and confidentiality.

Family
From the family:

- Basic needs, for example, food, clothing, shelter and medicine.
- Time, knowledge and skills of caring.
- Social/psychological support.
- Physical care.
- Financial support.
- Administration of medicine.

Community
From the community:

- Social support.
- Spiritual support.
- Material support.
- Financial support.
- Time, knowledge and skills of caring.

Resource Mobilisation for Home-based Care

The resources that have been mentioned are not all easily available. As a community nurse, you need to know what is available, where and how to obtain it.
Some of the materials can be sourced at your health facility, at the community level, government, organised groups, at the patient's home or with an NGO. You also need to understand the process of procurement. Get to know the procurement procedures and the paperwork that needs to be completed. You will have filled in various forms such as the S11, S12 or S13, which are used for procuring drugs and supplies from the hospital pharmacy or from the local medical stores. You may also have procured vaccines and family planning items. You need to do all you can to mobilise the resources needed at the local level. If the patient needs mosquito nets, you can link the caregivers with NGOs that give them out. Even some drug manufacturers give out free drug samples.
People in the community can also be mobilised to assist in HBC. These could be trained volunteers, students or untrained community members who are willing to be trained. As a community nurse, you must be ready to put in additional effort to mobilise the resources necessary to provide HBC for your patients.

Appropriate Technology

Technology is important, low cost technologies that assist with food presentation, processing and storage, water collection, pumping and storage, home improvements and energy conservation.

List three low cost technologies which you have seen in use in your community.

Low cost technologies

- Solar food and crop dryer/fixed and portable
- Fuel fried dryer
- Maize crib for post harvest storage and drying
- Traditional silo
- Groundnut sheller
- Hand winnower
- Hand mill
- Cement water jar for storage (small and large)
- Granary basket water tank
- Flap value water pump
- Rope and washer water pump
- Shallow well pump
- Deep well pump
- Bicycle pump
- Kerosene tin oven
- Raised cooking platform
- Solar reflector cooker
- Charcoal water filter
- Evaporative charcoal cooler
- Raised sink and utensil drying table
- Hanging storage shelves
- Hanging pot coconut sheller
- Hanging fly proof food safe
- Homemade improvised bedpans and commode

In HBC it is very important to sensitise the caregivers as well as patients on how to improvise and use affordable appropriate technologies that may be useful.

SECTION 7: REFERRAL AND NETWORKING FOR HOME-BASED CARE

In this section you will look at referral and networking for HBC.

When you work in a community you cannot work alone. The work is too much and you may not have all the resources necessary to accomplish your goals. In order to be effective you must network and refer your patients. Referral and networking are essential to ensure continuity of quality care for the patient at all times

Objectives

By the end of this section you will be able to:

- Describe the community networking for HBC
- Explain the importance of networking for HBC
- Describe the referral system in HBC
- Explain an effective referral channel for HBC patients
- State some of the constraints in referral and networking

Networking for Home-based Care

What is a network?

A network is a group of individuals or organisations that work together, undertake joint activities, or exchange information in order to strengthen and extend their individual capacities.

Networking has the following advantages:

- It promotes unity, harmony and understanding among the groups or individuals.
- It provides a learning experience, people and groups can learn from each other.
- It can assist individuals and groups to address complex problems by involving others.
- It promotes peer support.
- It reduces duplication of work.
- It reduces the isolation of individuals or groups working alone and provides a forum for consultation.

In HBC, several networks exist. There are networks for individuals working with PLWHA, cancer patients, and so on. Several networks may also exist for people infected and affected by, for example, HIV/AIDS.

As a community health nurse, you can facilitate networking in the community where you work by doing the following:

- Establishing networking at different levels, for example, district, location and village. Involving all institutions and groups working with the disease, such as HIV/AIDS.
- Facilitating the exchange of information between one group and another. This would prevent repetition and duplication of efforts.
- Making sure referral channels exist, for example, from one centre to another. Letting each organisation or individual be aware of the existence of the others.
- Ensuring that the basic essentials are available for the betterment of the patient who requires HBC.

You should never forget to establish the correct links between one group and another. This is where your community mobilisation skills matter. Also remember to share your experiences and information as often as possible.

Referral

Referral is an effective and efficient two way process of linking a patient from one caring service to another.

As mentioned earlier, you may not be able to do all things by yourself or indeed at the same place. There may be a time when you need to send your patients or community members to other institutions or people for further care.

Before you refer a patient, you should have recognised the signs and symptoms or the need for referral.

Why are patients referred?

Patients are referred for the following reasons:

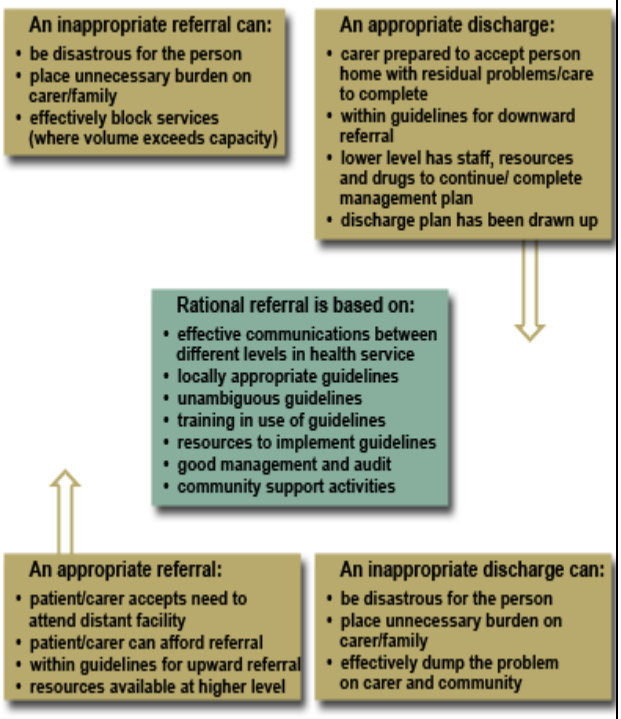
- When services or resources within reach are not able to meet the patients' immediate needs.
- In cases where the acute phase of the disease has been dealt with, and it is considered safe to transfer care to other caring services/organisations within the community.
- When the caregiver experiences burnout and has no access to counselling services for personal growth.

- When the caregiver has limitations in meeting certain needs of the patient, for example, based on religious beliefs.
- For better, more competent management in the next stage of referral.
- For specialised care in a hospital setting, especially if the patient is deteriorating.
- For continuity of care from the health facility downwards, or from family level back to the health facility.

Referral to and from the family/community should be well arranged to avoid unnecessary burdens to the patient and family.

The patient and the family should be prepared for the discharge and told what equipment and supplies they require for HBC.

The HBC team should also inform the family that in case of a change of condition of the patient, the patient will be referred to a health facility including what the family requires for the referral.



You may have undertaken the referral of patients before.

What resources did you require before you could refer your patients?

You need the following resources:

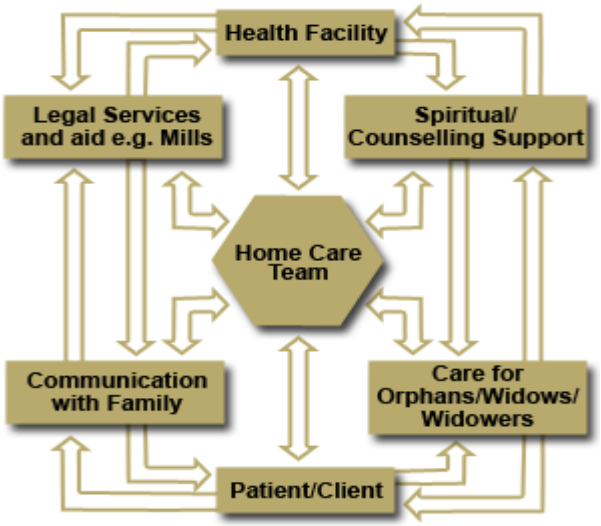
- Referral forms that contain information on patient particulars, disease condition, why the referral, who has referred and to whom, care which has been provided before the referral and a small note requesting for feedback. The form should be easy to understand.
- Information about where you are referring your patient to.
- A record of all the referrals that have been undertaken.

How do you go about referring your patients?

1. Identify those that need referral.
2. Decide where to refer them to and make arrangements by calling in advance.
3. Explain to the person being referred about the referral and the referral arrangements, for example, what time they will leave and how they will travel.
4. Prepare the patient for referral. If the patient will be admitted they may need to take certain items, such as X-ray reports, lab reports and other things required by the institution or the patient themselves.
   Make transport arrangements for them.
5. Allow the patient to express themselves and try to answer their concerns genuinely.
6. Fill in the referral form, obtain an escort for them and ask them to give you feedback about any actions taken. Thank and bid them farewell.
7. Follow up on the referral and document what happened to the patient.

Is this what you normally do?

If not, you need to practice it and follow the steps.



Despite the importance of referral and networking processes, there are many constraints to their effectiveness. Next you will look at some of their constraints and how they can be overcome.

Constraints/Limitations in Referral and Networking

There exists a number of constraints that can hinder effective referral and networking.

- Competition among various organisations, so that they do not disclose what they are doing and which services are offered. They prefer to work in isolation.
- Lack of evenly distributed community HBC programmes, with the result that some areas lack services and some are overcrowded.
- Lack of resources needed for patients to travel from one point to another.
- Lack of referral and networking guidelines as well as standardised referral procedures.
- Ignorance among family members about HBC due to lack of awareness and proper guidance.
- Fear of breach of confidentiality.
- Stigma and discrimination associated with some chronic illnesses like HIV/AIDS, which makes PLWHA reluctant to accept referral to certain facilities.
- Poor mobilisation and sensitisation of partners.
- Lack of confidence in the institution/service where referral is made.
- Lack of updated and proper directory of referral and networking.
- Lack of knowledge by people referring on how and when to refer or network.
- Cultural, social, religious and economic factors.
- Poor management of referral system.

What are the solutions to these constraints?

As a health worker, you can address the constraints just mentioned by taking the following steps:

- Holding collaborative meetings among various referral and networking partners
- Giving correct/proper information on referral to the relevant organisations and a proper patient history to the referral point
- Ensuring confidentiality
- Lobbying and advocating for the rights of the patient

Appropriate referrals expand capacity and improve care.

THE END