NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF HEALTH SCIENCES

COURSE CODE: **PHS 318**

COURSE TITLE: **Communicable Diseases**

COURSE GUIDE

COURSE CODE: PHS 318

COURSE TITLE : COMMUNICABLE DISEASES

DEVELOPED

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ILORIN

COURSE GUIDE

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COURSE TITLE : COMMUNICABLE DISEASES

Introduction

A communicable or infectious disease is an illness caused by transmission of a specific agent or its toxic products from an infected person or animal to a susceptible host either directly or indirectly through an intermediate animal host or inanimate environment.

Disease burden due to communicable disease is colossal and these diseases cause heavy mortality, disability and economic loss to the country.

The emerging diseases and reemerging diseases are a global phenomenon and most of these diseases result in widespread epidemics with high mortality and morbidity.

In addition to the immense suffering to the mankind, these diseases especially the epidemics disturb international trade and economic development.

These diseases cause immense suffering and often life long disabilities, some of these diseases are caused by various pathogenic microbial agents including pathogenic viruses, bacteria, fungi, protozoa aid parasites.

Transmission of an infection may occur through one or more diverse ways including physical contact with infected individuals, through liquids, food, body fluids, contaminated objects, airborne, inhalation or through vector borne spreads.

Course Code PHS 318, which is Communicable Diseases will give you an indepth knowledge of communicable disease, its causes, transmission processes and it also talked about International health and Internationally notifiable diseases

The course guide tells you briefly what the course is about, the course materials to be used and how you can work your way through these materials. Tutor Marked Assignments (TMA) are also provided at the end of each unit.

THE COURSE:

The course is expected to intimate you with communicable disease, its etiology, epidemiology and control measures. The knowledge will prepare you for control measures in line with international measures and protocols.

Learning Out comes

Course Aim

The aim of this course is to give you an insight into communicable diseases, management of outbreak of diseases using principles of control and International health.

Course Objectives

At the end of this course, you should be able to:-

Describe etiology and epidemiology of communicable diseases.

Identify the mode of transmission of communicable diseases.

Discuss the concept of immunity and immunization.

Describe control measures and management of outbreak of communicable diseases.

Identify major communicable disease in Nigeria.

Describe International health and organizations associated with International health.

Describe the current policies and intervention strategies in disease control.

Course Requirements

In order to successfully complete this course, you are required to read and study the course units, read the reference books and utilize the internet facilities provided by the university. Each unit also contains tutor marked assignments(TMAs) which would be of tremendous assistance to you.

Course Materials

Major components of the course are:

Course guide

Module/Study units

References and further readings

Assignments

Presentation schedule.

Module/Study Units: The study units of this course are as follows:-

Module 1: General Concepts, Etiology and Transmission Process of Communicable Diseases

Unit 1: Concept of communicable diseases 1

Unit 2: Concept of Communicable Diseases 11

Unit 3: Etiology and predisposing factors of Communicable diseases.

Unit 4: Epidemiology in communicable diseases.

Unit 5: Mode of transmission of communicable diseases.

Module 2: Prevention, Immunity and Immunization.

Unit 6: Preventive measures of communicable diseases.

Unit 7: Concept of immunity and immunization in relation to communicable diseases.

Module 3: Control measures and management.

Unit 8: Control of communicable diseases

Unit 9: Management of outbreak of diseases.

Unit 10: Surveillance, tracking, investigating and reporting as strategies for control of communicable diseases.

Unit 11: Current Policies and Intervention Strategies in Disease Control HIV/AIDS, Tuberculosis and Malaria.

Module 4: Major communicable diseases in Nigeria.

Unit 12: Malaria, tuberculosis measles, poliomyelitis.

Unit 13: HIV/AIDS, leprosy, cerebrospinal meningitis,

Unit 14: Cholera, Yellow fever, Lassa fever, and Typhoid fever.

Unit 15: Viral hepatitis, Onchocerciasis, Filariasis, Guinea worm.

Module 5: International health.

Unit 16: International Health

Unit 17: Organizations associated with International Health.

The first module deals with concept, causes and epidemiology of communicable disease. This module has 5 units. Units 1&2 focus on concept of communicable disease. Unit 3 deals with etiology, and predisposing factors of Communicable disease. Unit 4 treats Epidemiology of Communicable Diseases and Unit 5 deals with Mode of Transmission of Communicable Diseases.

Module 2 deals with Prevention, Immunity and Immunization, it has 2 Units. Units 6 deals with Preventive measures of Communicable Diseases, Unit 7 focuses on concept of Immunity and Immunization in relation to Communicable diseases.

Module 3 deals with Control measures and management of Communicable diseases. Module 3 has 4 units. Unit deal 8 deals with Control of Communicable diseases. Unit 9 focuses on Management of Outbreak of diseases. Unit 10 focuses on Surveillance, Tracking and Reporting as strategies for control. Unit 11 discussed Current Policies and Intervention Strategies in Disease Control.

Module 4 deals with major communicable diseases in Nigeria. It has 4 units. Unit 12 focuses on Malaria, Tuberculosis, Measles and Poliomyelitis. Unit 13 focuses on HIV/AIDS, Leprosy, Cerebrospinal Meningitis, while Unit 14 deals with Cholera, Yellow fever, Lassa fever and Typhoid fever. Unit 15 deals with Viral hepatitis, Onchocerciasis, Filariasis and Guinea worm.

Module 5 deals with International Health. It has 2 Units. Unit 16 discussed International health, while Unit 17 deals with Organizations associated with International Health. .

Each unit consists of or one or two weeks work and includes an introduction, objectives reading materials, exercises, conclusion, summary, tutor marked assignments (TMAs) references and other resources.

The units direct you to work on exercises related to the required reading. These will help to achieve objectives of the course as a whole.

Assessment

There are three aspects to the assessment of the course.

First is the tutor marked assignment(TMA) which gives the learner a good opportunity for independent learning and if it is properly done, it adds to the achievement of the learner. You are expected to harness your information acknowledge gathered during the course, so as to assist you to excel.

The second is self assessment exercise and the third is the written final examination on the course as arranged by the university.

Tutor marked assignment (TMA)

The tutor marked assignment is the concurrent assessment, the percentage of the total score is determined by the university. You are expected to answer the TMA, which should be type written and submitted to the facilitator for grading.

The TMA is one of the prerequisite for the final examination on the course, make sure your assignment reach your facilitator on or before the deadline given in the presentation schedule. If there is need for delay contact and discuss with your facilitator for possible adjustment and extension.

End of course examination

The final examination on this course is expected to cover two or three hours duration, and has higher value about 70% of the total course grade except, the university decided otherwise. The examination will consist of questions which will reflect the type of self testing, practice exercise and tutor marked assignment problems you have previously encountered. All areas of the course will be assessed. Do a review of the whole course including TMAs that have been graded.

Course marking scheme

Assignment Marks

Assignments 1 – 4	Four assignments, best three of the four counts at 10% each = 30 % of course marks.
End of course examination	70% of overall course marks
Total	100% of course materials.

Course Overview

The course tries to cover the issues pertaining to Communicable diseases.

These are divided into seventeen (17) units spread under five 5) modules.

The units are treated under TOC based on the NOUN house style which are:

1.0 Introduction
2.0 Objectives
3.0 Main content
4.0 Conclusion
5.0 Summary
6.0 Tutor marked assignment
7.0 References/further readings

Strategies for studying the course

In studying this course you are expected to liaise closely with your facilitator guidance. In addition you are expected to go through TOC and References for further readings.

It is advisable you make use of the internet for information on the topics discussed. Make sure you do the Tutor Marked Assignments and turn them in for grading because they will form part of the overall grading for the course. They carry a substantial percentage of the total score.

Your course materials have important dates for early and timely completion and submission at the stipulated time and date. Guide against falling behind in your work.

Facilitators/Tutors/Tutorials

There will be hours of tutorials provided, in support of this course. You will be

notified of the dates, times and locations of these tutorials as well as the name and phone number of your facilitator as soon as you are allocated a tutorial group. Your facilitators will mark and make comment on your assignments and monitor you closely and if there are difficulties, assistance will be provided during the course.

You are expected to mail your tutor marked assignment to your facilitator before the scheduled date, at least two working days are required. They will be marked and returned to you as soon as possible.

If you need assistance, contact without delay your facilitator by telephone or e-mail.

You may need to contact your facilitator in the following circumstances:-

- If you do not understand any part of the study or the assigned readings.
- If you have difficulty with the self-tests.
- If you have questions or problems with an assignment or with the grading of an assignment.

You should endeavor to attend tutorials because it is an opportunity to have close contact with course facilitator, to have your questions answered. Have a question list before the tutorials so as to gain much from the discussion.

Summary

The course intends to provide you with in-depth knowledge of communicable diseases. All aspects of community health are discussed. This enables you to be involved in the control measures of communicable diseases. It enables you to function efficiently as member of the health team.

To gain the most from this course you should endeavor to apply the principles you have learnt to your understanding of communicable diseases.

I wish you success in the course and you will find it both interesting, meaningful and useful for you in your professional practice.

MODULE 1:- GENERAL CONCEPTS, ETIOLOGY AND TRANSMISSION PROCESS OF COMMUNIABLE DISEASES

UNIT 1:- CONCEPTS OF COMMUNICABLE DISEASES 1

UNIT 2:- CONCEPTS OF COMMUNICABLE DISEASES 11.

UNIT 3:- ETIOLOGY AND PREDISPOSING FACTORS OF COMMUNICABLE DISEASES.

UNIT 4:- EPIDEMIOLOGY OF COMMUNICABLE DISEASES.

UNIT 5:- MODE OF TRANSMISSION OF COMMUNICABLE DISEASES

UNIT 1:- CONCEPTS OF COMMUNICABLE DISEASES 1

TABLE OF CONTENTS

1. 0. Introduction

Communicable disease is a major concern of community health stake-holders. Communicable diseases or infectious diseases remain a leading cause of morbidity and mortality world wide with HIV, Tuberculosis and Malaria estimated to cause 10% of all deaths each year (Alakija, 1985).

New pathogens continue to emerge as demonstrated by the SARS epidemic in 2003 and the swine flu pandemic in 2009. Some of these diseases often occur as serious epidemics killing many people e.g. Yellow fever, Lassa fever, cholera and cerebrospinal meningitis. These have increased word wide and in recent years many developing countries have faced alarming epidemics of these diseases. Reasons deduced include, faster travel and greater distance covered, urbanization, overcrowding, poor nutrition and lack of safe water and sanitation.

In this unit, you are expected to have a basic understanding of what communicable disease is and, some concepts of communicable diseases.

2 0. Objectives

At the end of this unit you should be able to:-

- Define communicable diseases
- Describe concepts used in communicable disease
- Identify common communicable diseases in Adults
- Identify common communicable diseases in children.

3.0. Main Content

3.1 Definition **of communicable** diseases

A communicable disease is an infectious disease that can be transmitted from one individual to another either directly by contact or indirectly by fomites and vectors.

It can also be defined as illness caused by micro organism and transmitted from an infected person or animal to another person or animal.

Some diseases are passed on by direct or indirect contact with infected persons or with excretions.

Most diseases are spread through contact or close proximity because the causative bacteria or viruses are airborne that is they can be expelled from the nose, and mouth of the infected person and inhaled by any one in the vicinity.Such diseases include diphtheria, scarlet fever, measles, mumps, whooping cough and influenza.

Some infectious diseases can spread only indirectly through contaminated food or water, e.g. typhoid, cholera and dysentery.

Other infections are introduced into the body by animal or insect carriers for example rabies, malaria and encephalitis.

3.2. Concepts in communicable disease.

The concepts in communicable diseases describe communicable diseases, etiology and transmission process . These concepts are described as follows:-

3.2.1. Agent

An agent is any biological, physical or chemical entity capable of producing infection or causing disease. Examples of agents in relation to communicable diseases are:-

i. Bacteria e.g. E- coli, Salmonella typhimurium etc
ii. Virus e.g. HIV
iii. Protozoa causing malaria and amoebas e.g. Plasmodium falciparum , Plasmodium ovale etc.
iv. Fungi e.g. Microsporum and Trichophyton
v. Metazoans e.g. helminthes
vi. Rickeettsiae e.g. Borrelia recurrentis, Rickettsia prowazeki

3.2.2. Infections

The entry and multiplication of an infectious agent in the body tissues of man or animal resulting in cellular injury.

Infections can be acquired through the followings ways:-

1. Through the skin, mucus membrane e.g. hookworm, shistosomiasis, rabies, tetanus and sexually transmitted diseases (STD's).
2. Arthropod and animal borne including zoonosis.
3. Air borne infections e.g. measles, pneumonia and tuberculosis
4. Infection through gastro intestinal tract e.g. cholera, typhoid (water and food borne).

3.2.3. Reservoir of Infectious Agent

It is any human being, animal, arthropod, plant, soil, or inanimate matter in which an infectious agent, normally lives and multiples and upon which it depends primarily for survival, and from which the agent can be transmitted to a new host. The susceptible person or animal is presumed not to possess sufficient immunity against particular agent to prevent contacting the disease on exposure to the agent.

3**.2.4.** Resistance

This is the sum total of host mechanisms which interpose barriers to the progress of invasion or multiplication of infectious agents or to damage by their toxic products. Resistance is achieved through immunity.

3.2.4.1. Inherent Resistance

An ability to resist disease independent of antibodies or of specifically developed tissue response. It commonly resides in anatomic or physiologic characteristics of the host and may be genetic or acquired, permanent or temporary.

3.2.5. Immunity

The resistance usually associated with presence of antibodies or cells having a specific action on the micro organism concerned with a particular infections disease or on its toxins.

3.2.5.1. Passive Immunity

It is attained either naturally or by transplacental transfer from the mother or artificially by inoculation of specific protective antibodies from immunized animals or convalescent hyper immune serum or immune serum globulin (human). It is of short duration (days to months).

3.2.5.2. Active Immunity

This is acquired either naturally (by infection, with or without clinical manifestations) or artificially by inoculation of fractions or products of the infectious agent or of the agent itself in killed, modified or variant form.

3.2.6. Carrier

A person or animal that harbors a specific infectious agent in the absence of discernible clinical disease and serves as a potential source of infection.

The carrier state may exist in an individual with an infection that is in apparent throughout its course (asymptomatic carrier), or during the incubation period, convalescence and post convalescence of an individual recognizable disease (incubatory or convalescent carrier). The carrier stage can be of short or long duration (temporary carrier or chronic carrier.

3.2.7. Vector

An arthropod which transfers an infectious agent from a source of infection to a susceptible host.

4.0. CONCLUSION

In this unit, you have in depth knowledge of the concept of communicable diseases, its definitions. Some of the concepts used in communicable diseases were identified and defined. It is expected that by now, you should be able to define these conceptual words.

5.0. SUMMARY

This unit has focused on the definitions of communicable disease and some common conceptual words in communicable diseases.

Unit 2 will identify some other concepts, thus it is a continuation of unit 1.

6.0. Tutor Marked Assignment

1. Define communicable diseases.
2. Identify 3 concepts mentioned in this unit and describe them briefly.

7.0. References and other Resources

Alakija Wole (2000):- Essentials of Community/Primary Health Care Health Management. Medisuccess Publications. Benin.

The Amarican Public Health Association(1985) :- Control of Communicable Diseases in man., (An official report of the American Public Health Association). Interdisciplinary Books, Pamphlets and Periodicals. John D. Lucas, Printing Co, USA.

Other Resources:

Community Health Practitioners Registration Board of Nigreia (2006) :- Curriculum for Higher Diploma in Heath. Miral Press.

UNIT 2:- CONCEPTS OF COMMUNICABLE DISEASES 11

TABLE OF CONTENTS

1.0. Introduction

Communicable disease as mentioned earlier is a major concern of community health stakeholder. Communicable diseases or infectious diseases remain a leading course of morbidity and mortality worldwide with HIV/ AIDS

Tuberculosis and Malaria estimated to cause 10% of all deaths each year. Thus it is necessary to look at the concepts relating to communicable diseases so as to have a better understanding of their transmission process. This in turn will help in control measures of these diseases.

2.0. Objectives

At the end of this unit, you should be able to:-

- Describe concepts used in communicable diseases.
- Identify common diseases in Adults.
- Identify common communicable diseases in children.

3.0. Main content

3.1. Incubation Period

The time interval between initial contact with an infectious agent and the appearance of the first sign or symptom of the disease in question.

3.2. Incidence

Number of new cases of a disease occurring within particular population during a specified period of time.

3.2.1. Incidence Rate

Number of new cases of a specified disease diagnosed or reported during a defined period of time as the numerator and the number of persons in a stated population in which cases occurred, as the denominator. This is usually expressed as cases per 1,000 or 10,000 per annum.

This rate may be expressed as age or sex – specific or as specific for any other population, characteristic or subdivision.

3.3. Attack Rate

An incidence rate often used for particular groups, observed for limited periods and under special circumstances, as in an epidemic usually

expressed in percentage.

3.3.1. Secondary Attack Rate

Measure of frequency of new cases of a disease among close contact of known cases, secondary attack rates are usually calculated for household contacts.

3.4. Prevalence Rate.

Measure of frequency of all current cases (regardless of the time of onset) within a particular population either at a specified instant (point prevalence r ate) or during a specified period. (A period prevalence rate).

3.5. Host

Organisms (simple or complex) including man, that are capable of being infected by a specific agent.

Hosts in which the parasite attains maturity and passes its sexual stage are primary or definitive hosts.

A transport host is a carrier in which the organism remains alive but does not undergo development

3.6. Case

An infected or diseased person or animal having specific clinical, laboratory and epidemiologic characteristics.

3.6.1. Confirmed case

This is a person from which a disease producing agent has been isolated and identified or from whom has been obtained other laboratory evidence of the presence of an aetiologic agent whether or not that person

has clinical syndrome indicative of the disease caused by the agent.

3.6.2. Presumptive case

It is a person with a clinical syndrome compatible with a disease but without laboratory confirmation of the etiologic agent.

3.7. Epidemic.

The occurrence of cases of similar nature in human populations in a particular geographic areas clearly in excess of the usual incidence.

3.7.1. Common Source Epidemic.

An epidemic in which one human or one animal or specific vehicle has been the main means of transmitting the agent to the cases identified.

The number of cases indicating presence of an epidemic will vary according to the infectious agent, size and type of population exposed, previous experience or lack of exposure to the disease and time and place of occurrence.

3.8. Pandemic.

An epidemic disease affecting people in several countries or continents e.g. AIDS, Avian flu.

3.9. Quarantine.

Restriction of the activities of well persons or animals who have been exposed to a case of communicable disease during its period of communicability (i.e. contacts) to prevent disease transmission during the incubation period of infection which could occur.

3.9.1 Absolute or Complete Quarantine.

Limitation of freedom of movement of those exposed to a communicable disease for a period of time not longer than the longest usual incubation period of that disease in such a manner as to prevent effective contact with those not so exposed (isolation).

3.9.2 Modified quarantine.

A selective or partial limitation of freedom of movement of contacts, commonly on the basis of known or presumed differences in susceptibility and related to the danger of disease transmission.

3.10. Major Communicable diseases among Adults**.**

1. Protozoan diseases e.g. Malaria infection which is also endemic in Nigeria.
2. Viral diseases which are yellow fever and Lassa fever.
3. Bacteria diseases such as cholera, cerebrospinal meningitis, typhoid fever, leprosy and tuberculosis.
4. Helminthic infestations such as guinea worm, schistosomiasis, onchocerciasis, filariasis, and loaisis.
5. Sexually Transmitted Diseases, such as HIV/ AIDS.
6. Tetanus, cholera, diphtheria, hepatitis, mumps, paratyphoid, rabies rubella and whooping cough.

3.11. Communicable Diseases peculiar to Childhood.

These are:-

1. Viral Infections such as:- Measles, German Measles (rubella). Chicken Pox , Mumps (Epidemic Parotitis).
2. Bacterial Infections such as:- Whooping Cough (pertussis), Diphtheria,

streptococcal infections, neonatal tetanus, and congenital syphyllis.

3. Others are:- Malaria in children, fever of unknown origin, scabies, headlice , conjunctivitis, acute respiratory syndrome, influenza, tuberculosis, food poisoning, cholera, bacillary dysentery, hepatitis A, viral gastroenteritis, dengue fever, sexually transmitted diseases, AIDS.

Children are particularly susceptible to some common communicable diseases which often occur in small epidemic. If the children survive these diseases, they usually develop a lifelong immunity against these infections.

4.0. Conclusion

In this unit, you have now an in depth knowledge of the concept of communicable diseases and their definitions. It is expected that by now, you should be able to define some of these conceptual words and identify some of these disease that trouble the children.

5.0. Summary

. This unit has focused on the definitions of communicable diseases and some common conceptual words in communicable diseases.

In addition, some communicable diseases that are common both in adults and children were also identified.

Unit 3 will build on what were discussed in unit 2.

6.0. Tutor Marked Assignment

1. Discuss any 3 concepts and their relationship with communicable diseases.
2. Write briefly on 2 common communicable diseases in adult.
3. Write briefly on 2 common communicable diseases in children.

7.0. References and other resources

Alakija Wole (2000):- Essentials of Community/ Primary Health Care and Health Management. Medisuccess Publication. Benin.

The American Public Health Association (1985):- Control of Communicable diseases in man. (An official report of the American Public Health Association) Interdisciplinary Books, Pamphlets and Periodicals. .John D.Lucas, Printing Co. USA.

Other Resources

Community Health Practitioners Registration Board of Nigeria (2006):- Curriculum for Higher Diploma in Heath. Miral Press.

UNIT 3. ETIOLOGY AND PREDISPOSING FACTORS OF COMMUNICABLE DISEASES

TABLE OF CONTENTS:

1. 0. Introduction

Etiology and predisposing factors of communicable diseases is a build up on units 1 and 2 which is concept of communicable diseases. Several causative agents have been identified as major causes of communicable diseases in man.

These agents or their toxic products are capable of being directly or indirectly transmitted from man to man, from animal to man or from the environment to man.

In this unit, you will be able to identify some agents in your environments that are capable of causing communicable diseases.

2. O. OBJECTIVES.

At the end of this unit, you should be able to:-

Define cause of a disease

Identify causative agents of communicable diseases.

Name factors in the environment that may be responsible for communicable disease transmission and outbreak.

3. O. MAIN CONTENT

3.1. Definition of a cause.

Cause of a disease is defined as an event, circumstance, condition, risk factor, exposure, characteristics or a combination of these factors which results in producing the disease e.g. vibrio cholerae is a cause of cholera disease.

There are single and multiple causes of a disease especially in communicable diseases. In this case, usually the etiological organisms are responsible for occurrence of diseases in combination with sufficient causes. These organisms can be isolated and proved to be the cause of a disease.

3.2. CAUSATIVE AGENTS.

It is generally believed that there are micro organisms which harm the human body, and they are called pathogens or germs.

These pathogens invade the tissues of the human host where they produce the disease.

Most of these organisms are present in places that are conducive to their growth and development.

The causatives agents identified are virus, bacteria, protozoa, metazoan.

3.2.1. Viruses.

These are the smallest of the pathogenic agents responsible for some diseases.

They cause diseases such as poliomylities influenza and infectious hepatitis.

3.2.2. Bacteria.

These are small unicellular organisms . They have different shapes and cause different diseases.

a) Bacilli (rod shaped)

They cause diseases such as Tuberculosis, Diphtheria and Tetanus.

b) Cocci (spherical shaped)

These are Staphylococcus, Streptococcus and Gonococcus. They cause boils, sore throats, scarlet fever and gonorrhea.

c) Spirochetes (spirals) They cause syphilis.

d) Fungi (moulds and yeast)

They cause ringworm infections in an athlete feet, systemic infections of respiratory and intestinal tracts.

e) Rickeltsia

They resemble bacteria and viruses. They are parasites which are mostly transmitted to human host through bites of fleas and lice.

They usually cause diseases such as spotted fever, typhoid fever.

3.2.3. Protozoa

These are simplest of animal forms causing disease. They cause malaria, amoebic dysentery, sleeping sickness and trichonomiasis.

3.2.4. Matozoa .

These are multi cellular organisms which can infect humans. They gain entry into human body through consumption of foods and fluids (e.g. beef, pork.)

3.3. Causal factors responsible for transmission of communicable disease.

Communicable diseases are the result of three factors, Agent, Environment, and host.

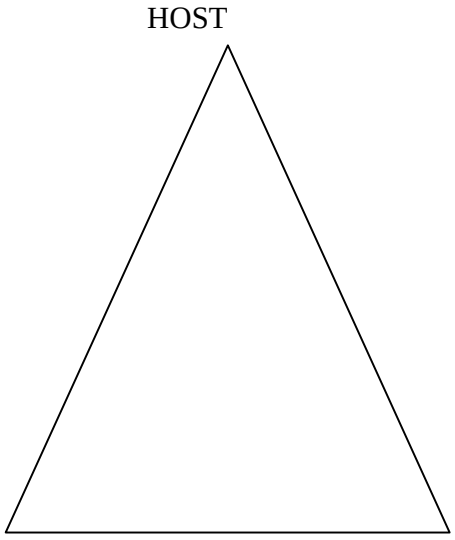
These are sometimes called the Epidemiological "TRIAD".There are close relationships between these factors

They play an important role in the causation of communicable diseases.

3.3.1 Agents

These are the original causes of diseases. Agents have been found to exist in what are called reservoirs. These may be in already sick person (a carrier), an animal or even part of the inanimate environment when the agent is expelled from the reservoir by coughing or sneezing, it may be picked up or transported to a potential host, that is someone who is susceptible to catching the disease e.g. Tetanus infection through a deep cut in the skin.

Agent can be biological, physical, chemical, mechanical, and social agent as depicted in the "TRIAD".



Agent

- Biological Agent
- Physical Agent
- Chemical Agent
- Mechanical Agent
- Social Agent

Environment

- Physical
- Biological
- social

3.3.2. HOST

These are organisms that are capable of being infected by a specific agent. They could be man or animals or organisms or all. The host just like the agent in the epidemiological "TRIAD" played important role as one of causative factors of communicable diseases.

3.3.2.1. Four stages are required for successful paratism

a) Portal of Entry
b) Site of selection inside the body.
c) Portal of Exit
d) Survival in external environment.

Host factors may determine the occurrence and outcome of infection.

One of the host factors is immunity, which is the ability of the host to resist infection.

Resistance is determined by non specific and specific factors.

a) Non specific factors are the skin, mucous membrane, certain secretions like mucus, tears, and gastric secretions, reflex responses like coughing and sneezing.

b) Specific factors

1) Genetic

2) Acquired immunity which may be active or passive.

Acquired – Host manufactures antibodies in response to an antigenic stimulus.

Passive – Host receives preformed bodies.

3.3.2.2. Factors affecting host immunity.

1. Age
2. Sex
3. Pregnancy
4. nutrition
5. Trauma
6. Fatigue

3.3.3. Environment

The Environment in the epidemiological Triad is the third factor that plays crucial role in the causation of communicable disease.

The environment consists of living and non living things that has interrelationship with both agent and host.

The environment consists of:- a) Physical environment, b) Biological environment c) Social environment. d) Political environment.

3.3.3.1. The Physical Environment.

It is made up of all non living things in man's total environment. They include climate, water, weather, refuse, chemical, and toxic, substances humidity, air and soil. A cold or hot weather will affect man and also vectors of diseases.

The influence of the physical environment has an indirect of effect in man. It determines distribution of plants and animals which provide him with materials for food, clothing and shelter. It determines, the natural distributions of the predators which prey on him and other animals which compete with him for food. It also determines the prevalence and distribution of parasites and their vectors.

3.3.3.2. The Biological Environment.

It is made up of all living things in man's total environment. They include: -

Plants e.g. grass and crops.

animals including stock and predators.

Insects for examples mosquitoes and housefly

Pathogens or infective organisms, for example tetanus and bilharzias.

All these things are interdependent on each other and they are ultimately dependent on the physical environment.

The physical environment can have effect on the biological and man can easily pollute his physical environment.

The relationship between biological environment and health of man are varied. For example food poisoning may occur among people who have consumed foods contaminated by bacteria or fungus.

The Social Environment

This is the man made part of the environment. It represents the situation of man as a member of the society (his family, group village or urban community. The culture includes beliefs and attitudes, societal organization, politics government laws, judicial System, educational system, transport, social and heath services.

3.3.3.4. Political Environment

This include rural and urban economy, military rule and political influence,

civilian rule and politics and developmental policies. They play crucial roles in the event of communicable diseases.

4. O. CONCLUSION

In this unit, you have been able to identify some causative agents and causal factors of communicable diseases.

It is expected that by now, you should be able to describe agents in the environment that can be responsible for incidence and spread of communicable disease.

5. O. Summary

This unit focused on causal agents and causal factors of communicable diseases. The agents and some of these diseases were identified.

Unit IV is expected to build on Unit III.

6. O. Tutor Marked Assignment

1. Discuss briefly the causal factors of communicable diseases
2. Identify some of the communicable diseases in your area with their agents.

7. O. REFERENCES AND OTHER RESOURSES.

Alakija Wole (2000):-Essentials of community/ primary Health care and Health management. Medi success Publications Benin.

UNIT 4:- EPIDEMIOLOGY IN COMMUNICABLE DISEASES

TABLE OF CONTENTS

1. 0. Introduction.

Communicable diseases also known as infectious diseases are transmitted directly to man from man (arthropozoonoses) or farm animals (zoonoses) to man. They are characterized by cyclic and seasonal variations.

Epidemiology is the study of the distribution and determinants of health related states and events in populations and the application of this study to control health problems (Last, 1983).

The knowledge of Epidemiology of communicable disease has greatly increased the potential of managing communicable diseases in the community. This has led to breakthrough in curtailing the spread and effects of the diseases on the populations.

In this unit, you are expected to have some understandings of epidemiology and the significant role it has played in the management and control of communicable disease.

The objective of understanding of the epidemiology of communicable disease is to reduce the incidence and prevalence of disease.

It may also help to eradicate a disease or eliminate a disease from the globe or geographical area.

2. O. OBJECTIVES.

At the end of this unit you should be able to :-

- Define some Terms related to epidemiology.
- Describe epidemiological Triangle
- Identify the importance of epidemiology in communicable diseases.

3. 0. MAIN CONTENT

3.1. Terminologies

3.1.1. Epidemiology as already described is the study of the distribution and determinants of health related states and events in populations, and the application of this study to control health problems.

3.1.2. Infection

This is the entry and development or multiplication of an infectious agent in the body of man or animals. An infection may not always cause illness,

There are several levels of infection usually referred to as gradients of Infection:-

colonization (Staphlococcus aureus in skin and normal nasal pharynx)

sub clinical or in apparent infection (polio)

latent infection (virus of herpes simplex)

Manifest or clinical infection.

3.1.3. Contamination.

The presence of an infectious agent on a body surface, or in clothes, beddings, toys, surgical instruments or dressings or other articles or substances including water and food.

3.1.4. Infestation.

For persons or animals, it is lodgment development and reproduction of athropods on the surface of the body or in the clothing e.g. lice and itch mite. It can also be used to describe the invasion of the gut by parasitic worms e.g. ascariasis.

3.1.5. Contagious disease.

This is the one that is transmitted through contact. Examples include scabies, trachoma, Sexually Transmitted Diseases (STD) and leprosy.

3.1.6. Endemic

The constant presence of a disease or infectious agent within a given geographical area. It may also refer to the usual prevalence of a given disease within such area.

3.1.7. Sporadic case

A case that has, no epidemiologic relationship to any other cases as far as is known.

3.1.8. Zoonoses

An infection or infectious disease transmissible under natural conditions from vertebrate animals to man e.g. Rabies, Plague and Brucellosis.

3.1.9. Opportunistic Infections

This is infection by organisms that take the opportunity provided by a defect in host defense e.g. immunity to infect the host and thus cause disease. For example, opportunistic infections are very common in AIDS organisms include Herpes simplex. M. tuberculosis.

3.1.10. Eradication and Elimination.

Eradication is termination of all transmission of infection by the extermination of the infectious agent through surveillance and containment.

Elimination is used to describe eradication of a disease from a large geographic region. Diseases that are amenable to elimination in the mean time are polio, measles and diphtheria.

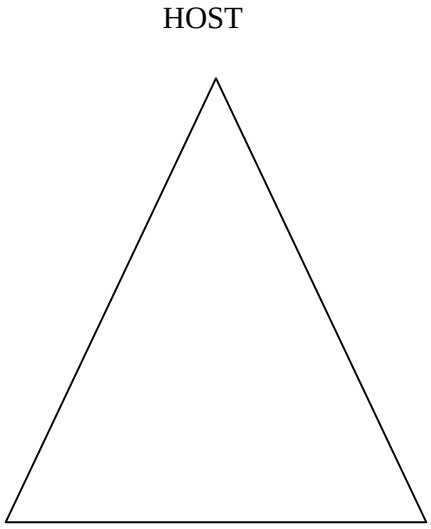
3.1.11. Case Fatality Rate.

It is usually expressed as a percentage of the number of persons diagnosed as having a specified disease who die as a result of that illness.

3.2. The Epidemiological Triangle

The Epidemiological Triad is made up of the Host, Agent and Environment. They are interwoven and interrelated.

They have a synergistic relationship, what affects one affects the other.



The Triad play significant role, in the transmission and control measures of communicable diseases.

a) HOST – As it has been defined is a simple or complex organism including man that are capable of being infected by a specific Agent. there are :-

1) Primary or definitive hosts in which the parasite attains its maturity or passes through its sexual stage.
2) Secondary (intermediate hosts) in which the parasite exists in the larvae stage or other asexual stage.

3) A host that has no role in the propagation or transmission of a particular infectious agent is known as Accidental (dead – end) host.

b) The second in the epidemiological Triad is the Agent.

An agent is an organism mainly micro organism that is capable of producing infection or infectious diseases. They include helminthes, bacteria, parasites, viruses, fungi and rickettsial organisms.

These agents include:

- Biological
- Physical
- Chemical
- Nutrient agent
- Mechanical agent
- Social agent

c) Environment:-

It is an aggregate of all the external conditions and factors which affect the life and development of an organism.

Promotion of healthy environments is the global concern. Environment is getting worse because of rapid population growth and increased pressure on natural resources threatening public health and development.

The environment can be classified into:-

a) Physical environments (water, air, temperature, humidity, radiation e.t.c.
b) Biological environments (All living organisms, plants, and animals)
c) Social Environment (Agriculture and industrial chemicals.
d) Social Environment (Human enviroment).

Environments are the major determinants of health and disease in the chain of infection .

The environment affect the life and development of infectious organisms or agents of disease, over 60 – 80% of infectious disease are related to bad physical environments like contaminated water supplies, poor drainage system, wide spread filth and insanitary conditions and indiscriminate defecation.

3.3. Importance of Epidemiology in Communicable Diseases.

- It enables to identify changes of the pattern of infectious diseases
- It leads to discovery of new infections
- It gives an insight into the possibility that some chronic disease have an infective origin

3.4. Major programs of communicable disease epidemiology.

They include:-

1) Collection of information on and reporting communicable diseases.
2) Investigation of outbreaks and coordination of information exchange
3) Evaluation, distribution and investigation of causes of communicable diseases.
4)Coordination of infectious disease prevention and control programmes.

3.5.1. Emerging Diseases on the globe.

There are infectious diseases that are emerging globally which were previously unknown and they are causing public health problems either nationally or internationally. These are:-

- Severe Acute Respiratory Sydrome (SARS)
- Hemolytic uremia syndrome caused by E- coli 01/57: H7
- Ebola hemorrhage that is fever by Ebola virus
- Yellow Fever
- Bird flue or Avian Influenza (H5N1 Virus).

3.5.2. Major reasons for emergence of infectious diseases

- High population growth, uncontrolled and unplanned urbarnization
- Poor environmental sanitation
- Migration of population
- Natural disasters
- Growing international trade, tourism and rapid travel.

- Alterations in micro organisms
- Resistance to anti microbials
- Weak Public Health System
- Illiteracy and ignorance

3.6. Uses of Epidemiology

Search for causes of diseases

Helps to describe the health statue of Population or groups.

Helps in controlling diseases by breaking the weakest link in chin of transmission of diseases.

Helps in planning of health programs

Helps in better management of health services.

Helps to evaluate heath programs and intervention.

4.0. CONCLUSION

In this unit, you have and insight into Epidemiology, terminologies and other issues in epidemiology.

It is also expected that by now you should be able to identify importance and uses of epidemiology and be familiar with some emerging diseases in Nigeria and globally.

5.0. SUMMARY

Unit IV focused on epidemiology of communicate diseases, epidemiological triangles, importance and uses of Epidemiology

6.0. Tutor Marked Assignment.

1. Define Epidemiology and discuss briefly its importance and use in community Health.
2. Discuss briefly Epidemiologic Triangle (Epidemiologic Triad).
3. Describe briefly two of the emerging diseases in Nigeria

7.0 References and other Resources cause

Sunder Lal, Adarsh and Pankaj (2007) :- Textbook of Community Medicine (Preventive and Social Medicine). CBS Publishers and Distributors, New Delhi, India.

The American Public Health Association (1985) :- Control of Communicable Diseases in man. (An official Report of the American Public Health Association) 14th Edition, 1985. The American Public Health Association Washington DC, 2005.

UNIT 5:- MODE OF TRANSMISSION OF COMMUNICABLE DISEASES

TABLE OF CONTENT.

1.0. Introduction.

Communicable diseases occur as a result of interaction of infectious agent, the transmission process and the host.

There are three components of chain of infection these are:- infectious agent, transmission process and the host in which the environment influence these three components. These will be discussed in detail in this unit.

This unit is built upon the other previous units.

In this unit, you will be able to identify ways by which infectious agents are transmitted to cause communicable diseases in the susceptible hosts.

2.0. OBJECTIVES

At the end of this unit you should be able to :-

Identify the components of chain of infection

Describe infectious agent

Describe the methods of transmission

Identify host in the chain of infection

Describe environment in chain of infection

3.0 MAIN CONTENT.

3.1. Definition of Transmission

Transmission of infectious agents is any mechanism by which an infectious agent is spread from a source of reservoir to a person.

3.2. Factors of Transmission (Components of chain infection)

1. Infectious agent
2. Transmission process
3. The host in the chain of infection
4. Environment in chain of infection

3.2.1. Infectious agent.

These are organisms that are acceptable of producing infections diseases.

Large number of agents like microbiological organisms (biological) agents are responsible for infection and occurrence of communicable disease. These organisms live or develop and multiply in various hosts or in environments.

These micro organisms belong to different categories like bacteria parasites, viruses, fungi and ricketsial organisms.

Please note that these were repeatedly mentioned in unit I, II, III and IV.

There are some terms that need to be mentioned in relation to infectious

Agent:-

Pathogencity

Pathogenecity of an agent is its ability to produce disease which can be measured by the ratio of number of persons developing clinical illness to the number exposed to infection.

Virulence

It is a measure of severity of disease which can vary from high to low.

Infectivity

It is the ability of an organism to invade and produce infection in the host.

3.3. Methods of Transmission.

There are two major ways of transmission of an infectious agent :-_

Direct and Indirect

1.Direct Method of Transmission

This method involves intimate or close contact between the infected person and reservoir of infection with susceptible host.

Direct transmission occurs by:-

Touching

Kissing

Sexual intercourse (STD's and HIV / AIDS)

Droplet and larger particles

Exposure to soil, water, milk and compost.

Transfusion of blood

Transplacental:- from mother to foetus

Breast feeding

Child birth

2.Indirect Transmission

These are:-

Vehicle borne transmission (by contaminated food and water)

Contaminated materials and objects e.g. toys, handkerchiefs and surgical instruments

Serum, plasma and other biological products

Vector borne transmission which can be mechanical or biological.

a) mechanical – soiling by feet or proboscis or crawling or flying insects
b) Biological – by saliva during bite by a vector.

Airborne transmission in which the portal of entry is respiratory tract e.g. spores, fungus

Formites

3.4. Host in chain of infection

3.4.1. The Host- This is the third link in the chain of transmission. The host is defined as a person or animal that provides a suitable place for an infectious agent to grow and multiply under natural conditions.

The persons is one who harbors disease producing organism. The reservoir acts as a natural habitat of the organism.

Man is the most frequent reservoir of infectious agents pathogenic to man.

Source of infection is the thing, person or object of substance from which infectious agent passes immediately to a host.

3.4.2. Common reservoirs and sources of infection

Diseases	***Reservoir***	***Source***
Tuberculosis	man	sputum
HIV / AIDS	man	body fluids and secretions
Malaria	man and mosquito	Infected blood
Rabies	Dog and other animals	Saliva
Measles	Man	Droplets
Cholera	Man	Unsafe water and food
Plague	rodents	infected flea.
Typhoid	man	unsafe water and food
Tetanus	soil	soil,

3.4.3. Host factors in the Transmission of Communicable diseases.

Host factors are important in distribution and determinants of communicable

diseases. The Host factors include, Age, Sex, Marital status, nutritional and immunization status, occupation and past experiences, exposures with infection and risk behaviour.

3.4.4. Mechanism of Entry of infectious organism in Host.

Infectious organism can enter in the body of host through intact skin and mucous membrane e.g. hookworm, larvae can penetrate intact skin, Rabies virus can enter through wound and intact mucus membrane.

Through oral cavity and gastro intestinal tract, contaminated water & food.

Through respiratory system e.g. mycobacterium tuberculosis.

By insect bite, the disease producing organism can be injected to the blood stream

Parenteral transmission – through use of unsafe needles and syringes and also through unsafe blood transfusion.

3.4.5 Host reactions to infections

Once an infections organism enter human host, the host reaction and host defence system comes into action.

This is a sample of following possibilities

Infectious organisms

↓

Enter humans

↓

Produces → in apparent infection→ Host recovers

↓

Mild disease Host fight or with treatment.

↓

Severe disease ↑ with treatment

Death Disability.

3.5. Environments in chain of infection

Environment is an aggregate of all external conditions and factors which affect the life and development of an organism. The important health concern in the environmental issues are the water shortages, soil exhaustion, loss of forest leading to

air and water population, soil pollution and degradation of coast lines.

Environments are the major determinants of health and disease in the chain of infection. Environments affect live and development of infectious organisms or agents of disease. It influences the transmission process and also affects the host.

Environments can tilt the pendulum of chain of infections to favorable or unfavorable side, 60% of infectious disease are related to bad physical environments like contaminated water supply, poor drainage system, wide spread filth, insanitary condition and indiscriminate defecation. This leads faeco-oral transmission of diseases in epidemic forms and many diseases get rooted as endemic diseases. Soil pollution has led to soil transmitted helminthic diseases apart from killer diarrhea diseases in children.

4.0. Conclusion

In this unit, you have the knowledge of transmission process.You are now able to identify the components of chain of infection. The chain of infection and transmission are interrelated . By now you should be familiar with the ways diseases are transmitted.

5.0 Summary

This unit has focused on transmission process, methods of transmission. Roles of agent, host and environment were also discussed. Unit 6 will build on this unit in other to maintain a sequence.

6.0. Tutor Marked Assignment

1). Identify two communicable Diseases in your area and discuss the chain of infection.
2) Discuss the components of chain of infection and their relationship.

7.0. References and other Resources

Alakija Wole (2000) :- Essentials of Community/Primary Heath Care and Health Mangement. Medisuccess Publications, Benin.

Sunder Lal, Adarsh and Pankaj (2007):- Textbook of Community Medicine (Preventive and Social Medicine. CBS Publishers and Disributors. New Delhi. India.

MODULE 2:- PREVENTION, IMMUNITY AND IMMUNIZATION

UNIT 6:- PREVENTIVE MEASURES OF COMMUNICABLE DISEASES.

UNIT 7:- CONCEPT OF IMMUNITY AND IMMUNIZATION IN RELATION TO COMMUNICABLE DISEASES.

Unit 6: PREVENTIVE MEASURES OF COMMUNICABLE DISEASES.

TABLE OF CONTENT

6.0. Tutor Marked Assignment

7.0. References and other resources

1.0. Introduction

Prevention of communicable diseases is an important aspect of community Health. Preventive actions can be taken at any stage of the spectrum of Health.

Most preventive actions are focused on those who are not affected. Preventive actions are aimed at curtailing and controlling diseases with the sole purpose of minimizing morbidity and mortality in the population.

In this unit, you are expected to be familiar with levels of prevention and be able to describe strategies for prevention.

2.0. OBJECTIVES

At the end of Unit 6, you should be able to :-

Describe the levels of prevention of communicable diseases

Describe strategies for prevention and control

Describe preventive measures to be adopted in combating communicable diseases.

3.0. MAIN CONTENT

3.1. Levels of Prevention

The levels of prevention provides foundation for planning preventive programs and education. Targeting levels of prevention ensures effective education intervention by promoting protective factors and reducing risky behaviors.

The three levels of prevention are:-

Primary levels

Secondary levels

Tertiary levels

3.1.1. Primary level of prevention

The aim of primary prevention is to prevent the development of disease / diseases in population by modification of risk factors.

3.1.1.1. Strategies of Primary prevention.

These are**:-**

1. Health Promotion
2. Adequate Nutrition
3. Safe water and sanitation
4. Periodic health checkup
5. Specific prevention /protection against diseases, trauma and accidents.

3.1.1.1. Health Promotion:-

This means improving positive health through best health practices such as personal hygiene, brushing teeth, hand washing, avoiding smoking and alcohol, regular physical exercises, adopting healthy eating habits.

Health promotion can be achieved through health education programs on communicable diseases in schools, community, market places, churches and mosques and even home.

3.1.1.2 Adequate Nutrition

Good nutritional status offers immunity against diseases and increases general resistance of the body. For example, Exclusive breast feeding for six months of life, adequate and clean eating during early childhood. Adequate diet should be made available for those who are vulnerable i.e. infants, young children, adolescents, pregnant women and lactating mothers.

3.11.3. Safe water and sanitation

Drinking safe water and safe disposal of human excreta prevents many diseases. This is the most important means to promote health of communities.

This also includes personal hygienic practices which are also related with adequate and safe water supply and sanitation measures.

3.1.1.4 Periodic health check – up

This is an important preventive measures but it is the most difficult to practice.

3.1.1.5 Specific Protection

This includes immunization especially for vaccine preventable diseases. Nigeria like any other countries has immunizations programmes to prevent diseases such as Tuberculosis, Poliomyelitis, Measles and Tetanus.

3.1.1. Secondary level of Prevention

This level of prevention is directed to those individuals who have developed disease.

The secondary approach is valid for treatment of Tuberculosis, Leprosy Malaria and other communicable diseases.

Preventive activities are aimed at early disease detection thereby increasing opportunities for interventions to prevent progression of the diseases and emergence of symptoms.

3.1.2.1. Strategies used in Secondary Level of Prevention

The major strategy in secondary level of prevention is to detect the disease at early stage and ensure prompt treatment.

This includes screening and surveillance programmes which assist in early case detection and prompt treatment.

3.1.3. Tertiary level of prevention

This is applied when an individual has reached an advanced stage of disease.

The objectives of tertiary prevention are to:-

- reduce the progress and development of complications of established diseases
- reduce impairment and disability
- provide rehabilitation measures
- prolong life

Rehabilitation is a restorative measures using the remaining capacities of an individual and making him/her self reliant and useful in the community.

Rehabilitation consists of physical, occupational and social rehabilitation measures.

Community based rehabilitation is the preferred approach where the family and community takes responsibility and government provides support.

3.3 Preventive measures to be adopted in combating communicable diseases.

These measures are divided into two categories:- Standard precaution and use of Personal Protective device.

3.2.1. Standard precautions.

These are designed to reduce risk of transmission of infective agents from recognized or unrecognized sources of infections contact with body fluids and excretions including blood, saliva, sputum, vomits, faeces, urine and discharge from wounds and mucous membrane. They should be regarded as potentially infectious, thus adequate measures should be adopted and relevant protective measures taken to reduce risk of infections.

Attention should be paid to the following aspects:-

1. Hand hygiene
2. Use of personal protective equipment
3. Handling of contaminated articles.

3.2.1.1. Hand hygiene:-

Washing of hands are essential when handling any objects including human's. Hand should be washed when and after going to the toilet and after touching any dirty objects. As health workers, before and after performing procedures.

3.2.1.2 Use of personal protective Equipment.

In order to minimize the risk of infection or becoming the vector unknowingly, staff should use appropriate Personal Protective Equipment (PPE) at work according to the risk of procedure and the physical condition of the patient so as to safeguard yourself and others.

Examples of the appropriate PPE to be stocked are:-

1. Gloves

Wears gloves when handling blood, body tissues, excreta, body fluids, secretions or any other contaminated wastes.

Change gloves immediately if they are contaminated with secretions even when the same patient is being nursed.

Take off used gloves and perform hand hygiene immediately before moving to the next patient so as to avoid transmission of infective agents from one to another or contamination of the environment

Perform hand hygiene immediately and thoroughly after taking off gloves.

Please note that wearing gloves cannot be a substitute for hand hygiene.

2. Surgical mask, goggles and face shield.

Wear surgical mask and goggles / face shield to protect the mouth, nose and eyes from contamination by droplets via sneezing or coughing, blood spill, body fluids secretions and excreta like, sputum, urine or faeces when caring for a patient .

3. Protective gowns.

Put in clean protective gowns, sterilized gown is not necessary to protect the skin and prevent clothes from contamination by respiratory droplets, blood spill, body fluids secretions, like sputum urine or faeces when caring for a sick person.

Take off contaminated protective gown carefully to avoid spread of infective agents.

4). Other PPE

Others such as caps can protect the hair from contamination by secretions and hence minimize the risk of transmission of infective agents from health workers to patients.

3.2.1.3. Handling of Contaminated Articles

Used articles may become indirect vendors for infective agents, appropriate precautionary measures should be taken while handling them.

1. Contaminated linen and clothing with infective agents can be transmitted through contact with linen and clothing. All linen must therefore be washed before reuse. Put on appropriate PPE (gloves, masks if appropriate) during the process of handling.
2. Handle contaminated linen and clothing separately.
3. Shared Articles. Should be clean and disinfect all shared articles before refuse to avoid cross – infection.

3.2.2. Preventive Measures according to different modes of transmissions.

In addition to general hygiene practices, vaccination and standard precautions, specific preventive measures should be adopted when dealing with diseases with various modes of transmission.

Preventive Measures according to Different Mode of Transmission

Mode of transmission	Examples of diseases	Preventive measures
Contact transmission	,Hand foot and mouth diseases, Acute conjunctivitis Headlice, scabies, chicken pox.	keep both hands clean, clean and disaffect items used by patients properly
Droplet	Influenza, streptococcus Pneumonia infection	- Main ventilation - keep hands clean - lower membrane - when sneezing or coughs people with respiratory infection symptoms and in close contact

		should put on surgical masks. - Adopt proper isolation for the sick - Use appropriate PPE when necessary
Air borne transmission	Pulmonary Tuberculosis, Measles. Chickenpox	Maintain good ventilation Any symptom suggestive of Airborne diseases should seek medical help
Food borne / water borne transmission	Viral gastroenteritis food poisoning cholera. Baciliary dysentery Hepatitis A.	- Ensure all food is adequately cooked especially high risk foods like shell fish. - Perform hand hygiene before meals and after going to the toilet - Handle vomitus and excreta properly - Food handlers if sick should refrain from work and seek medical advice early Maintain environmental sanitation to prevent breeding of insects mosquitoes e.g. prevention of stagnant water.
Vector – borne transmission	Dengue fever malaria	Personal protection prevents insect /use mosquitoes nets. - Never share tooth brushes, razors or other objects possibly contaminated with blood.
Blood / body fluid borne transmission	Hepatitis B, AIDS	- Followed standard precautions strictly when touching wound or blood contaminated objects - Practice safe sex with proper use of condoms, Receive Hep.B vaccination.

3.3. General hygiene practices as preventive measures

This include personal hygiene and Environmental hygiene which includes adequate water supply drinking of safe water), safe disposal of human excreta and other wastes. These two combined are most important means to promote health in the community.

3.4. Vaccination / immunization

This is an effective means of controlling communicable disease. Some antigens have been developed to combat some communicable diseases such

as pulmonary Tuberculosis, Tetanus, Poliomyelitis, Hepatitis A&B and Measles. This will be discussed fully in another unit.

4.0. Conclusion

In Unit 6, there has been indepth discussion of issues pertaining to preventive measures in communicable diseases.

It is expected that by the end of this unit, you should be able to describe levels of prevention and the two categories of preventive measures which are standard precautions and others.

By now these precautions should be familiar issues as medical worker.

5.0 Summary

Unit 6 focused on preventive measures of communicable diseases, levels of prevention and unit7 will build on this unit.

6.0 Tutor marked Assignment.

1. Discuss the major two categories of preventive measures to be taken in combating communicable diseases.
2. What are some of points to be emphasized when discussing preventive measures of vector borne diseases in your area

7.0 References and other resources

Alakija Wole (2000):- Essentials of Community Health/Primary Health Care and Health Management. Medi Success Publication.

Sunder Lal, Adarsh and Pankaj (1985) :- Text book of community medicine (Preventive & Social Medicine) CBS Publishers & Distributors New Delhi India.

Other Resources :-

Guidelines on prevention of communicable diseases in child care centres / kindergarten schools . http: //www.chp.gov.hk/files / pdf/school 4. eng.2009. 0115.pdf.

UNIT 7: CONCEPT OF IMMUNITY AND IMMUNIZATION IN RELATION TO COMMUNICABLE DISEASES

1.0. Introduction

Resistance to infection is an important concept in the issues of communicable diseases. This concept of immunization was brought about as a result of outbreak of communicable diseases in other to increase the level of immunity of individuals. Immunization is therefore possible for so many communicable diseases and by this procedure, many communicable diseases have been eradicated, while the epidemic of some have been reduced to the barest minimum.

In this unit, the concept of immunity and immunization will be discussed. It is expected that by end of the discussion of the unit, you will have the knowledge of immunity and immunization process including the diseases that man can be protected from through immunization.

2.0. OBJECTIVES

At the end of Unit 7, you should be able to:-

- Define Immunity, and Immunization
- Identify types of Immunity
- Describe Cold Chain system
- Identify Expanded Program on Immunization
- Discuss Nigeria Immunization Schedule.

3.0. MAIN CONTENT

3.1. Definition of immunization.

Immunization is the introduction of antigen into the body defense system so as to prevent infection.

The prevention of diseases by immunization is the best known, practical, low cost and community based means of protecting children and adults against the major killer diseases.

3.2. Immunity.

This is resistance usually associated with possession of antibodies that have an inhibitory effect on a specific micro organism or its toxins that cause a particular infectious disease.

It can also be defined as sum total of host mechanism which interpose barriers of invasions or multiplication of infectious agents or that prevent damage by the agents toxic products.

The level of immunity in a community is known as herd immunity.

3.3. Factors affecting individual's resistance to diseases

a) Nutrition
b) Age
c) Diseases condition
d) Health status
e) Stress

3.4. Ways by which immunity is gained

There are four ways by which immunity is gained into the body they are:-

1.By having disease

2.By having active immunization

3.By passive immunization

4.By receiving maternal antibodies.

3.5. Types of immunity

3.5.1. Passive immunity (Temporary)

This can be divided into:-

a) Natural immunity

This can be from maternal transfer and it is short lived. For example Measles (may not be contacted before four months of age).

b) Artificial Immunity.
This is inoculation of specific protective antibody gamma immunoglobulin which is serum containing antibody e.g. A.T.S.

3.5.2. Active immunity

This lasts months to years. It can also be divided into:-

a) Natural immunity – can be got through infection (clinical / subclinical infections).
b) Artificial immunity – inoculation of products of infectious agent. The agent itself is killed or in modified form (attenuated) or variant form.

Examples of killed form are whooping cough, Polio, Cholera, Typhoid and Influenza vaccines

Examples of attenuated are Measles, BCG, Oral Polio, Yellow fever, Rubella, Mumps, Toxoid (e.g. Tetanus (TT) and Diphtheria vaccines.

3.6. Cold chain system.

System used for storing and distributing vaccines in a potent state from the manufacturers to the child, woman and others being immunized.

It is a supply system which is particularly critical because vaccines are easily destroyed by heat and temperature.

It can also be described as a logistic system involving equipment and persons designed to preserve, transport, distribute and store vaccine in a potent state and rightly administered to the target group.

3.6.1.Component of cold chain system

These are:-

- People
- Equipment which are :-
  - Refrigerators
  - Transportation facilities
- Airplane, ship, trucks, motor cycles, bicycles
- Stores
- Freezers
- Vehicles
- Vaccines, ice pack like living, cold box, thermometers, vaccine carrier
- Sterilization and injection equipments.

These must be adequate and in good condition

3.6.2:– Vaccine storage time and temperature

Site Max storage time	Central store up to 8months	Regional up to 3months	HealthcenterTransport up to 1 month up to 1w 1 week
Measles,Oral Polio vaccine OPV	- 15 oc to - 25oc .		
DPT, Tetanus Toxoid (TT) BCG.	+ 20 oc to 8oc	+ 2oc to + 8oc.	

3.7 Expanded Program on immunization

This was initiated in 1979, by World Health Assembly which was later changed to National Program on Immunization. (NPI).

The objective of Expanded Program on Immunization is to effectively control the occurrence of these diseases.

1. Tuberculosis
2. Poliomyelitis

3. Diphtheria
4. Whooping cough

5. Neonatal Tetanus
6. Measles
7. Diseases of women of childbearing age through Immunization and provision of vaccines.

3.8. Target Population for EPI delivery in Nigeria

- All children age 0 – 24 months but after the first year focus should be in 0-12months of age.
- Women of child bearing age
- Pregnant women

3.9. Nigerian Immunization Schedule .

An immunization schedule contains information to which health worker may refer when deciding which immunization types to administer to a child, women of child bearing age and pregnant women.

Specifically an immunization schedule contains the following information:-

- vaccine to be given
- desirable age at which to administer first dose of each vaccine.
- minimum time interval between successive doses of vaccine.

3.9.1. Immunization Schedule Table

Contact	Target Age	Type of vaccine	Dosage	Site	Route of adminstration
1st	At birth	BCG	0.05ml	upper arm	Intradermal
	At birth	OPV 0	2-3drops	mouth	Oral
2nd	6 weeks	DPT I	0.5ml	buttock	Intra muscular
		OPV I	3drops	mouth	oral
		HBV I	0.5ml	upper arm	Intra muscular
3rd	10 weeks	DPT2	0.5ml	buttock	Intramuscular
		OPV2	3drops	mouth	oral
		HBV2	0.5ml	upper arm	Intramuscular
4th	14 weeks	DPT3	0.5ml	buttock	Intra muscular
		OPV3	3drops	mouth	oral
5th	9 – 11 months	Measles	0.5ml	upper arm	Subcutaneous
		Yellow fever	0.5ml	upper arm	Subcutaneous
		HBV3	0.5ml	upper arm	Subcutaneous

3.9.2. Tetanus Toxoid Immunization Schedule.

Vaccine	Dosage	Time of administration	Site	Method of administration	Duration of protection
TT – 1	0.5ml	At first contact or as early as possible	Deltoid	Deep subcutaneous	None
TT – 2	0.5ml	At least four weeks after TT – 1	Deltoid	Deep subcutaneous	3 years
TT -3	0.5ml	At least six months after TT – 2	Deltoid	Deep subcutaneous	5 years
TT – 4	0.5ml	At least one year after TT – 3 or during subsequent pregnancy	Deltoid	Deep subcutaneous	10 years
TT – 5	0.5ml	At least one year after TT – 4 or during subsequent	Deltoid	Deep subcutaneous	For life

		pregnancy.			

3.9.3. Diseases for which immunization is possible

Diseases	Type Of Antigen
Cholera	Killed Bacteria
Diphtheria	a) DPT (Toxoid). b) Antitoxin
Hepatitis	Immunoglobulin
Gas gangrene	Antitoxin
Influenza	live Attenuated
Leprosy	BCG.
Cerebrospinal Meningitis	Killed Bacteria
Measles	live Attenuated
Mumps.	Life Attenuated
Paratyphoid	Killed TAB
Polio	Life Attenuated
Rabies	a) Inactivated Virus b) Hyper Immune Serum
Rubella	a) Iive attenuated b)Immunoglobulin
Small pox	Live attenuated Polyvalent
Snake – bite	antiserum Tetanus Toxoid
Tetanus	and ATS. Killed TAB
Typhoid	bacteria
Tuberculosis	Live attenuated bacteria BCG
Whooping cough	Killed bacteria (DPT)
Yellow fever	Live attenuated virus

4.0. Conclusion

Unit 7 discussed an in depth knowledge of concept of immunity and immunization in relation to communicable diseases –

At the end of this unit, your knowledge and understanding of immunity, types and immunization, will be useful in application of this to your practice.

5.0. Summary

This unit has focused on concept of immunity, its definitions, types and immunization process. The unit also discussed Nigeria immunization schedule. Unit 7 will build on this unit in sequential manner.

6.0. Tutor Marked Assignment

1. Discuss immunity and its types
2. Describe Nigerian immunization schedule.

7.0. References and other Resources

Alakija Wole (2000):- Essentials of community health and primary Health care and Health management. Ambik press Benin city.

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MODULE 3:- CONTROL MEASURES AND MANAGEMENT.

UNIT 8:- CONTROL OF COMMUNICABLE DISEASE.

UNIT 9:- MANAGEMENT OF OUTBREAK OF COMMUNICABLE DISEASES.

UNIT 10:- SURVEILLANCE, TRACKING AND INVESTIGATIONS AS STRATEGIES FOR CONTROL OF COMMUNICABLE DISEASES.

UNIT 11:- CURRENT POLICIES AND INTERVENTION STRATEGIES IN DISEASE CONTROL.

UNIT 8:- CONTROL OF COMMUNICABLE DISEASES

TABLE OF CONTENT

1.0. Introduction

The control of communicable diseases is a central and major concern of

community health stake holders. It has received priority attention right from time.

Vaccines and effective antibiotics for prevention of communicable diseases are the major factors responsible for steep decline include death rates. Deteriorating urban sanitation, poor liquid and solid waste management and overcrowding have contributed to increasing prevalence of communicable diseases. All these reasons make control of communicable diseases priority. In this unit you are expected to be familiar with strategies and methods of control of communicable diseases with references to Nigeria.

2.0. 0bjectives

At the end of this unit you are expected to be able to:-

- Identify the strategies for control of communicable diseases
- Describe the general methods of control
- Describe reporting of communicable diseases

3.0. MAIN CONTENT

3.1. Methods of control communicable diseases

There are three main methods of control:-

1. Eliminate Reservoir of infection

The objective is to find and treat all infected persons both patients and carriers thereby eliminating source of infection.

In some infectious diseases:-

a) isolation of patients for diseases with high morbidity and mortality and high infectivity.

b) Quarantine: This refers to limitation of movement of persons, or domestic animal who have been exposed to communicable diseases for a period of time equal to the usual longest duration (incubation period of the disease), in such a manner as to prevent effective contact with those not exposed.

In case of animals as reservoir,destruction e.g. killing of dogs in case of rabies

2. Interrupt the pathway of transmission. They are:-

1) Environmental sanitation

2) Personal hygiene

3) Use of insecticide

4) Use of pesticide

These involve :_

Supply of safe drinking water by treatment and chlorination of water, pasteurization of milk

Safe disposal of human excreta and animal excreta by sewage system and sanitary latrines, compost pit / mature pits

Control vectors of diseases by source reduction and anti larval and anti dust measures.

Control animal by vaccinating dogs against rabies and eliminate stray dogs.

Rodent control measures e.g. Trapping and killing

Hospital waste management

Disinfection :- This implies killing infectious agents outside the body by chemical or physical means. All boiled articles with secretions, excretions of infectious patients are treated with suitable chemical .e.g. hypochlorite solution or other suitable chemicals.

Washing with detergents, bleaching powder solution, steaming, sun drying and autoclaving are common methods of disinfection of soiled articles. If affordable these can be burnt or incinerated as dangerous waste materials.

3. Protect the susceptible host

This may be achieved by active or passive immunization and chemoprophylaxis.

a) Immunization

Massive programs of immunization for vaccine preventable diseases have been launched in the country to control communicable diseases such as polio, measles, whooping cough, diphtheria, tetanus neonatorium and tuberculosis.

The Expanded Program on Immunization have been expanded to include Hepatitis A vaccines. The purpose of immunization is to prevent outbreaks as well as reduce the incidence of diseases and ultimately to eradicate Communicable diseases.

b) Use of Chemoprophylaxis.

In high risk areas of malaria like Nigeria, chemoprophylaxis in pregnant women is recommended to prevent morbidity and mortality and also to reduce the incidence of low birth weight babies.

In some areas, use of Isoniacid as prophylaxis in children who are in contact with sputum case is well established.

Children of HIV positive mothers are also given prophylaxis to prevent them from being infected during breastfeeding period. (Prevention of mother to child transmission (PMCT) which is part of AIDS control initiatives.

3.2. The General Methods of control of communicable diseases

A) Preventive measures.

1. Vaccination against epidemic e.g. measles, polio and others
2. Chlorination of water supplies to prevent water borne diseases
3. Pasteurization of milk
4. Control of rodent, arthropod and animals
5. Immunization
6. Health Education
7. Environmental sanitation and personal hygiene
8. Chemoprophylaxis e.g. against malaria, filariasis, meningococcal meningitis and bacillary dysentery.

B) Control of patient, contact and environment.

I. Measures are taken to prevent spread of infectious matters to person and to the environment.

2. Keeping contacts under surveillance during incubation period.
3. Keeping carriers under control until found to be free of infectious agents.
4. Reporting to local health authority.
5. Isolation.
6. Concurrent disinfection.

7. Quarantine
8. Immunization of contact
9. Investigation of contact
10. Specific Treatment

C) Epidemic Measures

These are measures to limit spread of communicable diseases which has developed widely in a group or community within an area, state or nation.

These measures are not applicable when the disease occurs sporadically among widely separated individuals or separated by considerable intervals of time.

The measures include:-

1). Notification of occurrence to the appropriate health authority.
2). Mass immunization.
3). Health education
4). Investigation of source and contact

D) International Measures

These include:-

1.Control of international travelers, immigrants, goods, animals and animal products and their means of transport based on provisions of international health regulations.

2. Intergovernmental arrangement,collaboration and enactment of national laws
3. Any control that may protect populations of one country against the known risk of infection from another country where a disease may be present in endemic or epidemic form.
4. Monitoring immunization posts especially at the borders and ports.

3.3. Reporting of communicable diseases

The first step in the control of a communicable disease is its rapid identification, followed by notification to the local health authority that the disease exists within the particular jurisdiction.

The purpose is to provide necessary and timely information to permit the institution of appropriate control measures by responsible authorities as well as to encourage uniformity in morbidity reporting so that data between different health jurisdictions within a country and between a nation can be validly compared.

There are four stages of reporting:-

First stage :- Collection of basic data in the local community where the disease occurs.

Second stage :- The data are assembled at district, state or zonal levels.

Third stage .- Aggregation of information under national auspices.

Fourth stage :- Report is made by the national health authority to the World Health Organization.

3.3.1. Report of cases

- Each local health authority will determine what disease are to be reported
- Case reports of a communicable disease provide minimal identification data such as name, address, diagnosis, age, sex, and date of report for each patient and in some instances, suspects, dates of onset and basis for diagnosis are useful.
- The right of privacy of the individual must be respected.

3.3.2. Report of Epidemics.

In addition to the requirement of individual case report, any unusual or group expression of illness which may be of public concern should be reported to the local health authority by the most expeditious means.

This is done whether it is included or not in the list of diseases officially reportable in the particular locality and whether it is a well known, identified disease or an indefinite or unknown clinical entity.

4.0. Conclusion.

Unit 8 has dealt on the control of communicable diseases.You now have a broad idea of the various principles and methods of control and also case reporting as an important aspect of control.

Unit 9 will try to build on this unit so as to provide sequence in the learning process.

5.0. Summary.

In this unit we have discussed the fundamental procedures for control of communicable disease, general control measures and case reporting as also a measure of control.

6.0. Tutor Marked Assignment.

Write short note on methods available for control of communicable diseases in your locality, using any familiar communicable disease as an example.

7.0. References and other Resources

Alakija Wole (2000):- Essential of Community Health / Primary Health Care and Health, Management. Medi success publication. Benin

Sunder Lal, Adarsh and Pankaj (2007) :- Textbook of Community Medicine (Preventive and Social Medicine) CBS Publishers and Distributors. New Delhi, India.

The American Public Health Association (1985):- Control of Communicable Diseases in Man (An official report of American Public Health Association). Inter disciplinary, Books, pamphlets and periodicals. John D. Lucas Printing Company USA.

Other Resources :-

Community Health Practitioners Registration Board of Nigeria (2006):- Curriculum for Higher Diploma in Community Health, Miral Press.

UNIT 9:- MANAGEMENT OF OUTBREAK OF DISEASE

TABLE OF CONTENT

1.0. Introduction

When two or more cases of infection with indistinguishable organisms are detected in one area, it constitutes outbreak and suggest a breakdown in normal hygienic practice.

Most outbreaks are dealt with on a day to day basis by the infection control team but in the case of large, serious or community associated outbreaks or epidemics, an ad hoc working committee will be formed to determine action.

The actions to take in case of an outbreak may be determined by the urgency which is in turn determined by the nature of disease involved and by the vulnerability of the population concerned.

The management plan is intended to ensure prompt action to recognize an outbreak of communicable disease, eliminate the source and stop further spread, prevent reoccurrence and ensure satisfactry communication between all concerned.

In this unit, objectives and principles of management of outbreak, resources needed and actions to be taken will be discussed.

2.0. Objectives

At the end of unit 9, you should be able to:-

- Describe an outbreak
- Define the objectives of management of outbreak
- Describe the principles of management of outbreak
- Identify resources for management of outbreak.
- Plan for out break
- Implement actions and monitor effectiveness in dealing with the causes of outbreak.

3.0. MAIN CONTENT

3.1. Definitions of Outbreak

- Outbreak occurs when incidence of the disease rises above the normal incidence in a particular time and place.
- Any communicable disease or acute exposure to toxic agent can become an outbreak when there is an unusual increase in number of clinical cases.
- Major outbreak:- This may be defined by numbers alone or by the potential risk presented, for example large numbers are affected at a public or private function, several cases in an institution.

  The following are examples of what constitute a major outbreak:

  Ten or more admissions in a 48 hour period

  More than twenty cases of acute food poison.

  Any case of the following diseases:- diphtheria, hemorrhagic fever, poliomyelitis.

  A water borne outbreak affecting water supply.

3.2. **O**bjectives of Management

These are:

To identify if an outbreak exists.

To establish the extent of the outbreak that is whether limited, extent or major.

To identify and eliminate source of outbreak

To stop or limit further spread

To prevent a re occurrence

To ensure satisfactory communication between all concerned.

To disseminate information.

3.3. Principles of Outbreak Management

These are:-

1. The rapid recognition of an outbreak is vital. Members of the public and health staff must report any suspicion of an outbreak to members of committees set up for control, for example, Infection Control Team.

Infection Control Team:-

This team will asses the extent and severity of any suspected outbreak, provide advice on immediate infection control measures and decide whether an outbreak has occurred.

If the extent of outbreak is large or extends outside the boundaries of the local communities then it is termed a major outbreak.

3.4. Resources needed for management.

The resources needed to manage outbreak include largely human resources and equipments. In considering human resources, there is need to consider:

1. Need for outbreak control team.
2. Need for increased clinical care.
3. Need for increased domestic/house keeping, laundry, Central Supply and Services Department and auxiliary staff.
4. Need for increased laboratory personnel for their assistance.

5. Need for clerical staff, IT support and telephones.
6. Other things to be considered are:
    a) Isolation facilities
    b) Isolation and nursing procedures to be well defined.
    c) Domestic/House keeping and catering procedures should be defined.

d) Requirements of Supplies such as:-

- Drugs
- Protective equipment
- Soap
- Paper towels etc.

3.5. Planning for Outbreaks

The plan provides guidance for dealing with outbreaks of communicable diseases in health facilities.

Outbreaks are generally the responsibility of that facility's infection control committee which is usually set up at the onset of outbreak.

Immediate steps must be taken by the facility's infection control team to collect further clinical, epidemiological and laboratory information. A case definition will be established and used to verify known cases as well as to search for further possible cases.

Once an outbreak is confirmed, an initial assessment of the extent and importance of the outbreak will be made and a deduction taken whether to institute the facility-specific outbreak plan and convene the outbreak control team (OCT).

- Factors to be considered in the decision to convene by OCT include:-
    a. Type of communicable disease involved.
    b. Number of confirmed or suspected cases (outbreak definition). These include:
        - Large number of cases
        - Two or more cases of a notifiable condition in the same area within an incubation period.

- Size and nature of the population at risk.
- The like source
- Potential impact on service delivery.

3.6. Implementation of Actions

The functions of outbreak control team are important, and are essential in dealing with the outbreak.

Their functions include:-

- Review evidence and confirm if there is an outbreak.
- Develop a strategy/strategies to deal with the outbreak and to allocate individual responsibilities for implementing actions.
- Implement control measures and monitor their effectiveness in dealing with the cause of outbreak and in preventing further spread.
- Ensure that adequate staff and resources are available for the management of the outbreak.
- Consider potential training opportunities for staff on the outbreak.
- Provide support, advise and guidance to individuals and organizations directly involved in dealing with the outbreak which include general community, hospital patients, visitors, relations and members of staff.
- Communicate with relevant agencies, general public, the media on the outbreak so that they can be appropriately informed from time to time.

3.7. Functions of Community Health Workers as a member of the team.

These are many and varied from facilities and communities.

The general disease outbreak management includes the followings:-

- Provision of prompt and adequate care. This includes secondary preventive care and Tertiary care (rehabilitation)
- Health Education activities (mass campaign) targeted at people with high risk.
- Serves as part of the epidemiologic investigation group by helping to design and collect data for epidemiological analysis.
- Involved in the implementation of regulations for the control of disease.

- Involved in reporting the prevalence and incidence of disease.
- Plans, implements and evaluates immunization measures by:
    a) Educating on the need for immunization.
    b) Giving immunization
- Control of the spread of infection by:-
    a. Monitoring the care provided for those who suffer from the disease whether in the hospital, primary health care setting or in community based care.

b. Takes part in quarantine and surveillance and tracking of the population and screening of contacts.

c. Health education on the prevailing diseases and how to prevent the spread of disease.

- Provision of therapeutic care in treatment centres.
- Education, counseling on prevention so as to promote their active participation in their own care and in protecting others.
- There must be an outbreak notification report which will be circulated to relevant bodies and institutions responsible for overseeing the outbreak.

4.0. CONCLUSION

Unit 9 dealt with management of outbreak of communicable diseases.

The major aim of management is to implement action that will identify the source, minimize spread and prevent reoccurrence of communicable diseases.

You now have in depth knowledge of management of principles and strategies that can be employed so as to control the outbreak of communicable diseases. In other to maintain continuity in the sequence of this course, unit10 builds on unit 9.

5.0. SUMMARY

In unit 9, we have discussed management of outbreak of communicable diseases. We discussed objectives, principles, plans and implementation of actions in the control of outbreak of communicable diseases.

6.0. Tutor marked Assignment

1. Discuss how you will manage an outbreak of communicable disease in area (using Tuberculosis outbreak) as an example.

2. The functions of outbreak control team in the health facilities are very crucial in the management of out break of communicable disease. Discuss the functions of outbreak control team.

7.0. REFRENCES AND OTHER RESOURCES

Alakija Wole (2000) Essentials of community health (primary health care and health management). Medi success publication, Benin.

The American Public Health Association(1985):- Control of Communicable disease in man, (An official Report of the American Public Health Association)14th edition . Interdisciplinary books, pamphlets and periodicals. John D. Lucas Printing co USA.

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UNIT 10: SURVEILLANCE, TRACKING AND INVESTIGATIONS AS STRATEGIES FOR CONTROL OF COMMUNICABLE DISEASES.

TABLE OF CONTENTS

1.0. INTRODUCTION

Surveillance is simply data collection for action. The information gathered from data collection is used for planning, implementation and programs.

Surveillance data are used to determine the need for public health action and to assess the effectiveness of programs like control program of communicable diseases.

Surveillance is an important epidemiological tool and it is limited to specific diseases which are of national significance and has high priority in terms of surveillance and other strategies for control of communicable diseases.

2.0. OBJECTIVES

At the end of Unit 10, you should be able to:-

- Describe surveillance as part of strategies for controlling communicable diseases.
- Identify objectives of surveillance
- Describe essential elements of surveillance
- Describe methods of surveillance.
- Identify targeted diseases for surveillance.

3.0. MAIN CONTENT

3.1. Description of surveillance

This is regular and systematic collection of data on the disease incidence for the purpose of appropriate action.

It can also be described as collection of epidemiological information of sufficient accuracy and completeness regarding the distribution and spread of disease to be relevant for planning, implementation and monitoring of disease prevent control program activities.

Surveillance is a continuous scrutiny of and careful observation of the distribution and spread of infections and the related factors with sufficient accuracy and completeness to provide basis for effective control.

3.2. Elements of surveillance

They are:-

1. Systematic collection of all relevant data.
2. Orderly consolidation (Tracking) and evaluation of these data.
3. Prompt dissemination of the results to those who need to know, particularly those who are in position to take action, included in this process are tracking, data collection and evaluation of:-

a. Morbidity and mortality reports
b. Special reports of field investigations of epidemics and of individual cases.
c. Isolation and identification of infectious agents by laboratories.
d. Data concerning the availability, use and effect of vaccines and toxoids, immunoglobulin, insecticides and other substances used in control.
e. Information regarding immunity levels in segments of the population.
f. Other relevant epidemiological data:- A report summarizing the above data should be prepared and others with a need to know the results of the surveillance activities.

3.3. Objectives of Surveillance

Some objectives of Surveillance are:-

1. To determine the incidence of disease
2. To know the geographical distribution or spread of disease/ event.
3. To identify population at risk of that disease/event.
4. To monitor trend of disease over a big time period
5. To capture the factors and conditions responsible for occurrence and spread of a disease.
6. To predict the occurrence of epidemic and control epidemics.
7. To evaluate the effectiveness of an intervention or programme.
8. To assess the disease burden in the community or health needs of the community.

3.4. Methods of Surveillance

These methods includes:-

1. Routine reporting system
2. Active surveillance and passive surveillance of malaria
3. Sentinel reporting system
4. Surveys and special studies
5. Cause and outbreak investigation

3.4.1. Routine Reporting System

In this system the health staff collects information about number of cases of reportable diseases and deaths that occur in their area.

Collection of information in this system from Primary Health Care Centres, Comprehensive Health Centres and Hospitals. Every patient that comes to this centre is recorded. It is the simplest and most widely prescribed way of collecting information for action.

Advantages of Routine Reporting System

1. It is the simplest and least costly.
2. It is efficient and quickest method to obtain information.

Disadvantages

1. There might be incomplete information
2. Quality and reliability of data are highly variable.
3. Provides incomplete picture of the total number of cases that occur.

3.4.2. Active Surveillance

This is a process of actively looking or searching for a particular type or group of diseases by the health personnel as well as the community.

Advantages

1. The degree of reporting is more complete than by any other method.
2. It detects early cases of a possible impending outbreak/ epidemic.

3.4.3. Sentinel Reporting System

In sentinel systems, a small number of health units are selected to report cases of diseases and deaths that are seen or diagnosed at their facility.

These sentinel sites also collect and report additional information such as age, immunization status and other details.

Sentinel sites are the hospitals like (Infectious disease, Tuberculosis, Pediatrics Hospitals, Health Centres, Laboratory or Rehabilitation Centre even Teaching Hospitals.

Advantages

1. Sentinel site/system collect more reliable and accurate data because trained staff and specialists handle the cases.
2. The records are more accurate and timely
3. The site provides consistent and quality data/information.
4. They are relatively in expensive to set up and operate.

Disadvantages

1. They are not representative of entire population at risk.
2. The incidence and prevalence rates cannot be calculated.
3. The information cannot be generalized to estimate the natural or state incidence rate.
4. Population served by sentinel site may change making the study or trends invalid.

3.4.4. Surveys and Special Studies

Sample survey or disease survey is an active and efficient method of surveillance which can complement the other method in planning a natural disease control strategy. Survey is needed to establish priorities between various diseases.

The limitations are:- (1) It is difficult to control (2) Relatively expensive (3) Needs highly skilled person with organizational abilities.

3.4.5. Case and Outbreak Investigation

Case is an investigation of a single case of a disease or death.

An out break investigation is an investigation of many cases.

Purpose of investigation:-

1. Confirm diagnosis and determine the causes.
2. Confirm the existence of an outbreak (an increase in the number of expected cases/ deaths).
3. Identify the most appropriate control measures
4. Identify where and to whom to apply these measures.
5. Determine what can be done to prevent similar out breaks in the future.

These investigations are conducted systematically by having a written protocol or plan to identify the underlying cause of the problem.

3.5 Diseases for Surveillance

These are:-

Malaria

Poliomyelitis

Measles

Viral hepatitis

Hemorrhagic fever

Tetanus

Whooping cough

Diphtheria

Meningococcal Infection

Tuberculosis

Enteric fever

Chicken pox

Influenza

Viral Encephalitis

Gonococci infection

Cholera.

4.0. CONCLUSION

Unit 10 has described surveillance/tracking as strategies for control of communicable disease. By now you have the idea that surveillance provides basis for prevention and effective control program activities. Unit 11 will build on this unit.

5.0. SUMMARY

In Unit 10, we have discussed, survey tracking and investigations as strategies for control of communicable diseases. We looked at all aspects of surveillance such as objectives, elements of surveillance and methods of surveillance, and the target and methods of surveillance process.

6.0 Tutor Marked Assignment

1. Write short notes on surveillance as a strategy for control of communicable diseases
2. Identify five target diseases for surveillance in your area.

7.0. REFERENCES AND OTHER RESOURCES

C.N. Obionu (2001), Primary Health Care for Developing Countries, Delta Publications (Nig.) Limited, Enugu, Nigeria.

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UNIT 11: CURRENT POLICIES AND INTERVENTION STRATEGIES IN DISEASE CONTROL (HIV/AIDS, TUBERCULOSIS, MALARIA)

TABLE OF CONTENTS

1.0. Introduction

The reason for the current policies and intervention strategies in disease control such as HIV/AIDS, Tuberculosis, Malaria is because, these diseases are major health problems in Nigeria.

They remain major health and developmental challenges to Nigeria. HIV/AIDS contribute to a significant increase in the nation wide prevalence of tuberculosis.

The impact of diseases such as malaria, HIV/AIDS and tuberculosis

in the economy is more pronounced in a highly populated country like

Nigeria.

Malaria is a major health and developmental problem in Nigeria as it affects school attendance and ability to work.

The control strategies are meant to stem the prevalence rates of these diseases. By the end of this unit, you are expected to be familiar with the strategies for control.

2.0. Objectives

At the end of the unit, you are expected to be able to:-

1. Identify strategies for control of HIV/AIDS, Tuberculosis and Malaria.
2. To describe these strategies based on Policy of Government.

3.0. Main Content

3.1. Strategies to Combat HIV/AIDS

3.1.1. Formation of National, State and Local Committees on AIDS (NACA, SACA and LACA)

The national response to the growing HIV/AIDS epidemic was the information of Presidential Commission on AIDS (PCA) which includes ministries from all sectors. The National Action Committee

on AIDS (NACA) was formed in 2000 to foster multi sectoral approach to AIDS.

Membership includes representatives from ministries, private sector, non-governmental organization (NGO's) and network of persons living with HIV and AIDS.

Formation of SACA and LACA: State and local action committee on HIV/AIDS are formed.

This is to spearhead the local multi sectoral response to HIV/AIDS.

3.1.2. Action plan on HIV / AIDS and the objectives.

The first HIV and AIDS Emergency Action Plan was prepared by NACA and approval for 3 – year period was given.

The Objectives are:-

1. Increasing awareness and sensitization of the general population and key stakeholder
2. Promoting behavior change in both low-risk and high-risk populations.
3. Ensuring that communities and individuals are empowered to design and intimate community-specific action plans.
4. Institutionalizing best practices in care and support for people living with HIV / AIDS, orphans and other affected groups.
5. Creating support groups of people living with HIV/AIDS and others affected by AIDS.
6. Establishing an effective HIV/AIDS surveillance system.
7. Stimulating research on HIV/AIDS.

3.1.3. National AIDS Policy

The national AIDS policy was launched in 2003.

3.1.3.1 Goal of the Policy

The overall goals of National AIDS policy are:-

1. To control the spread of HIV by providing equitable care and support for those infected by HIV.
2. To reduce its impact to the point where it is no longer of public health, social and economic concern, such that all Nigerians achieve socially and economically productive lives free, of the disease and its effects.

3.1.3.2. Strategies for Implementation

These includes:-

- Voluntary confidential counseling and testing (VCCT)
- Prevention of mother to child transmission (PMTCT)
- Strengthening the capacities to diagnose early and treat sexually transmitted diseases and other opportunistic infections.
- Providing access to anti retroviral drugs (ARV)
- Free treatment to tuberculosis patients
- Behavioral change communication
- Strengthening of surveillance system for major communicable diseases with particular emphasis on HIV/AIDS
- Formation of care and support group across the country to fight against stigmatization.
- Social Security for AIDS orphans and children with AIDS.
- Referral System:- Referring clients from one health facility to the other.
- Monitoring and Evaluation system.

Voluntary confidential counseling and testing:-

This is an effective means of addressing the psychological and socio sexual aspects of HIV/AIDS. It is an entry point of both HIV/AIDS prevention and care intervention programs.

The VCT operational centers have been set up all over the country.

The counseling centers should be more youth friendly to encourage access by youth to information, prevention and curative services.

Prevention of mother to child transmission

The national PMTCT was launched in 2002. Operational guidelines and scale up have been developed and widely disseminated to all parts of country's natural sites.

Behavioral change communication

Guideline for implementation of behavioral change communication intervention programs have been developed.

The frame work provides a direction for all HIV/AIDS intervention activities in Information Education and Communication (IEC).

The key messages are on abstinence mutual relationship.

This is to promote behavior change, prevention of HIV infections including targeted interventions.

Diagnosis and testing

- Strengthening of screening capacities:-

a. Screening of pregnant women in the blood banks.

b. Epidemiological surveys

c.Confirmatory testing for clinical management and voluntary testing

Providing access to Anti Retroviral Drugs (ARV)

Provision of adequate resources and ensuring improvement in the availability of drugs. This is to ensure uninterrupted drug supply and avoid stock-outs.

There must be definition of protocols and ensure adequate implementation of drug forecasting ordering, dispensing and

tracking at both national and facility levels.

Formation of care and support groups.

So many groups have been formed all over the country under the umbrella of network of people with AIDS in Nigeria (NEPWAN) such as PLWA (People Living With AIDS), communities, peers, and family members have been involved in formation of various groups of people. These are efforts to combat the spread of HIV/AIDS.

3.2. Strategies to control Tuberculosis

Nigeria ranks as one of the Tuberculosis burden countries with an

estimated incidence of 293 cases per 100,000 per year.

The federal government established the national Tuberculosis and

Leprosy Control Program (NTBLCP) in 1989 and adopted the WHO directly Observed Treatment Short Course (DOTS) strategy in 1993.

The strategy is TB-DOT Programme which includes:

1) Establishment of DOTS centers all over the country.

This involves:-

a) Good quality diagnosis of Tuberculosis

b) Regular and uninterrupted supply of anti T.B drugs.

c) Systematic monitoring of progress of treatment.

d) Involvement of family members in the DOT program.

e) Involvement of International NGOs in the DOT program initiative

3.3. Strategies to control malaria

The prevalence of malaria in Nigeria is high which may be due to the abundance of unkept drainage and environment which aids the vector of malaria. Deaths recorded from malaria have also been on the increase.

Malaria control has been a priority programme of the federal Government of Nigeria. Nigeria has adopted the “Roll Back Malaria (RBM) initiative in its efforts to combat the disease.

The RBM initiative funded by a global partnership of World Health Organization (WHO), United Nation Intrenational Children’s Education Fund (UNICEF), World Bank and United Nation Development Fund (UNDP).

The goal of this initiative is to halve the malaria burden worldwide by 2010.

The strategies adopted are:-

1. Dynamic global movement.
2. Well coordinated actions
3. Evidence based decisions
4. Multiple Prevention
5. Rapid diagnosis.
6. Treatment and focused research.

RBM advocates access for effective treatment within eight hours of

the onset of symptoms and use of insecticide treated material and effective vector control. The pregnant mothers should receive intermittent prophylaxis in the second and third trimester.

The strategic plan for RBM in Nigeria was launched in 2001 – 2005

The declaration has three main goals which are:-

1. Correct treatment
2. Preventive Measures
3. Presumptive intermittent treatment.

In order to achieve these goals, several structures have been developed in line with RBM principles. These include:-

a. Establishment of a National Malaria Program at the National, State and LGA levels.
b. ITN (Insecticide Treated Nets) massive promotion and awareness campaign (IMPAC) initiative.
c. Formulation of a single drug regimen that will combine the newly approved artemisin with older anti malaria treatment drugs called artemisin based combination treatment (ACT).

4.0. Conclusion

In this unit,you are made to understand that the impact of diseases such as HIV /AIDS, Malaria and Tuberculosis on health status and economy of this country is enormous. This led to strategies adopted for combating these diseases in Nigeria. These diseases constitute a global health problem which needs global efforts and strategies to control them.

Therefore the strategies or control discussed will go a long way in reducing the incidence and prevalence rates of these diseases.

By now you should be able to discuss some of these strategies for control as it applies to Nigeria.

5.0. Summary

This unit has discussed various strategies for control of HIV/AIDS, Tuberculosis and Malaria. These include policies such as:

National AIDS Policy, T.B DOT. Directly observed treatment short course (DOTS) programme and Roll Back Malaria (RBM) initiative.

6.0. Tutor Marked Assignment.

1. Discuss the strategies in the control of HIV/AIDS and Tuberculosis in Nigeria.

7.0. References and other related resources

Sunder Lal, Adarsh and Pankaj (2007) :-Textbook of Community Medicine (Preventive and Social Medicine). CBS Publishers and Distributors, New Delhi, India.

Other Related Resources

Health Reform Foundation of Nigeria Foundation (HERFON):- Nigeria Health Review 2006.

Millennium Development Goals Report 2004, Nigeria.

MODULE 4: - MAJOR COMMUNICABLE DISEASES IN NIGERIA.

UNIT 12:- MALARIA, TUBERCULOSIS, MEASLES, POLIOMYELITIS.

UNIT 13:- HIV/AIDS, LEPROSY AND CEBROSPINAL MENINGITIS.

UNIT 14:- CHOLERA, YELLOW FEVER, LASSA FEVER, AND TYPHOID FEVER.

UNIT 15:- VIRAL HEPATITIS, ONCHOCERCIASIS, FILARIASIS GUINEA WORM.

UNIT 12:-MALARIA, TUBERCULOSIS, MEASLES, POLIOMYELITIS.

TABLE OF CONTENTS

1.0. Introduction

The disease burden due to communicable diseases is colossal and these diseases cause heavy mortality, disability and economic loss to the country.

The emerging and reemerging infectious diseases are a global phenomenon and most of these disease result in widespread epidemics with high mortality and morbidity.

In addition to the intense suffering of mankind, these diseases especially the epidemics disturb the international trade and economic development.

These epidemics remain a major public health, social, economic and development challenge which account for large percentage of the burden.

In this unit, we will discuss some of these diseases and the challenges they pose to all stake holders of health and Nigeria in particular.

By the end of this unit, you will have in depth knowledge of these major communicable diseases that are discussed in this unit which are Malaria, tuberculosis, Measles and Poliomyelitis.

2.0. Objectives

At the end of this unit 12, you should be able to:-

1. Describe the epidemiology of these diseases malaria, measles, tuberculosis and poliomyelitis.
2. Identify their mode of transmission.
3. Describe the control measures of these diseases.

3.0. Main Content

3.1 MALARIA

3.1.1 Epidemiology

Malaria is an acute infectious disease caused in human by four species of protozoa, which are:- 1) Plasmodium falciparum, 2) Plasmodium malariae,

3) Plasmodium ovale , 4) Plasmodium vivax, genus plasmodium and transmitted by Anopheles mosquito.

Malaria is highly endemic in many developing countries and one of the major causes of illness and death especially in children. In Nigeria, malaria attacks ranks highest among notifiable diseases.

The risk of having malaria fever is higher in the rural areas because of the bushy environment and the forest areas although common in urban. Children under five years and pregnant women are at special risk of getting malaria infection during pregnancy.

This phenomenon has been associated with high maternal morbidity and mortality, first and second trimester abortions, still births, premature deliveries and low birth weights.

3.1.2. Infectious Agent

These are Plasmodium vivax, Plasmodium malariae, Plasmodium falciparum and Plasmodium ovale.

3.1.3. Transmission

Malaria is caused by the bite of infective female anopheles mosquito. In Nigeria, over three quarters of malaria infection are caused by Plasmodium .falciparum followed by followed by Plasmodium malariae and then Plasmodium ovale. Infections due to Plasmodium vivax are practically absent in West Africa. Transmission depends on host, vector and environmental factors.

HOST FACTORS:-

These include:- a) Innate resistance to malaria, blood groups, nutritional status.

b) Habits of host like clothing, sleeping habits occupation, animal keeping, migration of population for construction or project works..

c) Factors related to vectors are, feeding habits biting time and sensitivity to insecticides. d). Environment factors include humidity, rainfall, altitude and geographic controls. e) Agent factors, parasite load and sensitivity to drugs. f.) Factors of service availability and surveillance operations.

3.1.4. Life Cycle of Malaria Parasites

This involves 2 hosts:- (1). The cycle in mosquito (invertebrate) and cycle in man (vertebrates). Cycle in mosquito is sexual cycle in which the gametocytes escape from the containing red blood cells and mature into male and female gametes. The cycle takes 10-12 days.

(2) Cycle in man:- Pre-erythrocytic cycle takes 6-13 days in liver and man gets malaria after 12-18 days or longer after getting infective bite from mosquitoes.

3.1.5. Symptoms

These are characterised by:- Malaise, lack of appetite, headache, joint or body aches, followed by irregular fever which is often interrupted by episodes of chills (feeling cold) and rigor (shivering) and then sweating.

3.1.6. Diagnosis

This is by:-(a) Demonstration of malaria parasites in blood films.

(b) Clinical findings particularly in rural area where health facilities do not have microscope.

3.1.7. Control Measures of Malaria

A. Preventive Measures.

a. Those who are not immune requires use of supportive drugs of prophylaxis.

b. Effective treatment of acute and clinical cases.

c. Application of residual insecticide (DDT) as larvicide or imagicide.

d. Night spraying of living quarters with pyrethrum

e. Netting and screening windows and doors.

f. Repellants to cover skin

g. Using larvicide e.g organophorous compound (abate).

h. Screening blood donors.

B. Curative Approach

Use of Chemotherapy

The drugs available for treatment of malaria are:-

1. Aminoquinolines examples are Chloroquine and Amodiaquine (Camoquine).

Dosages are:-

	Day 1	Day 2	Day 3	Remarks
Chloroquine	600mg (4 tablets)	300mg (2tablets)	300mg (2 tablets)	150mg base per tablet or 5ml. Syrup. 200mg base in 5ml ampoule.
Amodiaquine	400mg (3tabs)	400mg (2tabs)	400mg (2tabs)	200mg base per tablet, 5ml syrup.
Quinine	600mg (2-3 tabs) 8hrlyx 7 days			300mg Salt per tablet 300mg per ml injection
Halofantrine (Halfan)	500mg (2 tabs) 6hrlyx3 doses			250mg halofantrine hydrochride Pertablet: 100mg in 5ml suspension.
Sulfadoxine pyrimethamine (Fansidar)	3 tabs start			Sulfadoxine 500mg Pyrimethamine 25mg per tablet.
Sulfalene Pyrimethamine (Metakelfin)	2 tabs start			500mg Sulfalene + 25mg Pyrimethamine
Mefloquine (larian)	3 tabs start			250mg Melfloquine per tablet

Child dose = Adult dose – Age of child (in years)

Age of child + 12

Rough estimation

Infant up to 2 years - $^1/_8$ - ¼ of adult dose

Children 2 -6 years - $^1/_8$ – ½ of adult dose

Children 6 – 12 - ½ - ¾ of adult dose

Over 12 years - ¾ - full adult dose.

C. Epidemic Measures

1. Field survey for breeding places

2. Mass Chemoprohylaxis

3.2. TUBERCULOSIS

3.2.1. Epidemiology

Tuberculosis is an infectious disease in human being caused by Mycobacterium Tuberculosis. The disease is present in all parts of the world. In Nigeria the disease has been in the increase over the past few years.

Recently,the disease has been recognized as one of the most frequent opportunistic infections with HIV infection.

The incidence of tuberculosis has increased in places where tuberculosis and HIV infections are highly prevalent.

3.2.2. Transmission

The causative agent is Mycobacterium Tuberculosis.

Incubation period is 1- 3 months. Man is the reservoir of the human strains and transmission is mainly by airborne droplets from sputum of infected persons, often adults with pulmonary tuberculosis. Such person spread the bacilli by coughing, sneezing, talking, singing etc. Transmission is enhanced by over crowding and poorly ventilated accommodation.

Factors that can favor development of tuberculosis

1. Age:- the younger the age at contact, the greater the risk of infection.

2. Housing:- Over crowding, poor ventilation

3. Nutrition:- It is made worse by malnutrition

4. Disease:- Diabetes, leukemia, cancer

5. Contact:- The closer to the infected person, the higher the risk.

6. Drug:- Those that affect the immune system e.g steroid.

3.2.3 Symptoms

The most common symptoms of pulmonary tuberculosis are:-

- Persistent cough lasting 3 or more weeks
- Sometimes blood stained sputum.
- Chest pain, heamoptysis, hoarseness, and shortness of breath.
- Loss of weight, fatigue, fever and general malaise.

3.2.4. Diagnosis

a. Sputum microscopy/culture

b. Chest X-ray

c. Tuberculin Test.

3.2.5. Treatment

Drugs used in treatment are:-

1. Streptomycin
2. INH (Isoniazid)
3. Thiacetazole
4. Rifampicin

3.2.6. Control of Tuberculosis

1. Mass Vaccination with BCG
2. Case finding for new patients
3. Treatment of known cases, contact tracing
4. Health Education
5. Prevention of malnutrition especially in children
6. Improvement of social condition e.g over crowding.
7. For contacts and inactive cases, treat with Isoniazid

8. BCG vaccination for unaffected, e.g Tuberculosis, negative cases.

9. Pasteurization of milk, TB Testing of dairy cattle.

3.3. MEASLES

3.3.1. Epidemiology

It is an acute, highly communicable disease caused by measles virus.

Measles is virtually a universal disease but endemic in densely populated areas while periodic outbreaks occur in less populated areas.

Outbreaks are more frequent in dry seasons. The incidence of measles is higher in children under two years of age with the greatest risk of complications and deaths occurring in infants.

3.3.2. Transmission

Mode of transmission is person to person by droplet spread or direct contact with measles is highly infections.

The incubation period is about ten days varying 8-14 days.

3.3.3. Symptoms

The first symptoms are:-

- Coryza (running rose)
- Pyrexia (fever)
- Conductivities, branches and cough for the first three days, followed by :
- Generalized rash lasting 4 – 6 days.
- Koplik spots in the mucus membrane of the mouth.

3.3.4. Susceptibility and Resistance

One attack of measles produced life long immunity. Infants born to mothers who had measles attack acquire passive immunity which lasts for appropriately six to eight months after which immunity disappears.

3.3.5. Immunization

Preventing measles by immunization will have multiple benefits of preventing other diseases particularly diarrhea dysentery,malnutrition, blindness, pneumonia

and acute respiratory infections. Immunization is achieved by given attenuated live measles virus vaccine.

See Immunization Schedule Table under the topic of immunization in Unit Seven which discussed Concept of Immunity and Immunization in Relation to Communicable Diseases.

3.3.6. Methods of Control

1. Preventive measures:-
   (a) Vaccination using live attenuated vaccine.
2. Control of patient, contacts and the immediate environment. These include:- (a) Reporting (b) Isolation, (c) Quarantine (d) Protection of contacts. (e) Investigation of contacts.
3. Epidemic measures.

3.4.1 Poliomyelitis (Infantile Paralysis)

Epidemiology

Poliomyelitis is an acute viral infection caused by an enterovirus. The infectious agent is polio types 1,2,3. Type1 causes most epidemics.

3.4.2. Transmission

Faecol-oral transmission is the most common due to poor sanitation. During epidemics and where sanitation is good pharyngeal spread becomes relatively more important.

3.4.3. Incubation Period

Average incubation period is between 7-12 days but, the range is 3-21 days.

3.4.4. Clinical Features

In non paralytic infection, the symptoms include fever, headache, sore throat, nausea, diarrhea, vomiting and stiffness of the back and neck lasting for two to ten days.

In paralytic infection, these symptoms are accompanied by a sudden on set of paralyzing respiratory muscles.

3.4.5. Methods of Control

A. Preventive measures

1. Vaccination: Two types of vaccines are used :- Salk (killed IPV given parenterally) and Sabin (live attenuated), given orally, OPV are used in EPI.

B. Control of patient, contacts and the immediate environment.

1. Report to local health authority
2. Isolation
3. Concurrent disinfection of throat discharges and faeces and soiled articles.
4. Quarantine
5. Protection of contacts.
6. Investigation of contacts

C. Epidemic measures

1. Institute Mass Vaccination with oral vaccine at the earliest indication of an outbreak.

D. International measures

1. Poliomyelitis is a disease under surveillance by WHO
2. International Travellers visiting area of prevalence should be adequately immunized.

4.0. CONCLUSION

In unit 12, malaria, tuberculosis, measles and poliomyelitis were discussed under major communicable diseases in Nigeria.

By now, the impact of these diseases spread and major control are now clearer. The knowledge of these diseases will assist you as a community health practitioner to know the steps to take in case of outbreak in your area. Unit 13 is a continuation of discussion on major communicable diseases in Nigeria.

5.0. SUMMARY

Unit 12 discussed malaria, tuberculosis measles and poliomyelitis. The epidemiology clinical features / symptoms and the control measures of these diseases were discussed.

6.0. Tutor Marked Assignment

1. Write short notes on malaria and measles emphasizing their control measures.
2. What are the steps to take in case of outbreak of poliomyelitis among children in your area.

7.0 REFERENCES AND OTHER RESOURCES

C.N. Obionu (2001):- Primary Health Care for developing Countries. Delta publication (Nig). Limited Enugu, Nigeria.

Sunder Lal, Adarsh and Pankaj (2007) :- Textbook of Community Medicine/ Preventive and Social Medicine. CBS Publishers and Distributors New Delhi, India.

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UNIT 13:- HIV/AIDS, LEPROSY AND CEBROSPINAL MENINGITIS.

TABLE OF CONTENTS

1.0. INTRODUCTION

HIV/AIDS has emerged as pandemic and has become the leading cause of death in many parts of the world. Acquired Immune Deficiency Syndrome (AIDS) is caused by Human Immune Deficiency Virus and is a serious disorder of immune system. It is a global problem that requires global response.

Leprosy is one of the oldest diseases known to mankind. It is a chronic Communicable disease which affects the nerves, skin, eyes, testes, the mucous membranes of the nose and upper respiratory tract and other organs. The disease is found in many parts of the world but tends to occur most frequently in the less economically developed countries.

These three communicable diseases are of major Public Health problems in Nigeria. In this unit we will discuss these diseases so that you can have an in depth knowledge of them. Cerebrospinal meningitis is endemic throughout the tropics and subtropics and constitutes a major health problem.

2.0 OBJECTIVES

At the end of Unit 13, you should be able to:-

1. Describe the epidemiology of HIV/AIDS, Leprosy, Cerebrospinal meningitis.
2. Identify their modes of transmission
3. Describe the control measures of these diseases.

3.0. MAIN CONTENT

3.1. **HIV/AIDS** (Human Immune Deficiency Syndrome)

3.1.1 Epidemiology

Acquired Immune Deficiency Syndrome (AIDS) is caused by Human Imuned Deficiency Syndrome (HIV). HIV/AIDS is a global problem. It is a modern epidemic and pandemic and it recognizes no boundaries. The causative agent is a retro virus called HIV. All age groups are affected but incidence is higher between 20-24 years group.

3.1.2. Transmission

Regardless of the area of the world from which cases are reported, the modes of transmission are fundamentally the same. They are:-

Through sexual contact with infected person

Transmission of contaminated blood or blood products.

Sharing of contaminated needles or other skin piercing instruments.

From infected mother to child mainly at the end of pregnancy, during labor and shortly after birth.

High risk factors include among others multiple sex partners, prostitution, homosexual practice, unprotected transfusion of blood and blood products and intravenous drug abuse.

3.1.3. Incubation Period

Available data suggested that the incubation period is about 10years and 75% of the people infected with HIV will develop AIDS within 15 years and 95% within 20 years.

3.1.4. Symptoms

The disease is due to gradual breakdown of the host is immune system characterized by depletion of CD4 element of immune system.

3.1.4.1. Major Signs (Adult)

(a) Weight loss greater than 100% of body weight
(b) Chronic diarrhea longer than one month
(c) Prolonged fever longer than one month

3.1.4.2. Minor Signs (Adult)

(a) Persistent cough longer than one month
(b) Generalized pruritic dermatitis
(c) Recurrent Herpes Zoster
(d) Oro-pharyngeal conditions
(e) Chronic progressive and disseminated herpes simplex infection.
(f) Generalized lymphadenopathy.

For a child, AIDS is suspected if an infant or child presents with at least two major and two minor signs in the absence of known cause if immune-suppression.

3.1.5. Diagnosis of AIDS

This is by detection of antibodies in serum samples. Some of these tests.

1. ELISA (Enzyme – linked Immuno-Sorbent Assay). A very sensitive test, it is the cheapest and most widely used preliminary screening test.
2. Western Blot (Immune blot) test. It is a standard test but expensive.
3. Immuno fluorescence Assay (IFA)
4. Radio Immune precipitation Assay (RIPA)

3.1.6. Prevention / Control of AIDS

The prevention strategies include:-

1. Information education and communication to establish healthy life styles

in adolescent and young people. Discourage sex before marriage, no extramarital sex and having one faithful safe injection if you must.

2. Use of screened blood and blood products for transfusion and rejecting as donors, members of sexual partners of high risk groups.
3. Avoid use of injection with unsterilized needles and syringes and use of unsterilized sharp instruments for surgical procedures including cultural scarifications, circumcisions, ear and nose piercing, hair barbing, manicures and pedicures, sterilization of instruments should be encouraged.
4. Promote voluntary testing and counseling
5. Behavioural change activities of high risk group by targeted intention of controlling sexually transmitted diseases (STDs) and promoting use of condoms and safe sex with unknown or strangers
6. Control of STDs / STI, effectively since most STDs are curable.
7. Safe Sex by consistent use of condoms
8. Prevention of drug abuse
9. Aggressive Control of tuberculosis
10. Adopt universal prevention practices.
11. Safe disposal of hospital and dangerous waste.
12. Prevention of vertical transmission i.e mother to child transmission (MTCT).

3.2. Leprosy

3.2.1. Epidemiology

Leprosy is a chronic bacterial disease of the skin, peripheral nerves and nasal mucosal. It is a chronic infectious disease caused by bacteria Mycobacterium Leprae.

Leprosy is common in India, tropical Africa, South East Asia and South America. In these places leprosy is under reported because of the negative attitude to the disease and stigma attached to it.

3.2.2. Transmission

Leprosy is acquired principally through inhalation of the bacilli mycobacterium leprae which is a gram positive unlike organism that is both acid

and alcohol for intimate and prolonged or repeated contact is considered to be necessary for infection to develop. Children are more susceptible to infection. Other factors that many play a part in the transistors are over crowding and hormonal influence.

3.2.3 Symptoms

Leprosy manifest in different forms depending on the number of bacilli present in the body.

1. Tuberculoid leprosy (TL):- this is characterized by localized skin lesion which may be hypo pigmented and erythematous. There might be impaired sensation and total loss of the sensation include skin ulcerations and bone infection due to repeated injury and damage to the numb limbs.

2. Lepromatous leprosy (LL) :-

The clinical features are mainly dermal.

- Thickening of the skin (macules, papules) with shiny surface.
- There is nerve involvement.
- Hoarse voice by paralysis to the vocal cords
- Testicular atrophy with consequent sterility, impotence and gynecomasia is a late symptom.

3 Borderline leprosy

- Severe deforming as a result of early nerve damage.

3.2.4. Diagnosis

1. Clinical Diagnosis
2. Skin Biopsy
3. Nerve Biopsy
4. Lepromni test
5. Histamin test

3.2.5. Treatment

Multiple Drug Therapy (MDT) is recommended for the treatment of leprosy. Drugs of choice are:

1. Rifampicin 600mg + Clofazamine (lamprene) 300mg once in 28 days.

2. Clotazamine 50mg + Dapsone 100mg daily until the patient had 24 supervised doses within 36 months and is active clinically.

3.2.6. Control

1.Case finding and Early treatment.

The best way of preventing the spread of leprosy is to trace and treat early any person harboring leprosy bacilli. By so doing the cycle of transmission will be broken. Early treatment plus health education are the mainstay of leprosy control.

2. Health Education.

Health education is aimed at encouraging early reporting and treatment and to remove unnecessary stigma attached to leprosy through public enlightenment.

3. BCG. Vaccination

This gives varying protection against tuberculoid leprosy but this is doubtful in lepromatous leprosy.

4 Chemoprophylaxis

Dapsone given prophylatically will reduce the risk of contracting leprosy

5. Control of Contacts

Periodic examination of house hold contacts at 6-12 months interval for at least 5 years last contact with an infectious case.

6. Environmental sanitation

Improvement of living conditions, especially good housing is also important in the control of leprosy.

7. Isolation

In highly endemic area, isolation is not an effective measure in the control of leprosy; however it is useful where diseases are rare.

3.3. Cerebro Spinal Meningitis

3.3.1. Epidemiology

Cerebrospinal meningitis is an acute bacteria disease caused by Neisseria Meningitis which is the infectious agent. It constitutes a major public health problem in the “Cerebro spinal meningitis belt” of Tropical Africa. Epidemics of CSM usually occur

during the dry harmattan months (January to April) and ends during rainy season.

The disease tends to affect children and young adults mainly, but in epidemic all age groups may be affected.

3.3.2. Transmission

The mode of transmission is by direct contact, including droplets and discharge from nose and throat of infected persons from carriers most frequently. Neisseria Meningitis exists in six major antigenic group A, B,C, W, 135 X and Y. Epidemics in tropical Africa are mainly due to group A Neisseria meningitis. Incubation period varies from 2-10 days commonly 3-4days.

3.3.3. Symptoms

- The illness starts suddenly
- Fever, rigor, severe headache, nausea and vomiting.
- Stiff neck may be present, skin rash.
- Delirium and coma may occur leading to death in untreatment cases.
- Deafness can also result as a complicator of CSM infection.

3.3.4. Diagnosis

- Isolation of the organism through culture of throat and nasal swabs and of cerebro spinal fluid.

3.3.5. Control

1. Early treatment of cases.

   This is important as control measures to prevent spread of infection. This is neither easy nor very effective.

2. Routine immunization is indicated in areas where an epidemic may occur like in "meningitis belt, in Africa monovalent vaccines are now available for A & B, while vaccines are available for group A & C.

   During epidemics, mass immunization programme should be organized to cover all potential susceptibles.

3. Chemoprophylaxis

Chemoprophylactic protection of contacts especially during epidemics can be done with sulfonamide, also rifampion can be given to intimate contacts to reduce carrier state and limit spread of infection.

4. Environmental sanitation.

   This includes measures to prevent over crowding in living quarters, public transportation, working places, barracks, camps, schools, and places of worship.

   Concurrent disinfection of nose and throat discharges of patients and articles soiled should be carried out.

5. Health Education

   The community should be educated on personal hygiene and the need for reducing direct contact through large and better ventilated houses.

- Overcrowding and mass rashes should be discouraged during epidemics.

6. Notification of cases.

   The state and federal ministries of health should be notified of any outbreak of CSM immediately.

4.0. CONCLUSION

AIDS, Leprosy and Cerebrospinal meningitis are communicable diseases that have been of great public health concern worldwide and particularly in tropical Africa.

By the end of this unit, you must have had appreciable knowledge of the epidemiology, transmission processes and control measures to prevent their spread.

Unit 14 will be a continuity of some communicable diseases in Nigeria.

5.0. SUMMARY

In this unit, we have discussed Acquired Immune Disease Syndrome (AIDS), Leprosy and Meningitis, the epidemiology, modes of transmission diagnosis and treatment and control measures.

6.0. Tutor Marked Assignment.

1. Discuss HIV/AIDS under epidemiology, transmission process and control measures.
2. What are the steps you will take in case of outbreak of Cerebro Spinal Meningitis in your area?

7.0. REFERENCES AND OTHER RESOURCES.

CN. Obionu (2001):- Primary Health Care for developing Countries. Delta Publication (Nig.) Limited, Enugu Nigeria.

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UNIT 14: CHOLERA, YELLOW FEVER, LASSA FEVER, AND TYPHOID FEVER

TABLE OF CONTENTS

1.0. INTRODUCTION

Cholera has reemerged as a major infectious disease in the recent past with a global increase in its incidence.

In Nigeria most epidemics occur during rainy season when faeces that are in discriminately disposed are constantly being washed away into sources of drinking water. It is an acute bacterial enteric disease with sudden onset, if untreated, can cause high mortality rate.

Yellow fever like cholera is an acute infectious disease of short duration and varying severity. It is a viral infection, all age groups are affected by the disease. There is no seasonal, sex, or age variation shown by the disease in areas where it occurred. Most deaths as a result of Yellow fever occur each year in almost all sub-Sahara Africa.

Lassa fever was first recognized in Nigeria in 1969 when a missionary nurse became ill of the disease in a village of Lassa in Northern Nigeria,since then outbreaks of varying intensity have occurred in Nigeria and some West Africa Countries like Liberia and Sierra Leone.

Typhoid fever is a systemic bacterial disease characterized by insidious onset of fever and headache.

The occurrence of typhoid fever is worldwide. The disease is a typical example of water infection and explosive epidemics sometimes occur.

These communicable diseases are just like the other major health problems.

In this unit, you will have a very good knowledge of these diseases, which have contributed their own quota to the high rate of human loss in Nigeria.

2.0. OBJECTIVES

At the end of Unit 14, you should be able to:-

Describe the epidemiology of, Cholera, Yellow fever, Lassa fever and typhoid fever.

Identify their modes of transmission.

Describe the control measures of these diseases.

3.0. MAIN CONTENT

3.1. Cholera

Epidemiology of Cholera.

The disease is caused by Vibro Cholerae which is minute bacterium responsible for the Cholera.

The disease occurs in the lower socio-economic group under prevailing unsanitary conditions, overcrowding and low standard of living, inadequate, safe water supply and absence or poor sewage.

In many parts of Nigeria, most epidemics occur during the rainy season when faeces are washed into drinking water sources, climatic factors such as rains, floods, monsoons or drought may increase or decrease the incidence according to socio-cultural and other conditions in a given area.

3.1.2. Transmission

Cholera patients or carriers are the only reservoir of infection.

Transmission is faecal-oral through water and food contaminated by faeces or vomitus of a sick person, a convalescent patient or a carrier or by direct contact with faeces or vomits, contaminated cold cooked food, milk, uncooked vegetables and fruits are frequent sources of infection.

The infectious agent is Vibro cholera. The Incubation period is usually 1-5 days but could be as short as few hours or as long as 7 days.

3.1.3. Symptoms

The disease has a sudden onset characterized by vomiting and copious watery diarrhea which may lead to rapid dehydration and loss of essential salts (electrolytes).

The patient is conscious but may be drowsy and acidotic and may gradually pass to a state of collapse.

3.1.4. Treatment

The aim is to restore fluid and electrolyte loss.

1. Dehydration – This can be done orally or intravenously by using ORS or SSS. Intravenously by use of Ringer's Lactate (Hartman's solution) or normal saline.
2. Antibiotics – use of Tetracycline or Cotrimoxazole (septrin)
3. Other measures – continuation of breast feeding of the infant child. Fluid intake should be increased

3.1.5. Control of Cholera

1. Early Detection and Treatment
   Treatment of cases is an essential element in the control.
2. Health Education on:-
   - Personal Hygiene and domestic hygiene
   - Boiling of drinking water
   - Washing of hands before eating and after defecation.
   - How to prepare SSS. (Salt Sugar Solution)
3. Notification to the appropriate authority
4. Environmental measures -such as:
   - Safe Water Supply
   - Proper sewage and excreta disposal
   - Concurrent Disinfection
5. Immunization

3.2. Yellow Fever

Epidemiology

Yellow fever is an acute viral infectious disease of short duration and varying severity, transmitted between humans by infected mosquitoes.

The disease affects people of all ages and occur in tropical areas mainly in Sub-Saharan Africa and parts of South Africa.

It is caused by an Arthropod-borne (ARBO) virus, the yellow fever virus. Yellow fever is maintained in Africa by monkeys and the wild mosquito (Aedes Africanus) which breeds and bites animals in the forest.

3.2.2. Transmission

Yellow fever is primary disease of monkeys and it maintains three cycles in nature:-

a) Jungle cycle- causing jungle yellow fever which is transmitted form monkey to monkey by Aedes africanus.

b) Rural cycle – When mosquitoes bites man when they enter the forest and then transmit virus from monkey reservoir to human population.

c) Urban cycles – This may be through Aedes aegypt which is a domestic mosquito that breeds around human dwelling. Breeding sites are collection of rain water, domestic storage water, water in leaves and old tyres. Once the mosquito becomes ineffective after biting an infected person on monkey, they remain ineffective for the rest of their lives.

3.2.3. Symptoms

- Many infections are mild.
- Typical attacks have a sudden onset with fever, headache, backache prostration, nausea and vomiting.
- As disease progresses, pulse weakens, albuminuria and anuria may occur
- Hemorrhage and jaundice follow period of fever and vomiting.

3.2.4. Control of Yellow Fever

1. Protection of Susceptible Persons by vaccination (vaccine is included in EPI).
2. Anti mosquito measures
   This is similar to malaria control.
3. Personal Protection through use of bed nets, window screen, repellant and wearing of full trousers to protect against mosquito bites. Night spraying of living houses with insecticides.
4. Epidemiological Surveillance
5. International Health Regulation

3.3. Lassa Fever

Epidemiology

It is an acute viral illness with a duration 1-4 weeks. It is widely distributed over West and Central Africa. Reservoir is wild rodents and incubation period is 6-21 days.

3.3.2. Transmission

It is caused by an arena virus, the Lassa virus. Humans are primarily infected, following direct or indirect exposure of food dust, contaminated by the urine or faeces of infected rats. Transmission from man to man is also possible since the virus has been isolated from blood, urine and pharynx of patients so that airborne transmission, accidental inoculation and mechanical transmission are possible.

Hospital workers are at risk of exposure and outbreaks in hospital have usually carried a high mortality rate.

3.3.3. Symptoms

- Slow onset.
- Fever, malaise and muscle pain
- Progressive deterioration of above symptoms
- Conjunctivitis, pharyngitis, tonsilitis

- Severe headache, cough, chest and epigastric pain, tenderness prostration.
- Death may occur as a result of cardiac failure.

3.3.4. Control

1. Isolation of Patients suspected of Lassa fever.
2. Reporting to the appropriate health authority.
3. Concurrent disinfection of patients, excreta, secretions, sputum, blood and formites.
4. Surveillance- High risk contacts should be identified and kept under active surveillance.
5. Rodent contact with food should be prevented by proper storage of food items.

3.4. Typhoid Fever

3.4.1. Epidemiology

Typhoid (enteric) fever is world wide in distribution although, endemic in communities where standard of sanitation and personal hygiene are low.

The occurrence is worldwide. All ages and both sexes are susceptible.

Man is the only reservoir of infection, the source of infection being patients suffering from disease including mild and ambulatory cases and carriers.

In typhoid fever there are different types of carrier:

a. Convalescent carrier passes bacilli in the excreta for up to six months after an attack of typhoid.

b. Chronic carrier- continues to pass bacilli intermittently in excreta at least one year after infection.

3.4.2. Transmission The infectious agent of typhoid fever is the typhoid bacillus (Salmonella typhymurium).

Transmission of typhoid is faecal-oral and the spread is usually through the stool or urine of a carrier or patient contaminating water or food supplies. Other sources are contaminated fruits, vegetables, salads, milk, ice-cream and

their milk products. The incubation period is usually 14 days but can range from 1-3 weeks.

3.4.3. Symptoms

- It has gradual onset but many be sudden.
- Headache, general malaise, anorexia
- Abdominal discomfort and diarrhea
- Others are unproductive cough and sore throat.

3.4.4. Diagnosis

- Bacteriological isolation of organism from the blood, stool, or urine culture is conclusive. Widal test may be performed.

3.4.5 Control

1. Treatment of cases

Amoxicillin and Cephalosporins and others may be drugs of choice for the treatment of Typhoid fever. Patients should be barrier nursed where possible and concurrent and terminal disinfection of their stool, urine, clothing carried out.

2. Environmental Health Measures.

These include:-

Supply of clean water and proper disposal of faeces

Personal hygiene

Hand washing after defaecation, before preparation and handling of food

Pre employment examination of food handlers and exclusion of infected persons and carriers from food handling and preparation.

Improved and safe food supply and storage

Pasteurization of milk and milk products

Enforcement of quality control in all plants preparing food and drink for man.

3. Other control measures

- Encourage breast feeding throughout infancy
- Boil all milk and water used for infant feeding

- Educate the general public and particularly food handlers and attendants in the care of patients and children in need of personal cleanliness.
- Control of patients, contact and the immediate environment
- Report to local authority
- Quarantine
- Investigation of contact.

4.0. CONCLUSION

Cholera, yellow fever, Lassa fever, and typhoid fever are major hazards to public health in Nigeria. Typhoid fever, cholera are widespread diseases. Prevention and control of these diseases are important aspect of Primary Health/Community Health. The reason for actons of prevention and control is because outbreaks of these diseases have increased worldwide and in recent years many developing countries have faced serious epidemics of these diseases.

At the end of this unit you will have knowledge of measures to take in situations of outbreak of these diseases.

5.0. SUMMARY

In unit 14, we have discussed the epidemiology, transmission process, diagnosis and control measures of cholera, yellow fever, lassa fever and typhoid fever. Unit 15 will build on this unit to give continuity.

6.0. Tutor Marked Assignment

1. Discuss the epidemiology and control measures of typhoid fever and yellow fever.
2. How would you control the out break of yellow fever and lassa fever in your area.

7.0. REFERENCES AND OTHER RESOURCES

CN. Obionu (2001):- Primary Health Care for developing Countries. Delta Publication (Nig.) Limited, Enugu, Nigeria.

Sunder Lal, Adarsh and Pankaj (2007) :-Textbook of community medicine and social medicine (BS Publisher and distributors. New Delhi, India.

The American Public Health Association (1985) :- Control of communicable diseases in man. (An Official Report of the American Public Health Association), Washington Dc 2005. The John D. Lucas Printing Co. USA.

UNIT 15:- VIRAL HEPATITIS, ONCHOCERCIASIS, FILARIASIS GUINEA WORM.

TABLE OF CONTENTS

3.1. Viral Hepatitis

3.1.1. Epidemiology – This is also a public health problem in Nigeria.

The causative organisms are hepatitis viruses which are diverse group of viruses and affect liver given rise to hepatitis. Viral hepatitis is an acute illness which cause yellow colouring of eyes and skin.

Hepatitis A and hepatitis B are the two types that are common in Nigeria. It has worldwide distribution.

3.1.2. Transmission

Hepatitis A is widely distributed, usually transmitted primary by faecal contamination of drinking water or food.

Hepatitis B is found in infected blood and other body fluid such as semen, vaginal secretions wound exudates. Man is the only known reservoir of this virus. Hepatitis B is more infectious than HIV/AIDS. The incubation period of hepatitis A may vary from 15-45 days, while that of Hepatitis B. is 60-90 days.

3.1.3. Symptoms of Hepatics A

- There is acute onset, fever of short duration followed by:-
- Jaundice, malaise, anorexia, hepatomegaly and abdominal tenderness in the right upper quadrant.

3.1.4. Diagnosis

1. Serological tests are necessary to identify the type of the virus.
2. Simple blood test called Hbs Ag will help determine whether one is infected with hepatitis B virus or not.

3.1.5. Control Measures

1. Immunization

   WHO recommends that Hepatitis B be included in routine infant immunization program in all countries, Nigeria inclusive.

   The primary objective of the immunization is to prevent early childhood infection which results in chronic liver disease later in life.

2. Safe injection programme
3. Health Education on the prevention of faecol oral transmission.

3.2 OnchoCerciasis

3.21. Epidemiology

Onchocerciasis or River blindness is a dsease caused by a nematode filarial worm, the Onchocerca volvulus.

This disease is common in tropical Africa where over 99% of the world total cases are found. There is presence of this disease in all states of the federation.

3.2.2. Transmission

Onchocerciasis is transmitted by a female black fly or simulum. Found in fast flowing rivers and streams for breeding. The disease is a very serious problem among people who live close to the river.

Some man-made factors such as construction of dams for irrigation schemes and other purpose also create artificial breeding sites for the simulus vectors of

onchocerciasis.

3.2.3. Life Cycle

Adult filarial worms live in the subcutaneous tissues of the human host producing millions of embryos or micro flariae.

They may invade the skin of the human host fly during blow meal. Some may remain under the skin. The life span in the skin is 30 months.

Incubation period is about one year after microfilarias are found in the skin after infection.

3.2.4. Symptoms

Most symptoms of onchocerciasis are due to the presence of microfilaria in the tissue.

- Painless palpable nodules found around the pelvic godless, buttocks, lower back and iliac regions.

They can also be seen on the head, chest, upper limbs. The nodules may lead to fibrosis.

- There is urtico-popular rashes characterized by intense pruritis and scratching.
- There is hyper pigmentation giving a leopard skin appearance.
- Loss of vision and blindness
- Painless enlargement of the lymphatic glands

3.2.5. Diagnosis

Skin snip or skin biopsy.

Diagnosis is by identification of microfilaria in skin snips.

3.2.6. Treatment

The use of drugs such as Ivermectin, banocide and suramin. However there are side effects to these drugs.

3.2.7 Control

1. Mass Chemotherapy

This is done using the aforementioned drugs which will lead to

reduction of the circulating microfilaria in the human reservoir.

2. Vector Control

This is done by aerial application of insecticides (larvicides).

3. Use of repellants to reduce man-simulum contact

4. Wearing of suitable clothings while working out doors as similum bites in the day

3.3. Filariasis

3.3.1. Epidemiology

This results from infection with the nematode filarial worms, Wuchereria bancrofti which is a widely distributed type and occurs in many areas in the tropics.

It accounts for 90 % of all filarial cases in the world, followed by B. Malayi and B timori.

3.3.2. Transmission

It is transmitted through the bite of various species of mosquitoes.

It is a vector borne disease. The incubation period is usually long of several years. The peak prevalence of infection occurs in age bracket of 20-30 years. The reservoir of infection is an individual who has circulating microfilaria in the blood. They are also known as carriers of infection.

3.3.3. Symptoms:-

These occur several months after infecting with the microfilaria parasites, during which period the patient must have been reinfected so many times.

The clinical manifestations include:-

- episodes of acute lymphadenitis and lymphangitis of the limbs and genitalia associated with fever and malaise.
- induration around the affected lymphatics spreading to surrounding tissues.
- late manifestations are lymphoedema, elephantiasis of legs, scrotum arms, penis, vulva, breast and hydrocele.

3.3.4. Diagnosis :-

- Diagnosis based on the presence of clinical manifestations in endemic areas.
- Presence of microfilaria in fluid obtained from hydrocele, or adult worms in biopsy of lymph glands.

3.3.5. Control

1. Vector Control

   This involves mass chemoprophylaxis e.g. barocide.

   This is given to the total population at risk in a given area or to those infected through a special survey.

2. Measures to reduce man-mosquito contacts.

   These include screening of houses ,use of mosquito nets and repellants.

3.4 Guinea worm disease (Dracunculiasis)

3.4.1. Epidemiology.

Guinea worm diseases exists in about 19 Africa countries.

The disease occurs mainly in the dry season which corresponds with the period for harvesting and clearing the land in preparation for the next planting season. It is found in remote rural communities where good quality drinking water is lacking and where ignorance of its mode of transmission abounds.

Man is the only reservoir host for guinea worm.

3.4.2. Transmission

Guinea worm is transmitted exclusively swallowing contaminated water containing infected intermediate hosts called cyclops or water flea.

3.4.3 Symptoms

- Emergence of adult female guinea worm through the skin of the victims about a year of drinking water containing larva of the parasite.
- This is proceeded by a blister which later ruptures, disclosing a small opening through which the worm later protrudes.
- The person may be crippled for months depending on the site of emergence of the worm.

- Commonest site is the leg especially ankle although can be from any other parts of the body. including the hands, breast milk, buttocks and scrotum.

3.4.4. Treatment

1. Winding the worm out on a stick
2. Drugs such as Zentel, metronidazole and others. They help to reduce pain pruritis, facilitating expulsion of the worm.

3.4.5. Control Strategy.

1. Health Education / Community mobilization by encouraging use of safe water, non-pollution of water supplies and boiling or filtering of drinking water.
2. Provision of portable drinking water eliminated through the provision of safe drinking water supply. Clean water can be provided in the form of pipe borne water, wells.

3. Chemical Treatment of pond water.

   Treatment of water with Abate (tenephos) is one of the component of guinea worm eradication programme. The objective is to kill the cyclops in the pond or reduce its population.
4. Treatment of cases.

3.4.6. CONCLUSION

Viral Hepatitis, onchocerciasis, filarialsis and guinea worm are of public health problems. The control measures of these diseases must be pragmatic ,all apparatus of control must be employed to rid the society of these diseases. At the end of this unit you will be more knowledgeable on these diseases, their management and control measures.

3.4.7. SUMMARY

In this unit, we have discussed viral hepatitis, onchocerciasis, filariasis and guinea worm. Their epidemiology, transmission process,

management and control measures were also discussed.

6.0. Tutor Marked Assignment

Discuss the control measure of viral hepatitis and guinea worm incidence in your area.

7.0. REFERENCES AND RELATED RESOURCES

C.N Obionu (2001). Primary Health Care for developing countries . Delta Publications (Nig.) Limited Enugu.

Sunder Lal, Adarsh and Pankaj (2007) :- Text Book of Community Medicine (Preventive& Social Medicine). CBS Publishers and Distributors, New Delhi, India.

MODULE 5: INTERNATIONAL HEALTH

UNIT 16: INTERNATIONAL HEALTH

UNIT 17: ORGANIZATIONS ASSOCATED WITH INTERNATIONAL HEALTH

UNIT 16:- INTERNATIONAL HEALTH

TABLE OF CONTENT

1.0 INTRODUCTION

International health also known as geographic medicine or global health is a field of health care usually with a Public Health emphasis dealing with health across regional or national boundaries.

It also refers to health personnel or organization from one area or nation, providing direct health care or health sector development in another area or nation.

International health policy tries to promote health and well being and quality of life through researches, evaluation, training and technical assistance and building community partnership.

In the globalized world, diseases can spread far and wide via international trade and travel. A health crisis in the country can impact livelihoods and economies in many parts of the world.

Therefore international health regulations become the principal legal instrument guiding the international management of public health emergencies. This is with a view to prevent international spread of disease without unnecessary disruption of trade or travel.

2.0 OBJECTIVES

By the end of this unit, you should be able to:-

1. Understand the concept of International health.
2. Identify strategies for implementation of International health policy in Nigeria.
3. Identify principal agencies and their functions
4. Identify internationally notifiable diseases
5. Diseases International health regulations

3.0 MAIN CONTENT

3.1 Concept of International Health.

International health or global health is a field of health care usually with a Public Health emphasize dealing with health across regional or natural boundaries.

It also refers to health personnel or organization from one area or nation providing direct health care, health sector development in another area or nation.

It had been noticed that the spread of a disease does not stop at a country's border, more people travel to other countries and living in crowded cities which makes it easy for infection to spread. Infectious disease which starts in one part of the world can quickly reach another.

This therefore prompts many countries and health organizations to work together, and sharing information on these and other issues.

The International health policy and regulation arose out of concern for the spread of disease from one country to the other.

3.2 Diseases of concern in International health.

These are:-

1. Cholera
2. Yellow fever
3. Plague
4. Meningitis

5. AIDS
6. Poliomyelitis
7. Influenza
8. Malaria
9. Avian flu

All these diseases can cross international barrier.

3.3 Internationally Notifiable Diseases

These are diseases covered by the International Health Regulations and the occurrence of which the health authority of any country must report to the World Health Organization.

They are also called convention or quaratinable diseases

They are reported to Public Health Authorities at the time, it is diagnosed because it is potentially dangerous to human health.

3.4 International Notifiable diseases in Nigeria

These are:-

1. Yellow fever
2. Small Pox (Already eradicated)
3. Cholera
4. Typhoid fever
5. Plague
6. Louse borne relapsing fever

3.5 Measures taken to control these diseases:

There is quarantine and epidemiological unit at Federal Ministry of Health which is concerned with the establishment of :

1. Port Health
2. Airport Health
3. Quarantine stations or hospitals
4. Vaccination

Vaccination is carried out in order to obtain international certificate for yellow fever which is valid for ten years starting from ten days after the primary vaccination

or in the same day after re-vaccination.

The aim of these units is to guard against the import of diseases, thus keeping the indigenous population reservoir as small as possible.

The International health stipulates every member states are obliged to develop strength and maintain the capacity to detect, report and respond to Public Health events.

3.6. International Health Regulations

3.6.1 The International Health Regulations are International legal instrument that is binding on member countries across the globe.

3.6.2 Aim of the International Health Regulations

The aim is to help the International community prevent and respond to acute Public Health risks that have the potential to cross borders and threaten people world wide. It also aims at limiting interference with International traffic and trade while ensuring public health through prevention of spread of diseases.

3.6.3 The Purpose

It is to help prevent the International spread of disease with minimum of inconvenience to the passenger,

This requires International collaboration in the detection and reduction or elimination of the sources from which infection spreads rather than attempts to prevent the introduction of disease by Legalistic barriers that overtime have proved to be in effective.

International Health Regulation which entered into force in 2007, requires countries to report certain diseases outbreaks and public health events to World Health Organization (WHO) .

The International Health Regulation define the rights and obligations of countries to report Public Health events and establish a number of procedures that WHO must follow on its work to uphold global public health security.

The International Health Regulation also requires countries to strengthen their existing capacities for public health surveillance and response.

The WHO works closely with countries and partners to provide technical guidance and support to mobilize needed resources to implement the new rules in an effective and timely manner.

3.7 International Statistical Classification of diseases and related problems (ICD 10).

All diseases are classified and assigned to a major group and categories and sub-categories according to established International criteria.

The purpose is to compare the disease burden with different areas, states and countries and to compare the disease burden over different time period within the same country. This helps to plan and evaluate the impact of health services and health programmes.

ICD 10 are divided into twenty one chapters or major groups of diseases. They are:-

Chapter No	Nomenclature of Chapters
I.	Certain infections and Parasitic diseases
II.	Neoplasms
III.	Diseases of blood and blood forming organs and certain disorders involving the immune mechanism
IV.	Endocrine, nutritional and metabolic disorders
V.	Mental and behavioral disorders
VI.	Diseases of the Nervous system
VII.	Diseases of eye and adnexa
VIII.	Diseases of the ear and mastoid processes

IX. Diseases of the circulatory system

X. Diseases of Respiratory system

XI. Diseases of the digestive system

XII. Diseases of skin and subcutaneous tissues

XIII. Diseases of the musculoskeletal system and connective tissue.

XIV. Diseases of Genitourinary system

XV. Pregnancy- childbirth and puerperium

XVI. Certain conditions originating in perinatal period

XVII. Congenital malformations, deformities and chromosomal abnormalities

XVIII. Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified.

XIX. Injury, poisoning and certain other consequences of external causes

XX. External causes of morbidity and mortality.

XXI. Factors influencing health status and contact with health services.

Chapter 1 is the group of major interest in this unit.

In chapter 1, the Nomenclature of chapter is:- Certain infectious and parasitic diseases (A 00 B99).

A00 – Cholera

A01 – Typhoid and paratyphoid fevers

A09 – Diarrhea and gastro enteritis of presumed infectious origin.

4.0 CONCLUSION

The International health concept was meant to prevent spread of diseases from one country to the other.

The aim and objectives of international health is to have worldwide collaboration between intergovernment health agencies and the population.

The International health concepts all deal with various organizations who are involved in providing health care to Nigerian citizens.

Unit 17 will build on this unit.

5.0 SUMMARY

In this unit, we have looked at the concept of International health,the aim and purpose and diseases of concern in International health. We also mentioned the internationally notifable diseases and measures taken to control these diseases.

International health Regulations anf International statistical classification of diseases and related problems were discussed, with attention paid on chapter one which contains the infections and parasitic diseases.

6.0 Tutor Marked Assignment

1. Write short notes on:

(a) International Health

(b) Internationally notifiable diseases

(c) International Health Regulations.

7.0. REFERENCES AND OTHER RESOURCES

Alakija Wole (2000) : Essentials of Community Health, Primary Health care and Health management. Ambik press, Beni-city.

C.N. Obionu (2001) Primary Healthcare for developing countries. Delta publications (Nigeria) Limited Enugu Nigeria .

Sunder Lal, Adarsh and Pankaj (2007) :- Textbook of Community Medicine Preventive and Social Medicine. CBS publishers and Distributors , New Delta India.

OTHER RESOURCES

WHO: - What are the International Regulations? Online Q&A April 2008.

List of Notifiable diseases :- Answers. Com. htm

UNIT 17: ORGANIZATIONS ASSOCIATED WITH INTERNATIONAL HEALTH

TABLE OF CONTENTS

1.0 INTRODUCTION

International health deals with various organizations who are involved in providing health care to Nigeria citizens.

These are organizations or agencies that offer technical cooperation to the government in matters relating to health services, prevention and controlling communicable diseases, improving environmental conditions.

They also assist in controlling rapid population growth, developing health manpower planning and implementation of health programs.

These organizations include world Health Organization (WHO), United Nations International children's Emergency fund (UNICEF), United States Agency for International Development (USAID).

Some of these organizations will be discussed.

At end of unit 14, you will have in-depth knowledge of the activities of these organizations in relation to International health.

2.0 OBJECTIVES

By the end of this unit you should be able to:-

(1) Identify principal agencies that are responsible for international health

(2) Describe the functions of these organizations.

(3) Identify their activities in Nigeria.

3.0 MAIN CONTENT

3.1 World Health Organization (WHO)

3.1.1 The WHO is one of the specialized agencies of the United Nations and came into being in 1948. This organization has more than 199 member states which collaborate in the task of achieving the highest possible level of health through out the world.

WHO deals with problems of health like malaria, cholera, plague, yellow-fever and other communicable and non-communicable diseases which have an international as well as natural impact.

WHO is non-political, international health organization of United Nations committed to promotion of attainment of highest standard of health by all citizens of the World.

The broad objective of WHO is to have a single intergovernmental health agency.

The objective of the WHO is the attainment by all people of the highest possible of level of health.

3.1.2 Offices of WHO

WHO established six regional offices.

1. African Region – Headquarter in Congo Brazzaville
2. American Region – Headquarter in Washington
3. Mediterranean Region – Headquarter in Alexandria, Egypt.
4. European Region – Headquarter in Copenhagen, Denmark
5. West Pacific Region – Headquarter in Manila, Philippines
6. South West Asia – Headquarter in New Delhi, India

3.1.3 Functions of WHO

1. It coordinates international health through international health regulations.

2. It collects and disseminates the information on an international notifiable disease through weekly epidemiological reports, thereby serves as a warning centre for epidemics and pandemics.

3. Helps establish National Surveillance System of diseases of public health significance.

4. Compilation of health statistics in notifiable diseases and causes of death for example international statistical classification of diseases injuries and causes of diseases.

5. Coordination of research activities on health problems for example special programs on research and training in topical diseases.

6. Helps support eradication of diseases and natural health programs to control

   diseases of public health significance (communicable and non-communicable).

7. It publishes weekly epidemiological reports, world health statistics quarterly, world health statistics annually, and world health reports on public health problems.

8. Standardization of medical products for example analysis and control of drugs.

9. It strives for "Health for All" through Primary Health care systems.

10. WHO helps certifies eradication of diseases/disease from a territory based on established international criteria. It certified eradication of smallpox in 1978 and certified eradication of guinea worm in India in the year 2000.

3.1.4 WHO Activities in Nigeria (Past & Present)

1. Small pox

   An intensified programme for global small pox control was launched in countries, where the disease was considered to be endemic including Nigeria in 1967. In 1980 WHO certified small pox eradicated.

2. Control of Epidemics of CSM of past decades and control of cholera yellow fever and Lassa fever.

3. Disease of childhood. In collaboration with UNICEF, WHO in 1974 initiated the expanded program on immunization (EPI) with the goal of reducing morbidity and mortality for diphtheria, tetanus, whooping cough, measles, tuberculosis and

poliomyelitis by providing immunization against these diseases for every child by 1990.

4. WHO and UNICEF jointly organized the Alma-Ata conference at which countries including Nigeria endorsed primary Health care strategy as a means of attaining Health for All the year 2000.

5. Provides Technical Assistance on community water supply and sanitation.

6. Women in Health Development program. This is a UN Development program in which WHO is the executing agency,

7. Research and Training

   WHO assists many research programs in Nigeria under its global health research development

3.2 United nations international children's emergency funds (UNICEF)

3.2.1 Activities of UNICEF

1. Child immunization

   In collaboration with WHO, UNICEF is leading a world wide campaign to provide effective immunization for all children by 1990 to prevent the six communicable diseases of childhood which are diphtheria, measles, poliomyelitis, tetanus, tuberculosis and whooping cough.

2. Basic Maternal and Child Health Services including health centres and training of national personnel.

3. Disease control including control or eradication of diseases such as Malaria, TB, Leprosy etc which affect large number of children.

4. Prevention and control of locally endemic and epidemic diseases through WATSAN programs with special emphases on sanitation, VIP latrine and Guienea worm control.

5. Health Education activities by Training mobilization officers and workshops for Health education.

6. Supply of food and proper nutrition.

7. Family Planning Services.

8. Safe water supply and sanitation.

9. Growth monitoring to detect malnutrition and institute intervention before it becomes serious.

10. Universal use of oral rehydration

11. Organizing basic educational and income generating activities for mothers.

3.3 Other International Agencies

3.3.1 United States Agency for International Development (USAID)

Activities include:-

1. Programs for combating child hood diseases.

2. Assists in EPI, control of diarrhea diseases, malaria control, health communication, training for health information system and health planning.

3.3.2 United Nations Fund for Population Activities (UNFPA)

Activities include:-

1. Supports the strengthening of material and Child Health service including provision of family planning services.

3.3.3 Christian Voluntary Agencies for Health under the umbrella of Christen Health Association.

Activities:

1. Provides support for Primary Health care

2. Developing health manpower

3. Promoting the development of comprehensive health services.

3.3.4 Ford foundation

Activities:

1. Renders financial assistance in operational research issues in primary Health care.

2, Involved in maternal and child health services.

3.3.5 Pathfinder, Africare and IPPF

Activities:

These organizations generally perform the following functions:

1. Promoting the development of comprehensive Health services

2. Preventing and controlling communicable diseases

3. Improving environmental conditions

4. Controlling rapid population growth

5. Developing health manpower

6. Planning and implementation of health programs.

4.0 CONCLUSION

The various activities of these organizations have in no small measures brought some improvement on the health of the people. These organizations have assisted in strengthening our health care systems.

5.0. SUMMARY

Unit 16 has discussed key international health organizations and their activities. Organizations such as WHO, UNICEF, USAID and others were discussed.

These agencies have carried out health activities to help tackle the problems of internationally notifiable diseases.

6.0. Tutor Marked Assignment

1. Write short notes on 3 key international health agencies and their activities in Nigeria.

7.0 REFERENCES AND OTHER RELATED RESOURCES.

Alakija Wole (2000) :- Essentials of Community Health, Primary Health Care and health Management. Medisuccess Publication Benin.

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