

CLINICAL CONCEPTS OF STI/HIV/AIDS (CCH03)



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CLINICAL CONCEPTS OF STI-HIV-AIDS
Paper –III : Certificate Course In HIV/AIDS Counseling

Certificate Course In HIV/AIDS Counseling
Syllabus

Paper – III : CLINICAL CONCEPTS OF STI-HIV-AIDS

Unit – 1a (Epidemiology of HIV/AIDS and STI)

General Epidemiology Of Infectious Disease And Stis Including Hiv/ Aids – General Concepts Of Hiv Infection - A Carrier State In The Incubation Period - Mechanism Of Infection - Infective Materials - Environment (Social Factors) Plays An Important Role - Infectious Disease Epidemiology - *Infection–Contamination–Host - Infectious Disease - Contagious Disease - Communicable Disease – Epidemic – Endemic – Sporadic – Pandemic - Nosocomial Infection - Opportunistic Infection – Surveillance - Dynamics Of Infectious Disease Transmission - Human Reservoir - Window Period - Modes Of Transmission - Direct Transmission - Indirect Transmission*

Unit – 2a (Basics of Immunology)

General Concepts of Immunity - Susceptible Host - HIV infection attacks the immune system of the body – Immunity - White Blood Cells – Neutrophils – Eosinophils – Basophils - Lymphocytes – Monocytes – Granulocytes – Monocytes - Immune Mechanism - Development of Immune system - Humoral Immunity - The Complement system - Cellular Immunity - Specific Defenses - Specific Defences - Active Immunity - Passive Immunity - The Immune Response - Primary Response - Secondary Booster response:

Unit – 2b (Virology & Pathology)

Structure of Virus : Development of Virus in the Body - These symptoms are also common in people who do not have HIV infection.

Unit – 3a (Sexually Transmitted Infections)

Sexually Transmitted Diseases (Stds) - **Classification and terminology – Prevalence - Types and their pathogenic causes – Bacterial – Fungal – Viral – Parasites – Protozoal** - Among these the following infections are having public Health Importance

Unit – 3b (Syndrome Approach of STIs)

syndrome approach - urethral discharge - genital ulcer - vaginal discharge (without speculum) - vaginal discharge (with speculum examination) - Scrotal swelling - Lower abdominal pain in female - Inguinal bubo - Ophthalmia neonatorum

Unit – 3c (Treatment for Sexually Transmitted Infections)

Urethral discharge treatment - genital ulcer treatment - vaginal discharge (without speculum) treatment - vaginal discharge (with speculum examination) treatment - scrotal swelling treatment - Lower abdominal pain in females treatment – inguinal bubo treatment - ophthalmia neonatorum treatment

Unit – 4a (HIV – infection & Risk factors)

Problem statement of aids - How hiv transmission take place - Sexual intercourse - Infected mother to new-born child – Blood - How is HIV not transmitted

Unit – 4b (Post Exposure Prophylaxis - PEP)

Risk occupations - Health care workers - Average Risk Of HIV Infection After An Occupational Exposure - Steps to be taken on exposure to HIV infected blood/ body fluids and contaminated sharps - REPORTING OF THE EXPOSURE - POST EXPOSURE PROPHYLAXIS - DETERMINATION OF PEP RECOMMENDATION - Post Exposure Prophylaxis Drugs recommended by NACO - ADVICE TO THE INDIVIDUAL ON PEP

Unit – 5 (Prevention and Control of HIV / AIDS in the Community)

HIV/AIDS: : ITS PREVENTION AND CONTROL - SEXUAL INTERCOURSE - Use of condoms – BLOOD - Sterilized syringes and needles - Blood Safety - MOTHER-TO-CHILD - “NO RISK” BEHAVIOURS - “RISKY” BEHAVIOURS - Control - IMPORTANCE OF COUNSELLING, CARE AND TEACHERS, ROLE - Importance of Counselling - No Preventive Vaccine or Cure for AIDS - Living With Persons with HIV and AIDS - AIDS in the Home

Reference Books

1. The Text book of Preventive and Social Medicine 19th Edition – by K.Park
2. The text Book of Microbiology – Anantanarayan - & Panikar
3. NACO WEBCITE – Download loadable documents

CONTENTS
Of
Paper - III

Unit – 1a (Epidemiology of HIV/AIDS and STI)

Unit – 2a (Immunology (Basics))

Unit – 2b (Virology – Pathology)

Unit – 3a (Venereal Diseases (STIs))

Unit – 3b (Syndrome Approach)

Unit – 3c (treatment for STIs)

Unit – 4a (HIV – infection & Risk factors)

Unit – 4b (Post Exposure Prophylaxis)

Unit – 5 (It's Prevention & Control)

Unit – I**Epidemiology of HIV/AIDS and STI****1.0 Objectives :**

After studying the lesson, the student will have a clear cut idea about Epidemiology & Concept of Communicability. This will help the student about the dynamics of the disease transmission.

Structure of the Lesson

- 1.1 Introduction : General Epidemiology of Infectious Disease And STIs Including HIV/Aids**
- 1.2 General Concepts Of Hiv Infection**
- 1.3 A Carrier State In The Incubation Period**
- 1.4 Mechanism Of Infection**
- 1.5 Infective Materials**
- 1.6 Environment (Social Factors) Plays An Important Role**
- 1.7 infectious Disease Epidemiology**
- 1.8 Infection**
- 1.9 Contamination**
- 1.10 Host**
- 1.11 Infectious Disease**
- 1.12 Contagious Disease**
- 1.13 Communicable Disease**
- 1.14 Epidemic**
- 1.15 Endemic**
- 1.16 Sporadic**
- 1.17 Pandemic**
- 1.18 Nosocomial Infection**
- 1.19 Opportunistic Infection**
- 1.20 Surveillance**
- 1.21 Dynamics Of Infectious Disease Transmission**
- 1.22 Human Reservoir**
- 1.23 Window Period**

1.24 Modes Of Transmission

1.25 Direct Transmission

1.26 Indirect Transmission

1.1 Introduction

Any Disease follow certain pattern in appearance in the human population. The study of pattern of the disease existence in the population is known as epidemiology.

For example certain diseases are common in developed and some diseases are common in underdeveloped countries. Like wise some disease, some diseases common in children & some diseases are common in adult.

1.2 General Concepts of HIV infection

An epidemic process specific to each infection has developed in the course of long evolution. The microbe-parasite has adapted itself to changes of individual host, without which its existence as a species would be impossible.

Definite conditions of discharge of the causative agent from the affected organism specific to each infections, and mechanism for its transmission to a new host, have evolved.

The presence of the following three links of the epidemic chain is required for development of an epidemic process:

1. a source of infection
2. routes of transmission
3. And a susceptible population.

The uniting of these links occurs in definite environmental conditions.

The source or the **natural reservoir** of an infection is an infected human or animal.

The HIV affected **human** is the only important source of HIV infection. The person usually becomes infective from the onset of the disease to the end of his life. ot only patients with clinically manifest forms of the disease are dangerous as regards infection but also those who are normal & healthy are more dangerous.

Three types of the infectious persons are distinguished:

Carriers discharging the infective agent during the incubation period of the disease. Don not have any symptoms.

Carriers with early opportunistic infections

1.3 A carrier state in the incubation period

It observed to be very dangerous. The duration of the HIV positive state to AIDS case after an attack of infection is by no means the same for individuals, it depends on individual properties of the Host reaction or response.

1.4 Mechanism of infection

The Mechanism of infection is specific for each infectious disease, and depends on localization of the causative agent in the human organism, i.e. of the source of infection.

This localization determines the route of discharge of the microbe into the environment.

Thus, when the agent is localized on the skin or other areas of the body.

In diseases that humans are less susceptible, to and in which infection is largely determined by the dose of the infective agent, matters are quite different.

The causative agent HIV virus spreads by direct contact of a healthy person with a source of infection. It can be transmitted by unprotected sexual intercourse.

The transmission of infection via **infected Needles** i.e. by **indirect contact** is possible.

1.5 Infective materials are :

Materials that May Contain HIV

- Usually Infected Materials Most likely to be associated with a risk of HIV transmission
- Concentrated HIV in Laboratory Specimens
- Blood
- Fluids contaminated with Blood
- Usually Infected Materials may contain HIV, but less likely to be associated with risk of HIV transmission
- Semen
- Vaginal Secretion
- Cerebrospinal Fluids
- Synovial Fluids
- Pleural Fluids
- Peritoneal Fluids
- Pericardial Fluids
- Amniotic Fluids
- Human Milk
- Unfixed Body tissue
- Usually Non infectious Materials
- Saliva
- Urine
- Feces

- Tears
- Sweat
- Vomitus
- Nasal Secretions
- Sputum

Living vectors do not transmit HIV. There is trans-placental transmission of the causative agent from an affected mother to the child is playing an important role from Parent to Child transmission. Breast Milk of Mother also carrying HIV virus and it is infectious. Sickness can lead to death of the foetus (miscarriage)

A most important factor in the epidemic process is the **susceptibility of a population**. Irrespective of their immunity, Nutritional and Socio economic status all are susceptible to HIV virus.

1.6 Environment (Social factors)

Environment (Social factors) plays an important role in the epidemiology of HIV infection. The social structure of society largely determines the **social Behaviour**.

1.7 INFECTIOUS DISEASE EPIDEMIOLOGY

In fact, the subject of epidemiology originally developed from the study of epidemics of infectious diseases. Some Definitions:

1.8 INFECTION:

The entry and development or multiplication, of an infectious agent in the body of man or animals is infection. An infection does not always cause illness but HIV Infectious disease epidemiology is a fundamental part of the whole of epidemiology. Infection once established it leads towards AIDS.

1.9 CONTAMINATION:

The presence of an HIV on a body surface, of injection needles or surgical instruments or shaving blades is known as Contamination.

1.10 HOST:

Host is a person that affords subsistence or lodgment to an infectious agent under natural conditions. An obligate host means the only host, e.g. man in HIV.

1.11 INFECTIOUS DISEASE:

Infectious Disease is a clinically manifestation of the disease of man.

1.12 CONTAGIOUS DISEASE:

Disease transmitted through contact is known as Contagious Disease. Examples include scabies, trachoma, STD and HIV

1.13 COMMUNICABLE DISEASE:

An illness due to a specific infectious agent is being directly or indirectly transmitted from man to man is known as Communicable Disease.

1.14 EPIDEMIC:

The “unusual” occurrence in a community or region of disease, specific health – related behavior (e.g., smoking) or other health-related events (e.g traffic accident) clearly in excess of “expected occurrence”.

The above definition covers not only the usual epidemic diseases such as measles, chickenpox and cholera which are compressed in time, but also the modern “slow” epidemics of non-communicable diseases (e.g., CHD, lung cancer) in which the time scale of the epidemic is shifted from days or weeks to years. The slow growth of these epidemics conceal their size.

1.15 ENDEMIC:

It refers to the constant presence of a disease or infectious agent within a given geographic area or population, without importation from outside.

1.16 SPORADIC:

The cases occur irregularly, haphazardly from time to time, and generally infrequent. The cases are so few and separated widely in space and time that they show little or no connection with each other, nor a recognizable common source of infection .

1.17 PANDEMIC:

An epidemic usually affecting a large proportion of the population (2), occurring over a wide geographic area such as a section of a nation, the entire nation, a continent or the world e.g. HIV

1.18 NOSOCOMIAL INFECTION:

Nosocomial (hospital acquired) infection is an infection originating in a patient while in a hospital or other health care facility.

1.19 OPPORTUNISTIC INFECTION:

This is infection by an organism (s) that takes the opportunity provided by a defect in host defense to infect the host and hence cause disease.

The organisms include Herpes simplex, Cytomegalovirus, Toxoplasma, M.tuberculosis, M.avium intracellular, pneumocystis, etc. (for example, opportunistic infections are very common in AIDS).

Infection by an organism that is not normally pathogenic, but can cause disease if resistance is lowered.

1.20 SURVEILLANCE:

It is defined as “the continuous scrutiny of the factors that determine the occurrence and distribution of disease and other conditions of all ill health. Surveillance is essential for effective control and prevention, and includes the collection, analysis, interpretation and distribution of relevant data for action.

The main purpose of surveillance is to detect changes in trend or distribution of a Disease in order to initiate investigative or control measures against the Disease.

1.21 DYNAMICS OF INFECTIOUS DISEASE TRANSMISSION

Communicable diseases are transmitted from affected individual to Susceptible Individuals.

Sources and Reservoir:

The starting point for the occurrence of a communicable disease is the existence of a reservoir or source of infection.

The **source** of infection is defined as “the person from which an infectious agent passes or is disseminated to the host”.

A **reservoir** is defined as “any person in which an infectious agent lives and multiplies, on which it depends primarily for survival, and where it reproduces itself in such manner that it can be transmitted to a susceptible host”.

In short, the reservoir is the natural habitat in which the organism metabolizes and replicates. For HIV Man is only Source & Reservoir of infection.

1.22 HUMAN RESERVOIR:

The source or reservoir of HIV infection for humans is man himself. He may be a AIDS Case or carrier (HIV Positive without any symptoms of AIDS).

Man is often described as his own enemy because most of the communicable diseases of which man are contracted from human sources.

a. AIDS Case

A case is defined as “a person in the population identified as having less than 200 CD4 Count under investigation”.

In epidemiological terminology, the term **primary case** refers to the first case of a communicable disease introduced into the population unit being studied.

The term **index case** refers to the first case to come to the attention of the investigator; it is not always the primary case.

Secondary cases are those developing from contact with primary case.

(b) **CARRIERS:** HIV Positive Individual:

A carrier is defined as “an infected person or animal that harbours a specific infectious agent in the absence of discernible clinical disease and serves as a potential source of infection for others”

As a rule carriers are less infectious than cases, but epidemiologically, they are more dangerous than cases because they escape recognition, and continuing as they do to live a normal life among the population or community, they readily infect the susceptible individuals over a wider area and longer period of time, under favorable conditions.

1.23 Window Period:

This is the period in which individual is HIV negative and sheds the infection to others. This period ranges from 3 weeks to six months.

1.24 MODES OF TRANSMISSION

Communicable diseases may be transmitted from the reservoir or source of infection to a susceptible individual in many different ways, depending upon the infectious agent, portal of entry and the local ecological conditions.

As a rule, an infectious disease is transmitted by only one route, e.g., typhoid fever by vehicle transmission and common cold by direct contact.

However, HIV/AIDS will be transmitted by several routes. The mode of transmission of infectious diseases may be classified as below.

1.25 DIRECT TRANSMISSION

- a) Direct contact (Sexual Contact – Through Breast Milk)
- b) Inoculation into skin or mucosa
- c) Transplacental (vertical)

(a) **Direct contact:** Infection may be transmitted by direct contact from skin to skin, mucosa to mucosa, or mucosa to skin of the same or another person. This implies direct and essentially immediate transfer of infectious agents from the reservoir or source to a susceptible individual, without an intermediate agency, e.g., Infected wounds or inflamed skin-to-skin contact as by touching, kissing or sexual intercourse or continued close contact. Direct contact not only reduces the period for which the organism will have to survive outside the human host but also ensures a larger dose of infection. Diseases transmitted by direct contact include STD and AIDS.

(b) **Inoculation into skin or mucosa:** The diseases agent may be inoculated directly into the skin or mucosa e.g., rabies virus by dog bite, hepatitis B virus, AIDS virus through contaminated needles and syringes etc. and

(c) **Transplacental (or vertical) transmission:** Disease agents can be transmitted transplacentally. This is another form of direct transmission. Examples include the so-called TORCH agents (Toxoplasma gondii, rubella virus, cytomegalovirus and herpes virus), varicella virus, syphilis, hepatitis B, Coxsackie B and AIDS.

1.26 B INDIRECT TRANSMISSION

There is no Indirect transmission for HIV

1.27 Summary

The lesson in short deals with transmission of the disease from one individual to another individual. Student shall learn about the infective material and ways of spread. It is also shall be kept in mind that Window period is the one which cannot be identified and person infective will transmit the disease.

1.28 Kew Words

Epidemiology

Reservoir of infection

Incubation period

Susceptible host

Social factors

Infection

Contamination

Host

Contagious Disease

Epidemic

Endemic

Sporadic

Nosocomial Infections

Surveillance

Window Period

1.29 Self Assessment Questions

- Define Infections and its mode of transmission from Source to Susceptible host.
- Define Endemic
- When do you call HIV infection as AIDS case
- What is Window Period
- Write about Transplacental Transmission of infection.

1.30 Reference Books

Text book of Preventive & Social Medicine

- Dr.Maruti Sarma Mannava

Unit – II a**Basics of Immunology****2a . 0 Objective :**

After Studying the lesson, the student will have a clear cut idea about the body defense Mechanism and role of defense mechanism in HIV/AIDS infection

Structure of the Subject:

- 2a.1 Introduction
- 2a.2 Susceptible Host
- 2a.3 Immunity
- 2a.4 White Blood Cells
- 2a.5 Immune Mechanism
- 2a.6 Humoral Immunity
- 2a.7 The Complement System
- 2a.8 Cellular Immunity
- 2a.9 Specific Defenses
- 2a.10 Active Immunity
- 2a.11 Secondary Booster response
- 2a.12 Summery
- 2a.13 Key words
- 2a.14 Self Assessment Questions
- 2a.15 Suggested Books

2a.1 Introduction:

Any life struggles for existence. They have to depend on ecosystem in which they are living. Many organisms will try to invade us for their survival but our body resists this resistance offered by our body or life against invaders to damage our tissues is known as immunity.

2a.2 Susceptible Host :

All Humans are Susceptible to HIV infection, Irrespective of Immunity status, Nutritional status and other factors. If HIV positive patient continue the risk life new strains of infection will spread. Hence though the sex partners both are HIV infected, in spite of it they are advisable to use condoms.

2a.3 Immunity

Host defences against infection are at once local and systemic, non-specific and specific, and humeral & cellular. It is difficult to identify any infectious agent that fails to stimulate multiple host Defence mechanisms.

2a.4 White Blood Cells:

There are normally 4000 to 11000 White Blood Cells per μl of human blood. Of these the granulocytes, or polymorphonuclear leucocytes (PMNs), are the most numerous.

Young granulocytes have horseshoe-shaped nuclei that become multilobed as the cell grows older. They are three types depending on the character of granule nature.

1. Neutrophils
2. Eosinophils
3. Basophils

The other two cell types found normally in peripheral blood are

1. Lymphocytes – Cells with large round nucleus with scanty cytoplasm
2. Monocytes – cells with abundant granular cytoplasm and kidney shaped nucleus

Functions :

Granulocytes:

Granulocytes contain enzymes. Eosinophils phagocytose (Swallowing) Antigen (foreign body) and Antibody complex. The Neutrophils seek out, ingest, and kill bacteria and have been called the body's first line of defense against bacterial & viral infections. The Monocytes invade areas of infection and phagocytose bacteria and other foreign material and dead cells. These are called body's second line of defence.

When bacteria invade the body, the bone marrow is stimulated to produce and release large number of Neutrophils. Bacterial products interact with plasma factors to produce agents that attract these phagocytic cells to the infected area (Chemotaxis).

The chemotactic agents are formed from proteins of the complement system. These chemotactic & other plasma factors act on bacteria to make them "tasty" to the phagocytes (opsonization).

The Principle Opsonins that coat the bacteria are Immunoglobulins of a particular class of (IgG) and Complement proteins.

Monocytes :

The Monocytes, like Neutrophilic leucocytes are actively phagocytic. These cells enter the circulation from bone marrow, but after about 24 hours they enter the tissues to become 'tissue-Macrophages'. All the 'Tissue-Macrophages' including 'Kupffer cells' from liver and the alveolar macrophages in the lung, come from circulating Monocytes. The "Tissue macrophage" system has been called as **reticuloendothelial** system.

The Monocytes migrate in response to chemotactic stimuli & engulf, and kill bacteria by processes that generally similar to those occurring in neutrophils.

Lymphocytes:

Some Lymphocytes are formed in the bone marrow, but most are formed in the lymph nodes, thymus, and spleen, from stem cells that originally come from the bone marrow. There are

large & small lymphocytes in the lymph nodes and blood. The large lymphocytes are probably simply the precursors of the small lymphocytes. The small lymphocytes contain the antibodies responsible for delayed hypersensitivity reactions.

2a.5 Immune Mechanism

Types:

The body has principle defense immune system: Humoral and Cellular. Both react to antigens usually proteins that are foreign to the body such as bacteria, virus or foreign tissue.

Humoral Immunity: it is immunity due to circulating antibodies, in the γ (gama) globulin fraction of the plasma proteins. It is major defense against microbial infections.

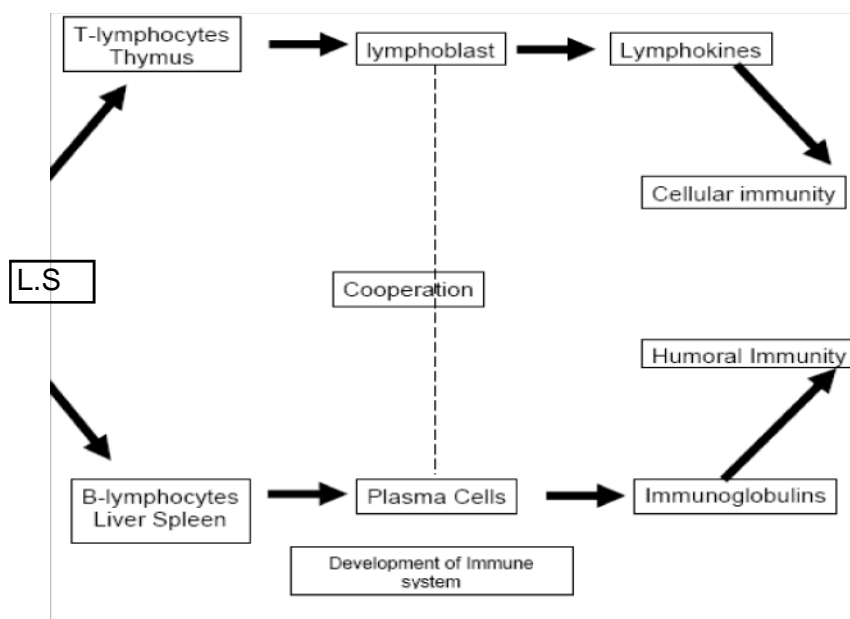
Cellular immunity: it is mediated in part by lymphocyte products called lymphokines and is responsible for delayed allergic reactions. It constitutes a major defense against infections due to viruses, fungi and a few bacteria such as Tuberculosis.

Development of Immune system:

Lymphocytes precursors originate in the yolk sac and migrate into fetus. Those that populate the thymus become transformed by the environment in this organ into the lymphocytes, are responsible for cellular immunity. (T-lymphocytes)

In the birds, the precursors that populate the bursa of fabricious, a lymphoid structure near the cloaca, become transformed into the lymphocytes responsible for Humoral immunity (B.lymphocytes)

In Mammals, it appears that the transformation to B.lymphocytes occur in the fetal liver and possibly the fetal spleen. After residence in the thymus or liver & spleen, many of the T-lymphocytes & B-lymphocytes migrate to the lymph nodes and bone marrow.



2a.6 Humoral Immunity:

B-lymphocytes have receptors on their surfaces for particular antigens. When antigen binds to the cell, the cell is stimulated to divide, and its daughter cells are transformed into plasma cells. These cells secrete large quantities of antibodies into the general circulation, called Immunoglobulins.

Humoral Immunity comes from B-Cells (Bone Marrow derived Lymphocytes) which proliferates and manufacture specific antibodies.

Immuno-globulins are divided into 5 main classes.

- a) IgG
- b) IgM
- c) IgA
- d) IgD
- e) IgE

2a.7 The Complement system:

When antigen combines with circulating antibodies, cells are lysed, bacteria are opsonized, leucocytes are attracted to the antigens, and histamine is released from elements in the blood. These effects are mediated by the system of plasma enzymes called the complement system.

2a.8 Cellular Immunity:

Cellular immunity is mediated by T-lymphocytes that are present throughout the body. When these cells encounter the antigen on the cells from another individual or viruses, they are activated. They enlarge, divide and release lymphokines, which participate in the attack on foreign protein. The T-lymphocytes independent of complements are called killer T-cells.

Phagocytosis of the Macrophages plays important role in cellular immunity. The Macrophages can be stimulated by substances (Lymphokines). These Lymphokines are secreted by specific stimulated T – Lymphocytes.

2a.9 Specific Defenses:

By virtue of the specific defences, the host is able to recognize, destroy and eliminate antigenic material (e.g., bacteria, viruses, proteins, etc.) foreign to his own.

A person is said to be immune when he possess “specific protective Antibodies or Cellular Immunity as a result of previous infection or immunization.

- Specific Defences are:
- a) Active Immunity
 - Humoral Immunity
 - Cellular Immunity
 - Combination of Both

- b) Passive Immunity
 - Normal Human Ig
 - Specific Human Ig
 - Animal Anti Toxins & Antisera

2a.10 Active Immunity :

It is the immunity, which an individual develops as a result of infection or by specific immunization and is usually associated with presence of antibodies or cells having a specific action on the microorganism concerned with a particular infectious Disease or its toxins.

Active immunity Can be acquired in three ways
Following clinical infection
Following sub clinical infection
Following Immunization

The Immune Response:

Primary Response :

When an Antigen is Administered for the first time to human who has never been exposed to it, the response offered within the range of 3 to 10 days is known as Primary response

The Antibody that is elicited first is entirely IgM type.

If Antigen stimulus is sufficient, IgG antibody appears in a few days

An important outcome of Primary response is educating Reticulo-Endothelium system of the body. There is production of Memory cells of both B and T Lymphocytes. These are responsible for immunological memory.

2a.11 Secondary Booster response:

The secondary response also involves the production of IgM antibody and much larger & more prolonged production of IgG antibody.

2a.12 Summery

With the foreign body stimulation the white Bood cells will react and develop Humoral bases fighters known as Antibodies and Cellular bases killer cells known as Cellular immunity

Entire Mechanism will held to kill the micro organisms and are under the control of many enzymes and Complex chemotaxis Mechanism

2a.13 Key words

Immunity
White Blood Cells
Granulocytes
Neutrophils
Eosinophils
Basophils
Lymphocytes
Monocytes
Chemotaxis
Reticuloendothelial System

Plasma Cells
T – Lymphocytes
IgG, IgM, IgA, IgE
Immuno Complement System
Humoral Immunity
Cellular Immunity
Active Immunity
Passive Immunity
Booster Effect

2a.14 Self Assessment Questions

- Define Immunity
- What is Humoral Immunity
- What is Cellular Immunity
- What is Active Immunity
- When do you see the rise of IgM antibodies levels in the Body

2a.15 Suggested Books

- The text book of Microbiology – Anantanarayan & Panikar
Lesson Writer

- Dr.Maruti Sarma Mannava

Unit II b

Virology & Pathology

2b.0 Objective:

After studying the lesson, the student will have a orientation on the structure of the Virus (Micro organism) causing the disease. And student will learn about how the virus enters the human body and way of damaging the human immune system.

Structure of the lesson

- 2b.1 Introduction
- 2b.2 Structure of Virus
- 2b.3 Pathology
- 2b.4 Summery
- 2b.5 Key words
- 2b.6 Self Assessment Questions
- 2b.7 Suggested Books

2b.1 Structure of Virus :

HIV stands for:

- Human
- Lmmunodeficiency
- Virus

HIV is a virus which causes impairment to the Immune system in humans. There are currently two types of HIV viz. HIV 1 and HIV 2, which are known to cause AIDS. HIV belongs to a family of many viruses called retroviruses. It is tiny, a thousand times smaller than the thickness of a hair, and it looks like a rolled up porcupine or a sunflower in full bloom. It also looks like a wheel having radiating spokes with clubbed terminals. Viruses are tiny organisms that cause many diseases in humans and other animals and even in plants. Viruses are the smallest and simplest living things. There are numerous types of viruses which cause many diseases. Human diseases caused by viruses include measles, polio, mumps, common cold and flu.

HIV is a member of the *retrovirus* family of viruses which has been known for many years to cause a number of different diseases in animals. Like all retroviruses, HIV contains RNA in its core; the virus itself is surrounded by a protein and lipid envelope or "coat". To replicate itself in human cells, the virus first needs to select cells to which it can attach itself; these are cells carrying a special "receptor" known as the CD4 antigen. This receptor occurs on cells in the body's *immune system*, the *helper T lymphocytes*, and on some *macrophages*. There is some evidence that other cells can support the growth of HIV, such as those in the lining of the bowel (bowel epithelium) and in the brain (microglia cells).

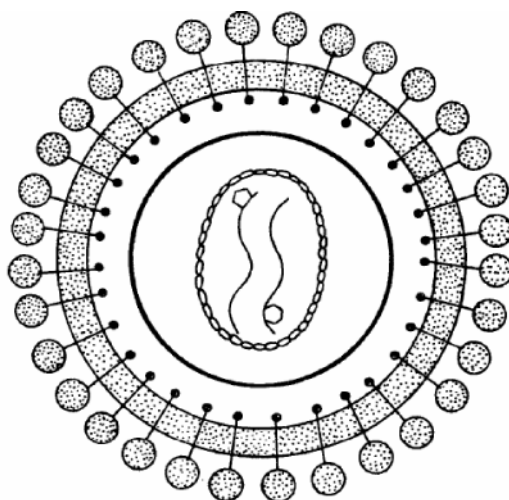


Figure 1: THE HUMAN IMMUNODEFICIENCY VIRUS (HIV)

Viruses cannot multiply on their own. They can only reproduce themselves by using the genetic materials of the cells of the host animal or plant. In order to reproduce, HIV attaches itself to the genetic material of the human cell it has infected. This makes it very hard for either the body or drugs to deal with it, without destroying the cell itself. This is why it has been difficult to develop a 'cure' for HIV so far, since anything which damages the virus is likely to also damage the cell it has infected. The destruction of the immune system by the virus means that infectious organisms can invade the body unchallenged and multiply to cause disease.

2b.2 Pathology :

This subject deals with how the HIV virus will damage the human body & its system. HIV causes damage to the immune system. The immune system is the means by which the body protects itself from infection and disease. The skin serves as a physical barrier and the white cells in our blood deal with potentially harmful organisms such as viruses and bacteria*. HIV is attracted to white blood cells. These cells are among the most important in the working of the body's 'immune system, as they regulate the immune response of the body in case of an infection. After being infected with HIV, the body produces the antibodies to HIV in an effort to protect itself. These antibodies are not powerful enough to neutralize the virus and by this time HIV will have already attached itself to and integrated into the genetic material of some white blood cells, ready to reproduce itself some time in the future. Most people with HIV show no symptoms of disease and may be asymptomatic for months and even up to ten years. These people may remain completely healthy and free from symptoms of a disease but they have the virus in their blood and are at risk of developing AIDS at any time in future. Once a person is infected with HIV, he/she can transmit the virus to other people even though he/she may appear perfectly healthy and may not know that he/she has been infected with HIV. There is no way of knowing whether a person is infected with HIV except by having a blood test. Some people with the HIV infection develop one or more of the signs and symptoms which make up AIDS. These can be easily mistaken for those of many other illnesses. They include persistent fatigue, severe weight loss, night sweats or fevers lasting several weeks, persistent diarrhoea lasting over one month. Common complaints of people with AIDS are painless swollen glands, usually in the neck and armpits, which last for at least three months. Some people develop recurrent infections such as oral thrush (Candida), Herpes zoster (shingles) or genital Herpes.

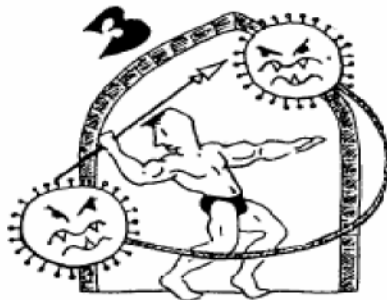
Many develop TB. A common manifestation in children is failure to thrive, prolonged diarrhoea and pneumonia which do not respond to treatment.

HOW HIV WEAKENS YOUR IMMUNE SYSTEM

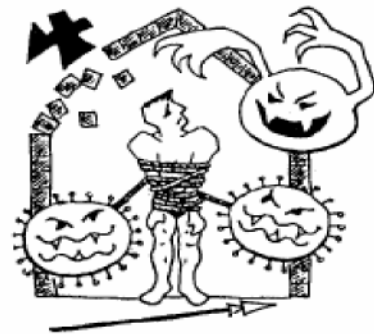
White blood cells kill the germs that attack your body.



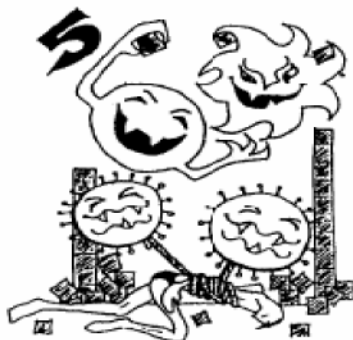
Your immune system is your guard against disease.



HIV attacks your immune system by entering your white blood cells.



HIV stops your immune system from being able to protect your body.

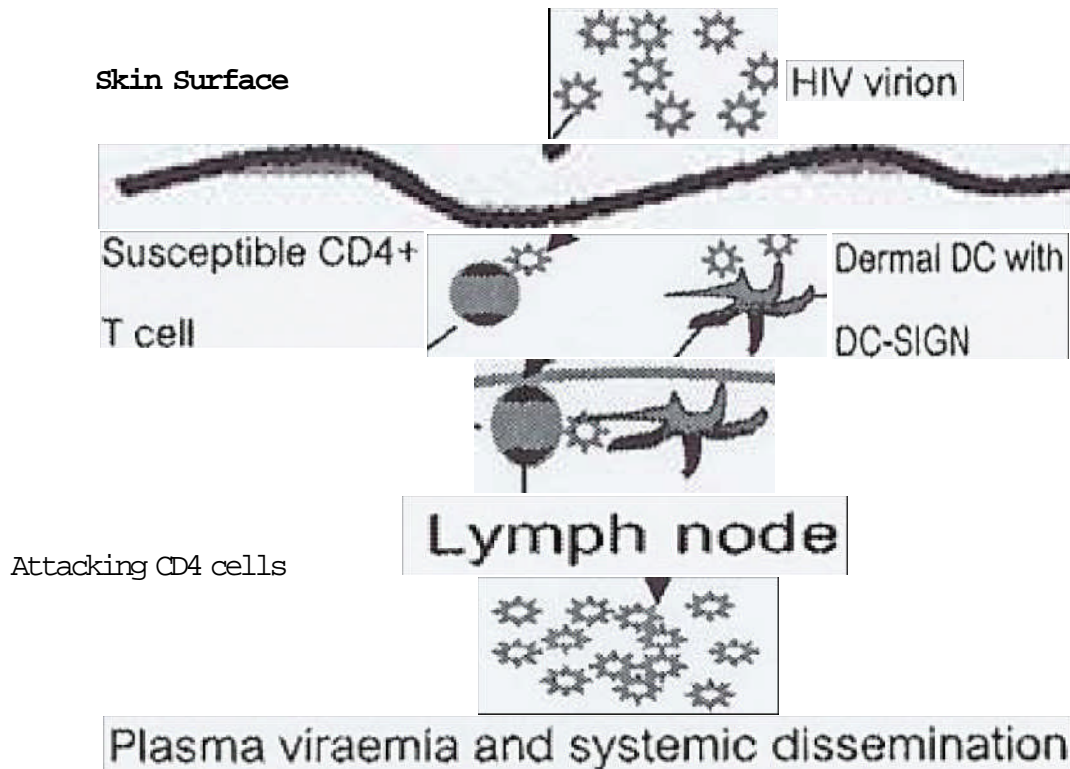


Once HIV has weakened your immune system, germs can take over your body, and you become sick.

HIV CAN ENTER YOUR BODY THROUGH:

- ★ Sexual intercourse without a condom with an infected partner
- ★ Use of unsterilized needles or syringes infected with HIV
- ★ An infected mother may pass it on to her child before, during or after birth
- ★ Transfusion of blood infected with HIV

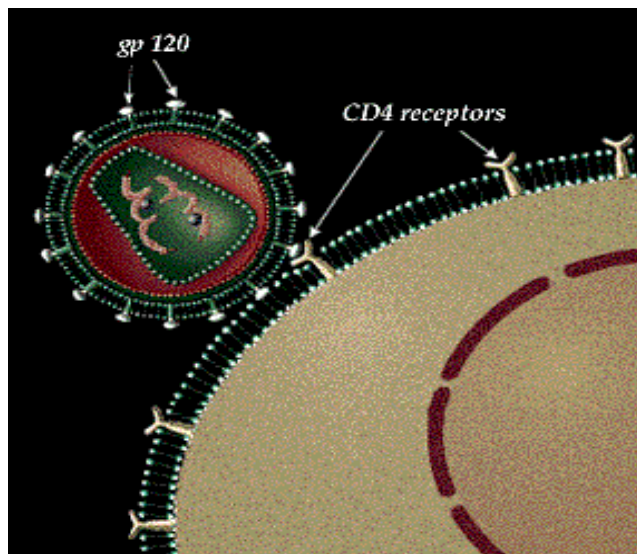
HIV Virion entering the Human body



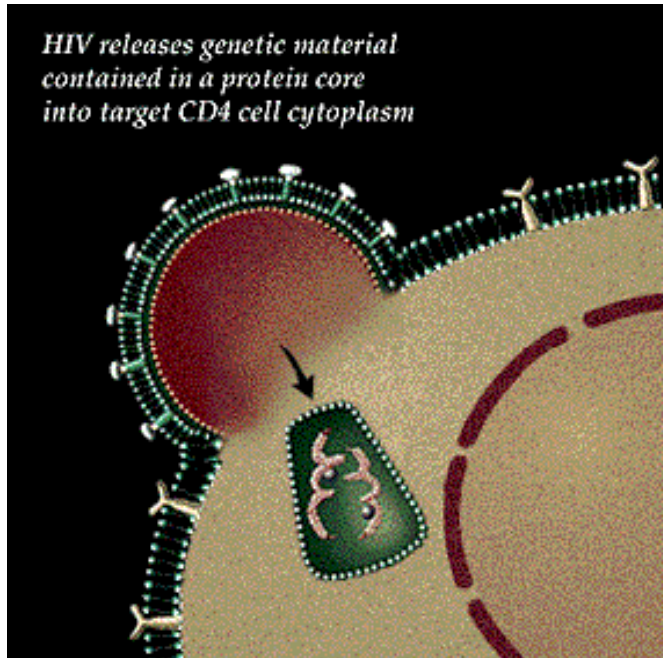
HIV Virion are attaches to CD4 cells or certain type of Dermal cells. These cells are part of cell mediated Immunity. CD4 cell is one of the type of Lymphocytes.

After attaching to the CD4 cells / Dendroid cells HIV virus multiplies anormously and reaches Lymph nodes. There it once again attacks the CD4 cells and multiplies to develop millions of HIV viruses. From Lymph node these viruses enter blood stream to attack our cell mediated immune cells.

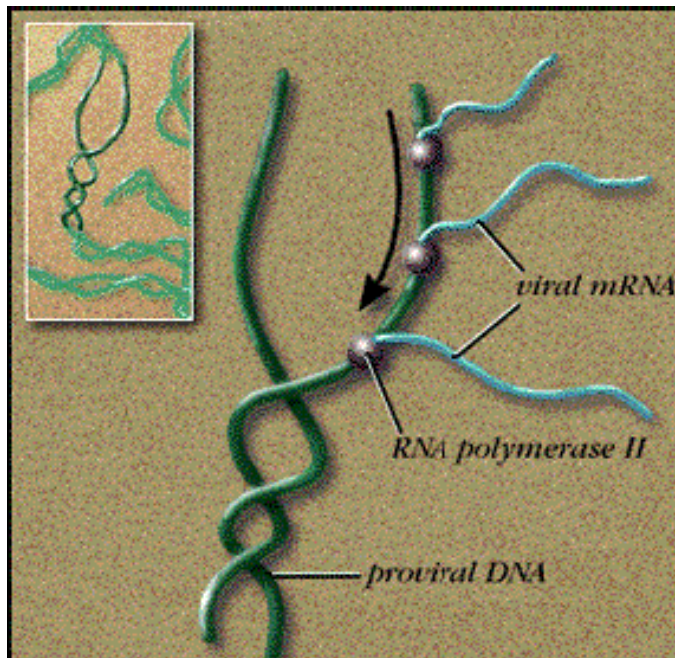
Attacking CD4 cells

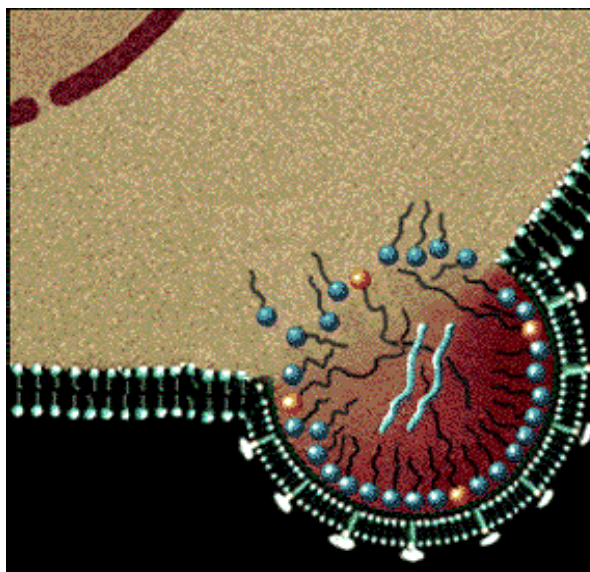


Entering the CD4 cell



Multiplying in the CD4 cell (Synthesis of mRNA)



Developing in to New Virus

These symptoms are also common in people who do not have HIV infection.

However, when several of these occur at the same time and they are persistent, this may indicate the development of AIDS. As the immune system is increasingly damaged, these health problems become more serious and more difficult to treat, as the body no longer responds to treatment. It is not yet understood why the length of time it takes for people with HIV to develop AIDS varies so widely from person to person. The following factors are thought to contribute:

- The amount of concentration of the virus in the blood and infection with different strains of virus.
- Individual differences in immune responses.
- Stress on the immune system through general lack of fitness and exposure to repeated or severe infections.
- State of mind - anxiety, depression and generally feeling low may increase the risk of other infections and so add stress to the immune system.
- Other health risks such as smoking, overtiredness, low nutrition, poor diet and heavy drinking of alcohol.

2b.4 Summery

Virus is a Particle neither life nor material. For its reproduction it is depending on other life cell. HIV virus is also such virus and solely depending on Human cell. Mainly on CD4 cells. It contains some chemical material and do not perform any Metabolic activity generally we observe in all life.

After lodging on to the Human surface (mainly damaged part) it attacks CD4 cell or Dendroid cells and Multiplies enormously and reaches Lymph Node there it still more develops its population and enters the blood stream. After entering blood stream it attacks all Immune cells with CD4 receptors. This impairs the Cellular Immunity. Then opportunistic infections create massive damage to the human tissues and organs. 90% of deaths of AIDS cases are due to Tuberculosis.

2b.5 Key words

Virus
RNA
CD4 cell
HIV
Lymph Node
Opportunistic Infections

2b.6 Self Assessment Questions

1. Draw the structure of HIV Virus and Name them
2. Explain how the Virus enters the human body and how it attacks the CD4 cells

2b.7 Suggested Books

- a. Text Book of Preventive Social Medicine by Park
- b. The text book of Microbiology – Anantanarayan & Panikar

- Dr.Maruti Sarma Mannava

Unit 3a

Venereal Diseases (Sexually Transmitted Infections)

3a.0 : Objectives :

After studying the lesson student will have a clear orientation about the Sexually transmitted infections and it's classification & terminology. General characteristics followed during the transmission of infection from one to other. The magnitude of the problem and spectrum of Disease Causing agents.

Structure of the lesson:

- 3a.1 Introduction
- 3a.2 Sexually transmitted Infection
- 3a.3 Classification & Terminology
- 3a.4 Prevalence
- 3a.5 Types and their Pathogenic Causes
- 3a.6 Key words
- 3a.7 Self Assessment Questions
- 3a.8 Suggested Books

3a.1 Introduction

Communicable Diseases caused by Microorganisms that are transmitted by sexual partner ship is known as STDs – Sexually Transmitted Diseases.

3a.2 SEXUALLY TRANSMITTED Infections (STIs)

There is strong evidence that sexually transmitted diseases (STDS) put a person at a greater risk of getting and transmitting HIV This may occur because of sores and breaks in the skin or mucous membranes that often occur with STDS. There are various types of sexually transmitted diseases. AIDS is only one of the sexually transmitted diseases and knowledge about others is necessary for understanding AIDS.

A sexually transmitted disease (STD) is an illness caused by an infectious pathogen that has a significant probability of transmission between humans by means of sexual contact, including vaginal intercourse, oral sex, and anal sex. Increasingly, the term **sexually transmitted infection (STI)** is used, as it has a broader range of meaning; a person may be *infected*, and may potentially infect others, without showing signs of *disease*. In addition, “disease” seems to have much more of a negative connotation than “infection.” Some STIs can also be transmitted via the needles used in Intra Venous drug use, as well as through childbirth or breastfeeding. Sexually transmitted diseases have been well-known for hundreds of years.

3a.3 Classification and terminology

Until the 1990s, such afflictions were commonly known as *venereal diseases*: *Veneris* is the Latin genitive (possessive) form of the name Venus, the Roman goddess of love. *Social*

disease was another euphemism. Public health officials originally introduced the term *sexually transmitted disease*, which clinicians are increasingly using alongside the term *sexually transmitted infection* in order to distinguish it from the former. According to <http://www.etharc.org>: "Sometimes the terms STI and STD are used interchangeably. This can be confusing and not always accurate, so it helps first to understand the difference between infection and disease. Infection simply means that a germ – virus, bacteria, or parasite – that can cause disease or sickness is present inside a person's body. An infected person does not necessarily have any symptoms or signs that the virus or bacteria is actually hurting his or her body (they do not necessarily feel sick). A disease means that the infection is actually causing the infected person to feel sick, or to notice something is wrong. For this reason, the term STI – which refers to infection with any germ that can cause an STD, even if the infected person has no symptoms – is a much broader term than STD." The distinction being made, however, is closer to that between a *colonization* and an *infection*, rather than between an *infection* and a *disease*.

Specifically, the term STD refers only to infections that are causing symptoms. Because most of the time people do not know that they are infected with an STD until they start showing symptoms of disease, most people use the term STD, even though the term STI is also appropriate in many cases.

Moreover, the term *sexually transmissible disease* is sometimes used since it is less restrictive in consideration of other factors or means of transmission. For instance, meningitis is transmissible by means of sexual contact but is not labeled as an STI because sexual contact is not the primary vector for the pathogens that cause meningitis. This discrepancy is addressed by the probability of infection by means *other than sexual contact*. In general, an STI is an infection that has a negligible probability of transmission by means other than sexual contact, but has a realistic means of transmission by sexual contact (more sophisticated means—blood transfusion, sharing of hypodermic needles—are not taken into account). Thus, one may presume that, if a person is infected with an STI (e.g., chlamydia, gonorrhea, genital herpes), it was transmitted to him/her by means of sexual contact.

The English language has short words for two of the most common: the "pox" (syphilis) and "the clap" (gonorrhea).

Many STIs are (more easily) transmitted through the mucous membranes of the penis, vulva, and (less often) the mouth. The visible membrane covering the head of the penis is a mucous membrane, though it produces no mucus (similar to the lips of the mouth). Mucous membranes differ from skin in that they allow certain pathogens into the body.

This is one reason that the probability of transmitting many infections is far higher from sex than by more casual means of transmission, such as non-sexual contact—touching, hugging, shaking hands—but it is not the only reason. Although mucous membranes exist in the mouth as in the genitals, many STIs seem to be easier to transmit through oral sex than through deep kissing. Many infections that are easily transmitted from the mouth to the genitals or from the genitals to the mouth, are much harder to transmit from one mouth to another. With HIV, genital fluids happen to contain much more of the pathogen than saliva. Some infections labeled as STIs can be transmitted by direct skin contact. Herpes simplex and HPV are both examples. KSHV, on the other hand, may be transmitted by deep-kissing but also when saliva is used as a sexual lubricant, which is common among gay men engaging in anal intercourse.

Depending on the STD, a person may still be able to spread the infection if no signs of disease are present. For example, a person is much more likely to spread herpes infection when blisters are present (STD) than when they are absent (STI). However, a person can spread HIV infection (STI) at any time, even if he/she has not developed symptoms of AIDS (STD).

All sexual behaviors that involve contact with another person or the bodily fluids of another person should be considered to contain some risk of transmission of sexually transmitted diseases. Most attention has focused on controlling HIV, which causes AIDS, but each STD presents a different situation.

As may be noted from the name, sexually transmitted diseases are *transmitted* from one person to another by certain sexual activities rather than being actually *caused by* those sexual activities. Bacteria, fungi, protozoa or viruses are still the causative agents. It is not possible to catch any sexually transmitted disease from a sexual activity with a person who is not carrying a disease; conversely, a person who has an STD got it from contact (sexual or otherwise) with someone who had it, or his/her bodily fluids. Some STDs such as HIV can be transmitted from mother to child either during pregnancy or breastfeeding.

Although the likelihood of transmitting various diseases by various sexual activities varies a great deal, in general, all sexual activities between two (or more) people should be considered as being a two-way route for the transmission of STDs (i.e. "giving" or "receiving" are both risky).

Healthcare professionals suggest safer sex, such as the use of condoms, as the most reliable way of decreasing the risk of contracting sexually transmitted diseases during sexual activity, but safer sex should by no means be considered an absolute safeguard. The transfer of and exposure to bodily fluids, such as blood transfusions and other blood products, sharing injection needles, needle-stick injuries (when medical staff are inadvertently jabbed or pricked with needles during medical procedures), sharing tattoo needles, and childbirth are other avenues of transmission. These different means put certain groups, such as doctors, haemophiliacs and drug users, particularly at risk.

Recent epidemiological studies have investigated the networks that are defined by sexual relationships between individuals, and discovered that the properties of sexual networks are crucial to the spread of sexually transmitted diseases. In particular, assortative mixing between people with large numbers of sexual partners seems to be an important factor.

It is possible to be an asymptomatic carrier of sexually transmitted diseases. In particular, sexually transmitted diseases in women often cause the serious condition of pelvic inflammatory disease.

3a.4 Prevalence

STD incidence rates remain high in most of the world, despite diagnostic and therapeutic advances that can rapidly render patients with many STDs noninfectious and cure most. In many cultures, changing sexual mores and oral contraceptive use have eliminated traditional sexual restraints, especially for women, and both physicians and patients have difficulty dealing openly and candidly with sexual issues. Funding to control STDs is almost uniformly inadequate. Additionally, worldwide dissemination of drug-resistant bacteria (eg, penicillin-resistant gonococci) reflects misuse of antibiotics and spread of resistant clones by mobile populations. The effect of travel is most dramatically illustrated by the rapid spread of the AIDS virus (HIV-1) from Africa to Europe and the Americas in the late 1970s.

Commonly reported prevalences of STIs among sexually active adolescent girls both with and without lower genital tract symptoms include chlamydia trachomatis (10 to 25%), *Neisseria gonorrhoeae* (3 to 18%), syphilis (0 to 3%), *Trichomonas vaginalis* (8 to 16%), and herpes simplex virus (2 to 12%).^[citation needed] Among adolescent boys with no symptoms of urethritis, isolation rates include *C. trachomatis* (9 to 11%) and *N. gonorrhoeae* (2 to 3%).

As early as 1996, WHO estimated that more than 1 million people were being infected daily. About 60% of these infections occur in young people <25 years of age, and of these 30% are <20 years. Between the ages of 14 and 19, STDs occur more frequently in girls than boys by a ratio of nearly 2:1; this equalizes by age 20.

The most effective way to prevent sexual transmission of STIs is to avoid sexual activity with an infected partner. Ideally, both new partners should get tested for STIs before initiating sexual activity. If a person chooses to have sexual activity with a partner whose infection status is unknown or who is infected with HIV or another STI, a new condom should be used for each act of intercourse. Condom use is not completely protective against acquisition of STI because of the presence of pathogen outside the protected skin or condom breakage. Condoms do not offer complete protection against herpes and genital warts, which are commonly found outside of areas covered by condoms.

Some common STDs are Gonorrhoea, Syphilis, Herpes, Chlamydia, etc.

Some of the symptoms of STDs are:

- Yellow/green discharge.
- Pain/burning sensation when urinating
- A small painless ulcer at the site of infection - usually the sexual organs or the mouth, followed by a red rash all over the body;
- Small, usually painful ulcers on or around the genital organs;
- Small blisters at the site of infection - the mouth or the genitals accompanied by fever and general aches and pains:
- Warts on and around sex organs

A person may be infected for some time and he do notice it. The danger is that the person can spread the disease to others without realizing it. It is important that sexually transmitted diseases are adequately treated. If not, they can become chronic and be the cause of serious complications. For adequate and effective treatment it is necessary to go to a qualified doctor. Self-treatment or treatment by quacks is's not advisable. One should not feel ashamed to go to a doctor. It is the doctor's duty to maintain strict confidentiality.

3a.5 Types and their pathogenic causes

Most of the diseases on this list are most commonly transmitted sexually. Some are commonly transmitted in other ways as well; for example, HIV/AIDS is also commonly transmitted through the sharing of infected needles by drug users.

Bacterial

- Chancroid (*Haemophilus ducreyi*)
- Chlamydia infection (*Chlamydia trachomatis*)
- Donovanosis (*Granuloma inguinale* or *Calymmatobacterium granulomatis*)
- Gonorrhoea (*Neisseria gonorrhoeae*)
- Lymphogranuloma venereum (LGV) (*Chlamydia trachomatis* serotypes L1, L2, L3. See Chlamydia)
- Non-gonococcal urethritis (NGU) (*Ureaplasma urealyticum* or *Mycoplasma hominis*)
- Syphilis (*Treponema pallidum*)

Fungal

- Crotchrot
- Yeast Infection

Viral

- Hepatitis B. (Note: Hepatitis A and Hepatitis E are transmitted via the faecal-oral route, not sexually; Hepatitis C is rarely sexually transmittable, and the route of transmission of Hepatitis D is uncertain, but may include sexual transmission.)
 - Herpes simplex
 - o Herpes simplex virus (HSV)
 - Human Immunodeficiency Virus (HIV/AIDS)
 - Human papillomavirus (HPV)
 - o Certain strains of HPV cause genital warts
 - o Certain strains of HPV cause cervical dysplasias which can lead to cervical cancer/anal cancer
 - Molluscum (MC)
 - Kaposi's sarcoma-associated herpesvirus (KSHV/HHV8)
 - o The cause of Kaposi's sarcoma

Parasites

- Pubic lice, colloquially known as "crabs" (*Phthirus pubis*)
- Scabies (*Sarcoptes scabiei*)

Protozoal

- Trichomoniasis (*Trichomonas vaginalis*)

Among these the following infections are having public Health Importance

- *N. gonorrhoea*,
- *C. trachomatis*,
- Syphilis
- Chancroid
- Genital herpes

- *Trichomonas vaginalis*
- *Candida albicans*
- Chlamydial urethritis
- *Mycoplasma hominis*
- Chancroid or Lymphogranuloma venereum (LGV)

3a.6 Key words

- STD
- STI
- Infection
- Disease
- Colonization
- Prevalence rate
- Incidence rate
- Bacteria
- Fungal
- Viral
- Parasites
- Protozoal

3a.7 Self Assessment Questions

- Name few of the important STIs.
- Write few of the common symptoms of STIs

3a.8 Suggested Books

- a. Text Book of Preventive Social Medicine by Park
- b. The text book of Microbiology – Anantanarayan & Panikar

- Dr.Maruti Sarma Mannava

Unit – 3b**Syndrome Approach of STIs****3b. 0 Objective**

After studying the lesson, student will have orientation on identifying the sexually transmitted infections. One can suspect that whether an individual having STI or not.

Structure of the lesson

- 3b.1 Introduction
- 3b.2 Urethral Discharge
- 3b.3 Genital Ulcers
- 3b.4 Vaginal Discharges (Without Speculum)
- 3b.5 Vaginal Discharges (With Speculum)
- 3b.6 Scrotal Swelling
- 3b.7 Lower Abdominal Pain in Female
- 3b.8 Inguinal Bubo
- 3b.9 Ophthalmia Neonatorum
- 3b.10 Key words
- 3b.11 Self Assessment Questions
- 3b.12 Suggested Books

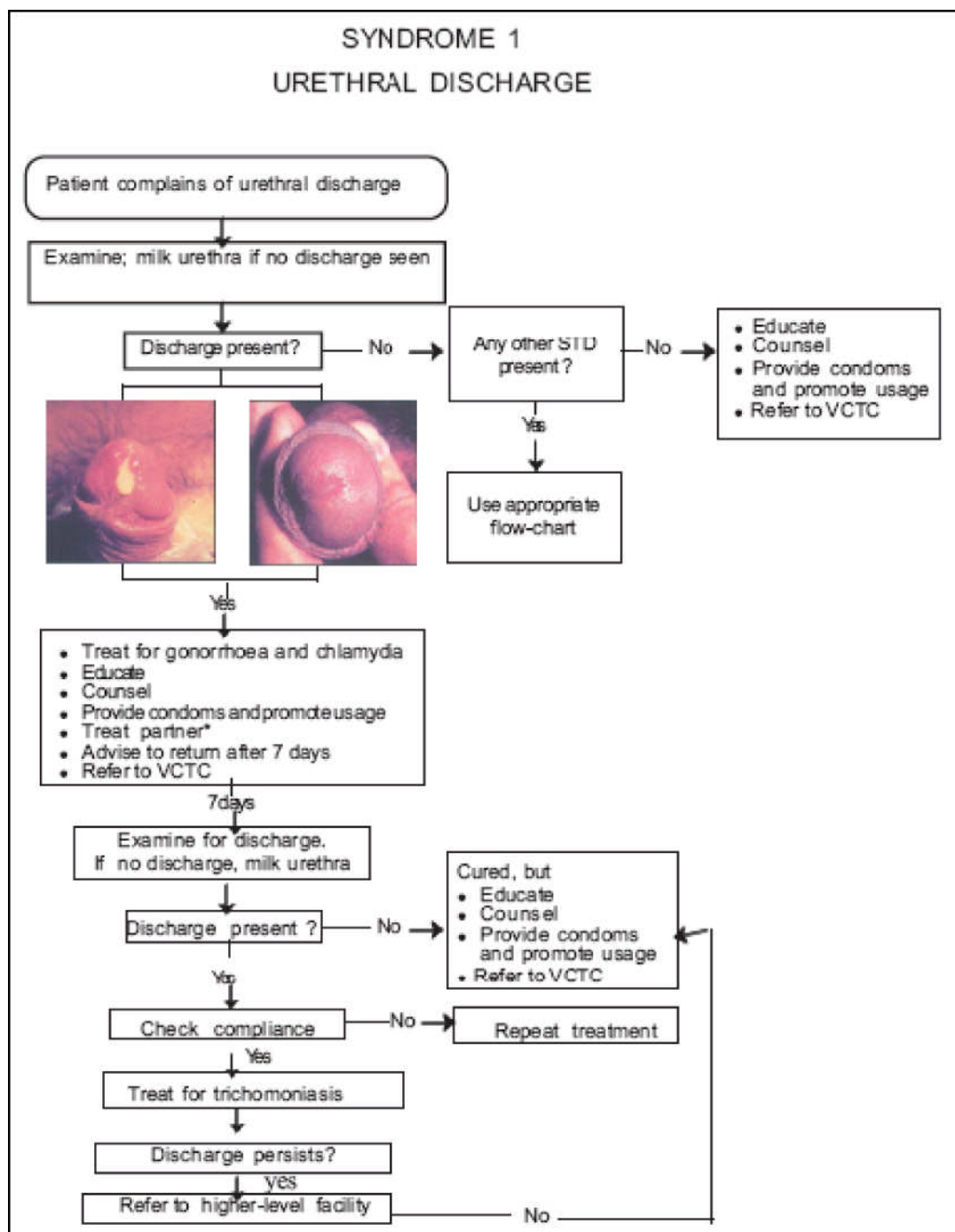
3b.1 Introduction :

All Diseases causes Symptoms & Signs. Symptom is the one which is the expression of an individual suffering from any disease. Sign is the one the Doctor finds the particular one during his medical examination

Likewise all STIs express through some characteristic signs & Symptoms. Basing on just any unqualified Medical Professionalist can identify the disease. The classification of symptoms & Signs in different groups and diagnosing the disease is known as Syndrome Approach.

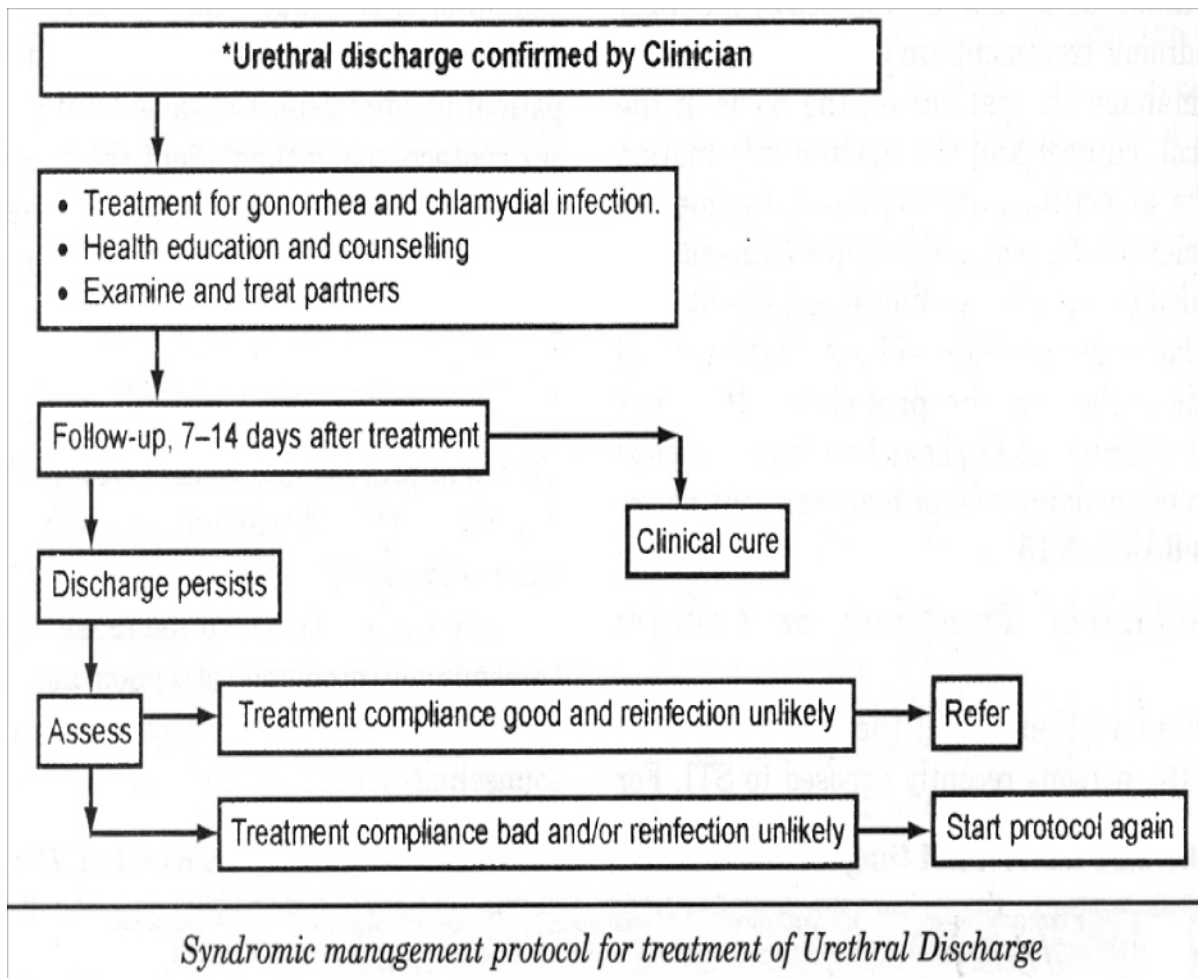
3b.2 URETHRAL DISCHARGE

Examine male patients complaining of urethral discharge and/or dysuria for evidence of discharge. If no discharge is seen, massage along the ventral aspect of penis towards the meatus, to look for discharge. The common causes of urethral discharge are *N. gonorrhoeae* and/or *C.trachomatis*.



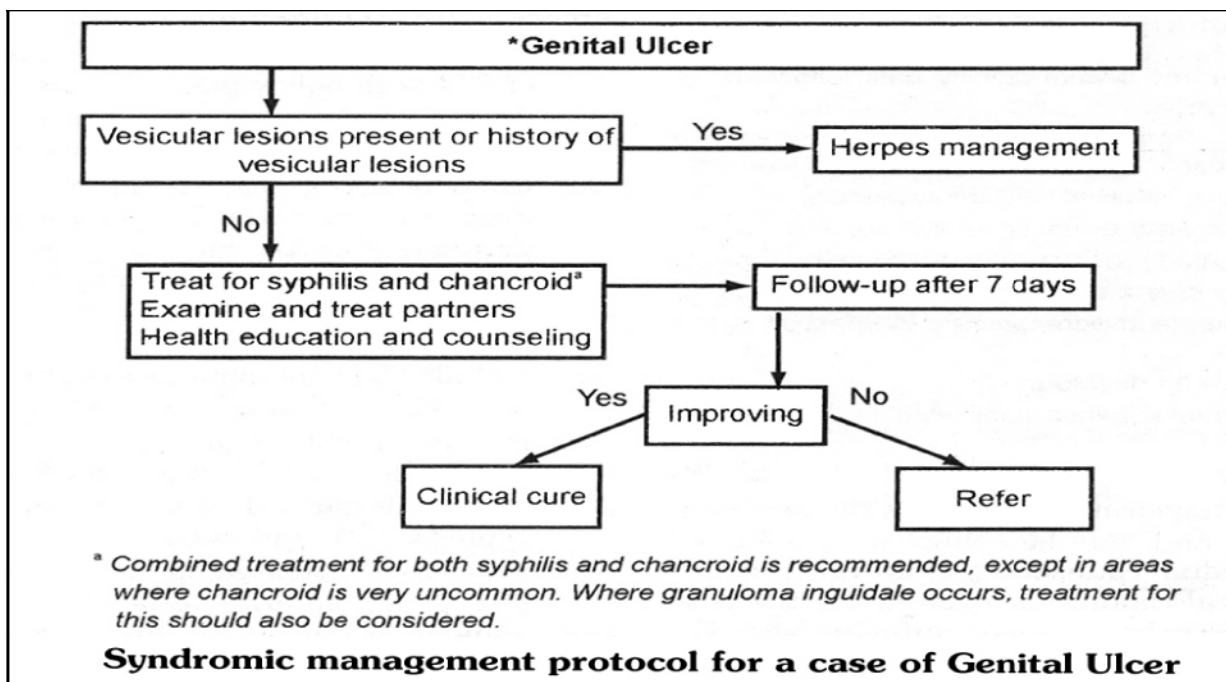
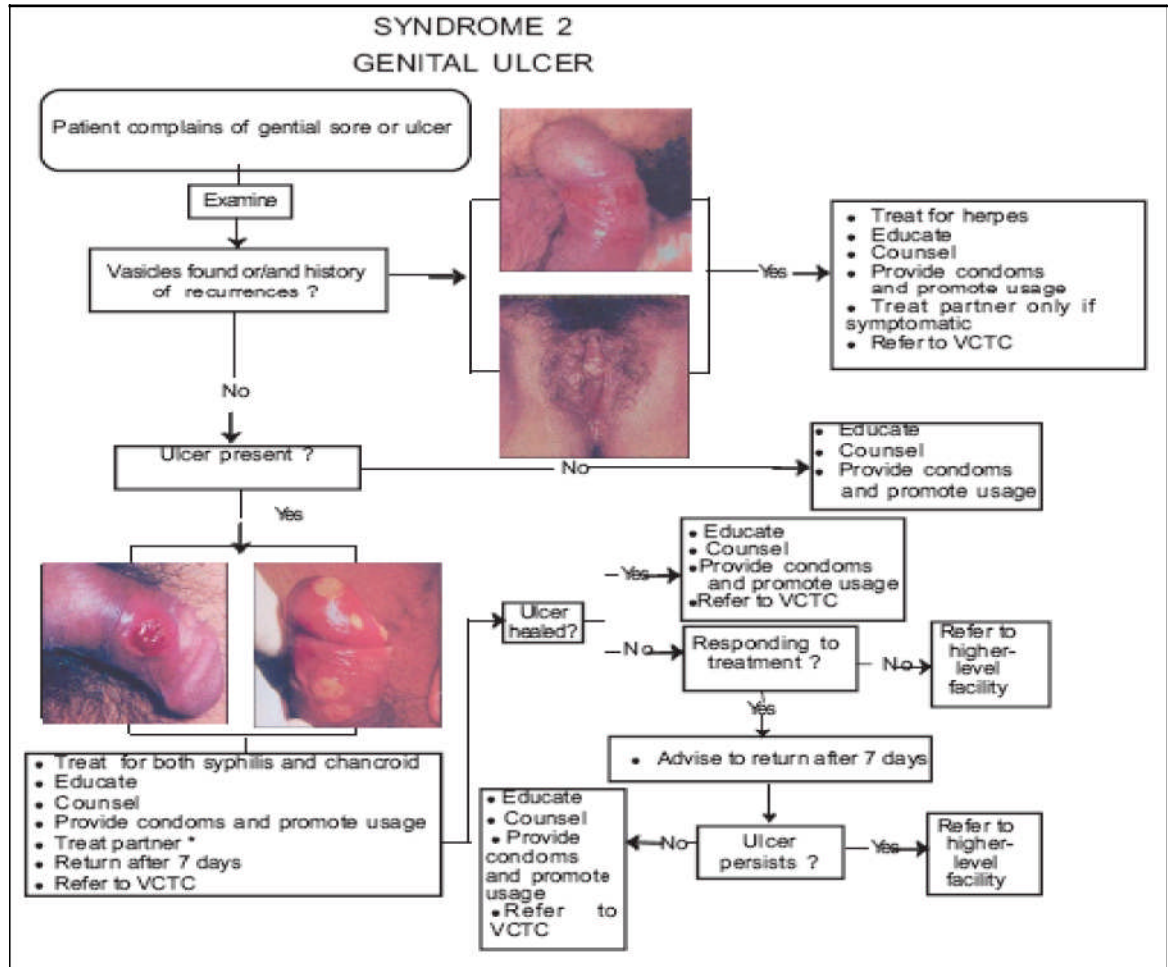
3b.3 GENITAL ULCER

The most common STIs presenting with genital ulcer(s) are syphilis, chancroid and genital herpes. Treat adequately to cover both syphilis and chancroid or genital herpes depending on history and examination.



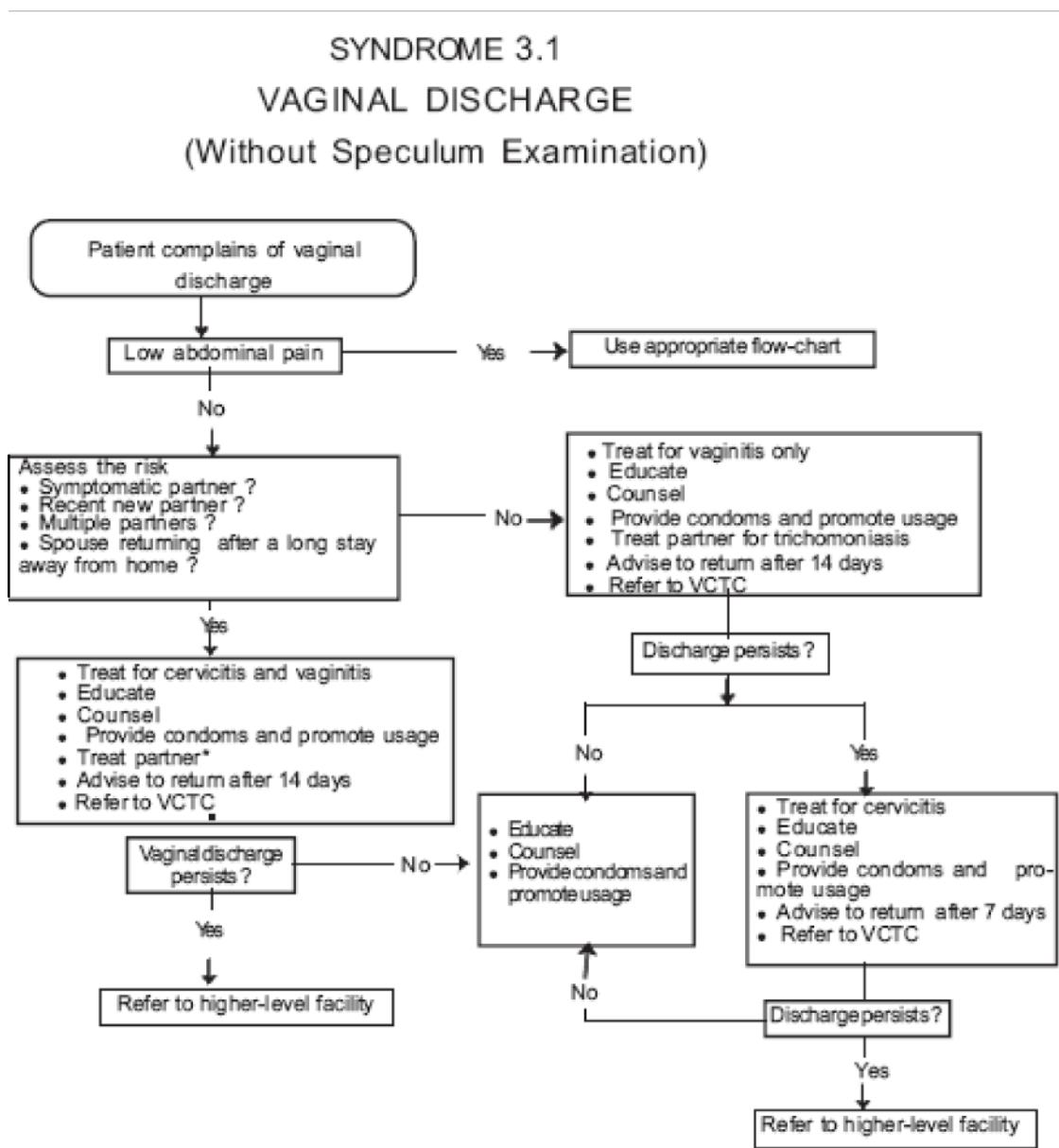
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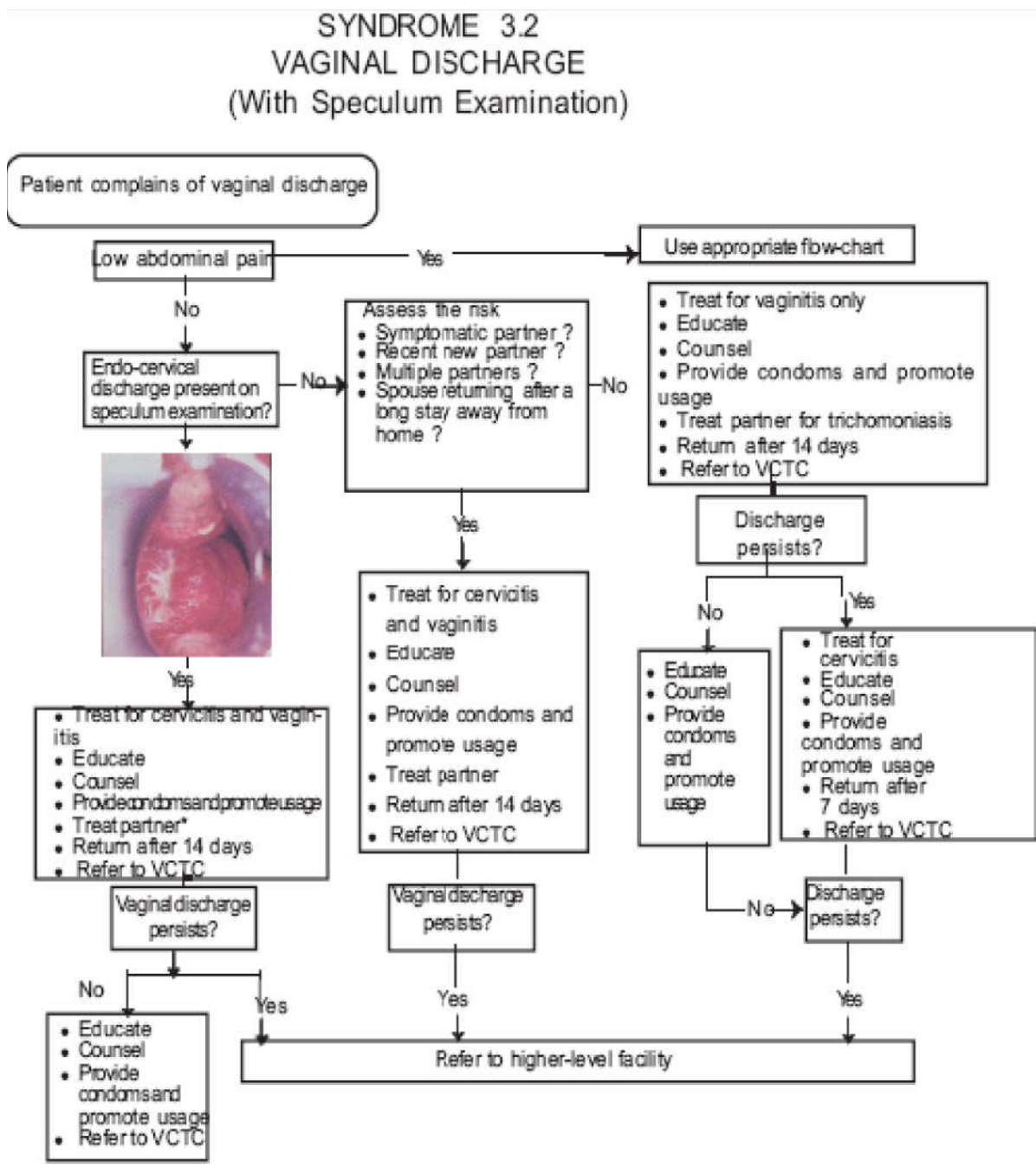
3b.4 VAGINAL DISCHARGE (WITHOUT SPECULUM)

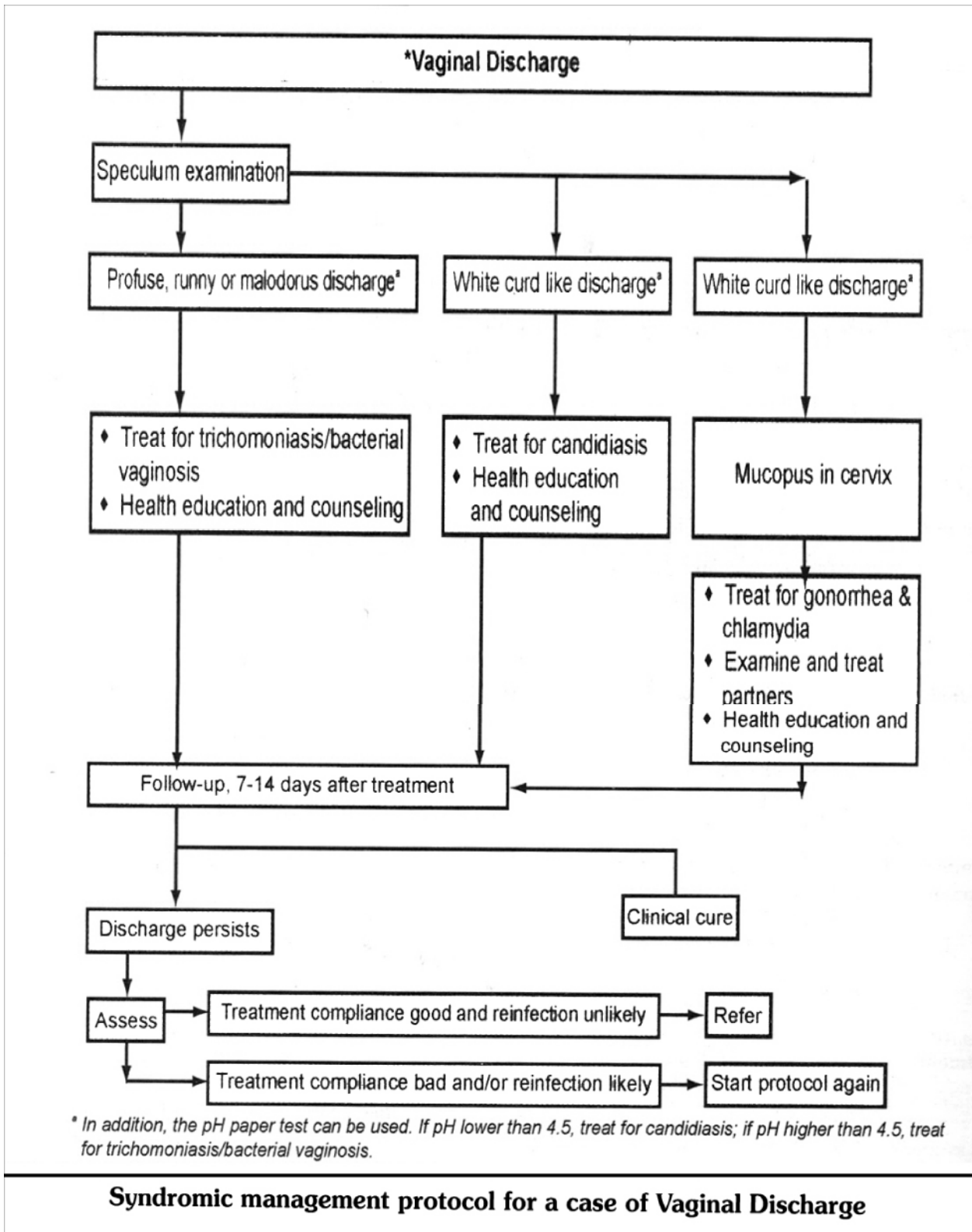
Vaginal discharge is commonly due to vaginitis and/or cervicitis. Cervicitis is caused by *N. gonorrhoeae* and *C. trachomatis* while *Trichomonas vaginalis*, *Candida albicans*, and bacterial vaginosis cause vaginitis. However, clinical differentiation between the two conditions is difficult. An assessment of the woman's risk status may help in making a diagnosis of cervicitis. If risk assessment is negative treat for vaginitis. Where it is not possible to differentiate and/or the risk assessment is positive, treat patients for both cervicitis and vaginitis.



3b.5 VAGINAL DISCHARGE (WITH SPECULUM EXAMINATION)

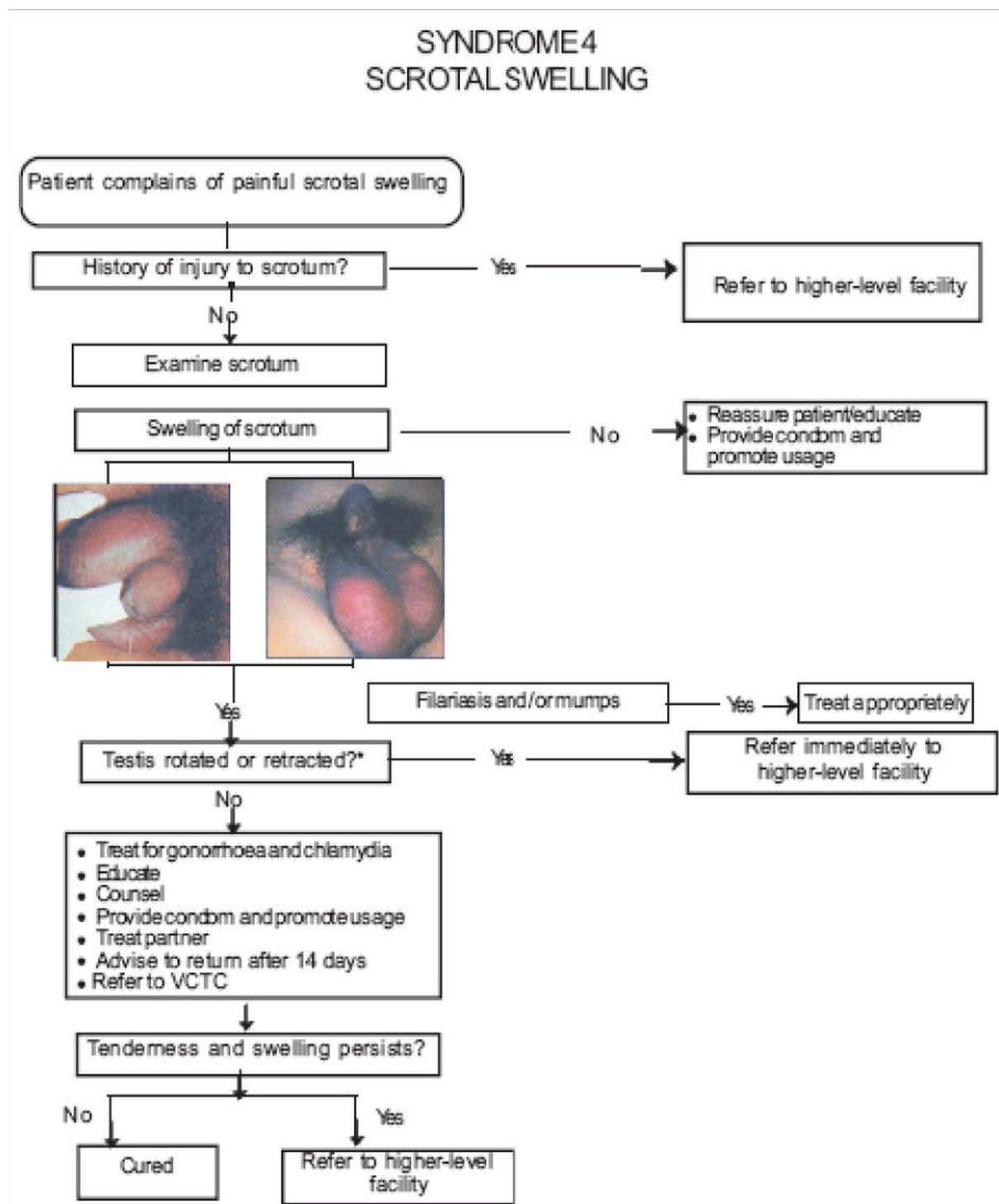
Vaginal discharge is due to vaginitis and/or cervicitis. Cervicitis is caused by *N. gonorrhoeae* and *C. trachomatis* while *Trichomonas vaginalis*, *Candida albicans*, and Bacterial vaginosis cause vaginitis. However, clinical differentiation between the two conditions is difficult. An assessment of the woman's risk status may help in making a diagnosis of cervicitis. If risk assessment is negative treat for vaginitis. Where it is not possible to differentiate and/or the risk assessment is positive, treat the patients for both cervicitis and vaginitis.





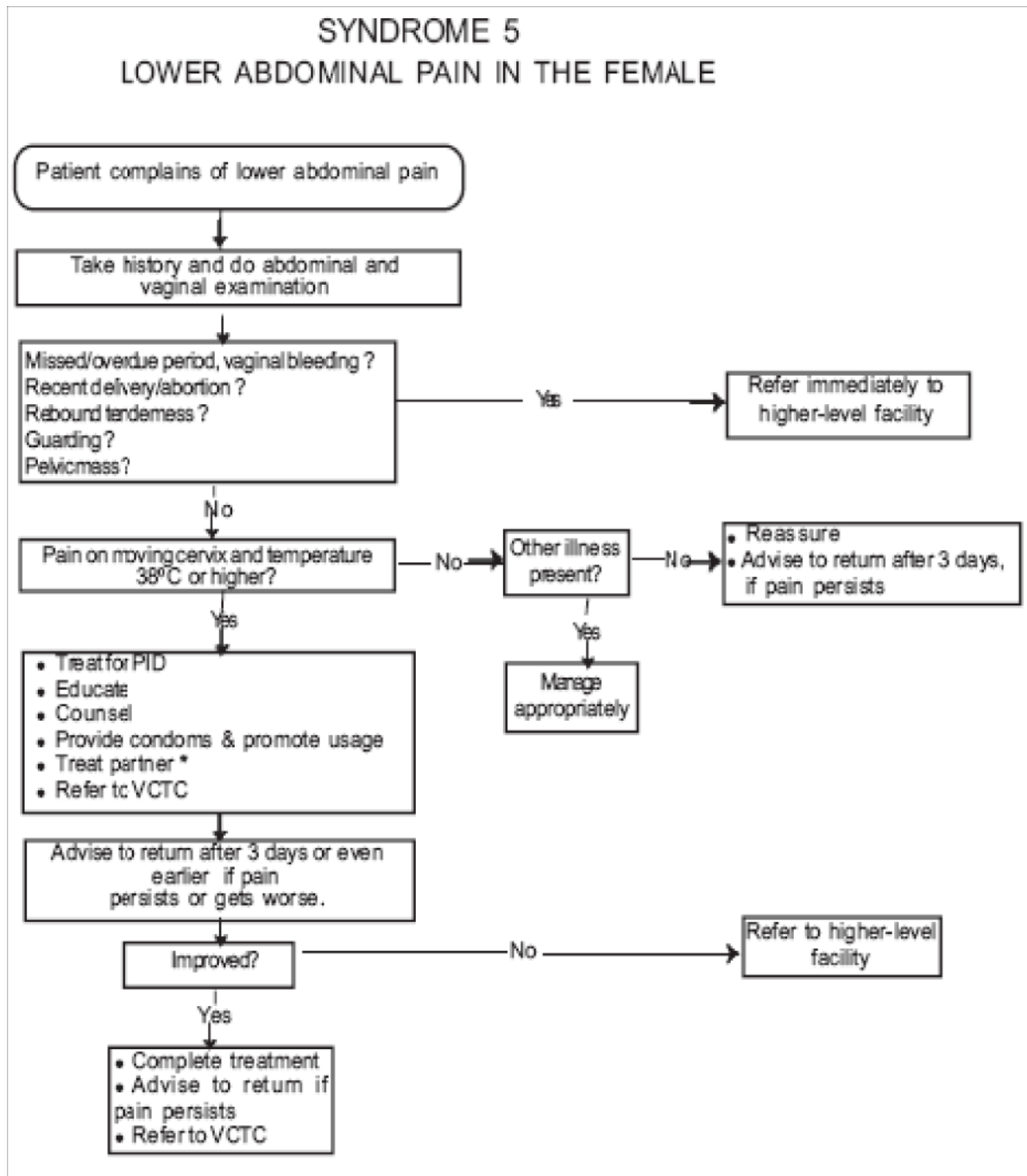
3b.6 SCROTAL SWELLING

A serious complication of gonococcal and chlamydial urethritis is epididymo-orchitis. The patient often gives a history of urethral discharge. The scrotum becomes swollen, warm and painful. If quick and effective therapy is not given, destruction and scarring of the testicular tissues may occur, causing sub-fertility. Other causes of sub-fertility are mumps virus infection and filariasis.



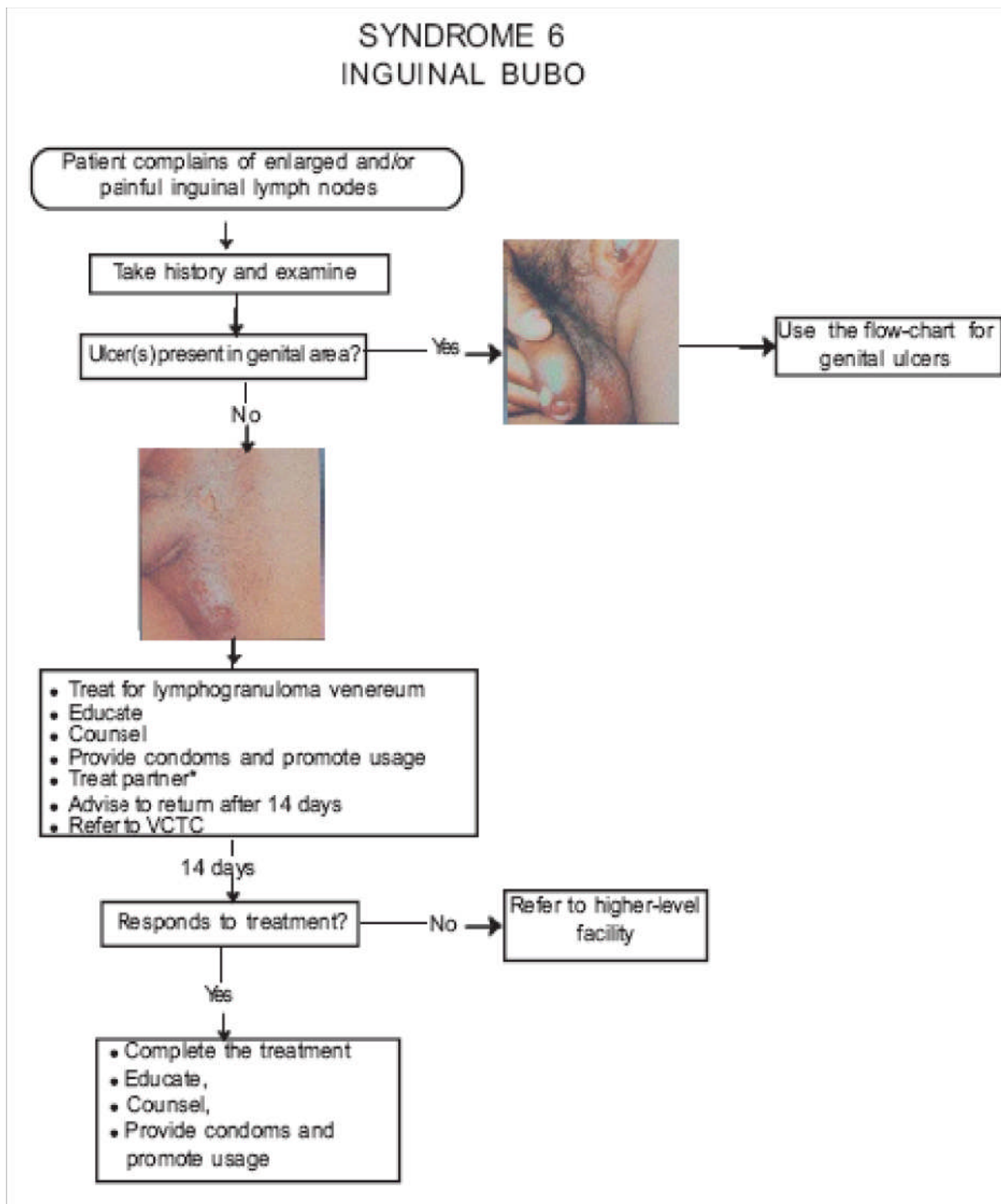
3b.7 LOWER ABDOMINAL PAIN IN FEMALE

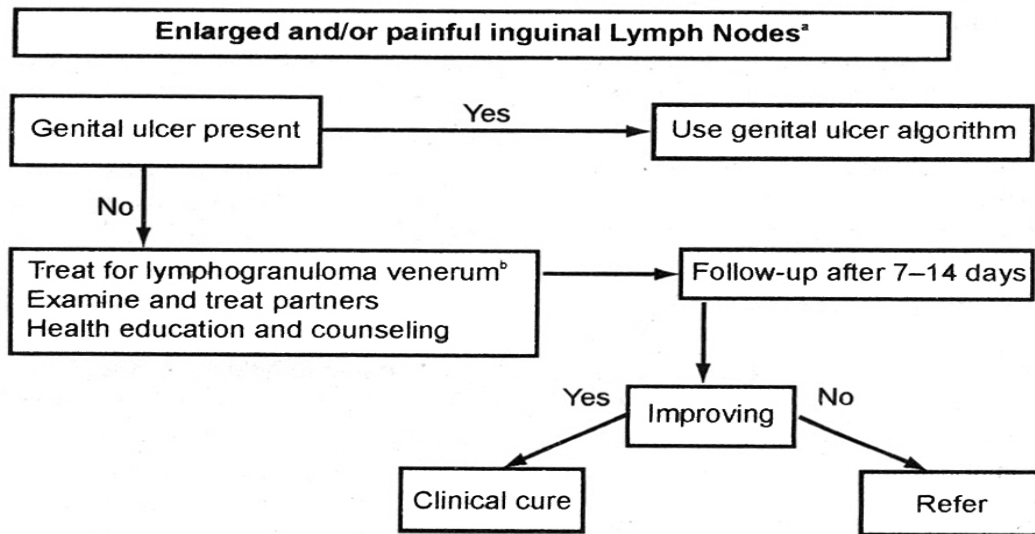
Lower abdominal pain is often the presenting feature of women with pelvic inflammatory disease (PID). **PID** is defined as an infection of the female genital tract above the cervix and may include endometritis, salpingitis, tubo-ovarian abscess and peritonitis. **PID** occurs as a result of ascending infection from the cervix and is caused by *N. gonorrhoeae*, *C. trachomatis* and anaerobic bacteria. Occasionally, **PID** may be caused by *Mycoplasma hominis*. Infertility due to tubal occlusion and ectopic pregnancy are serious complications of PID.



3b.8 INGUINAL BUBO

This is a painful swelling of the lymph nodes in the inguinal region. A bubo may occur in chancroid or lymphogranuloma venereum (LGV). It can also result from any kind of acute infection of the skin on the pubic area, genitals, buttocks, anus thighs, legs feet and toes.





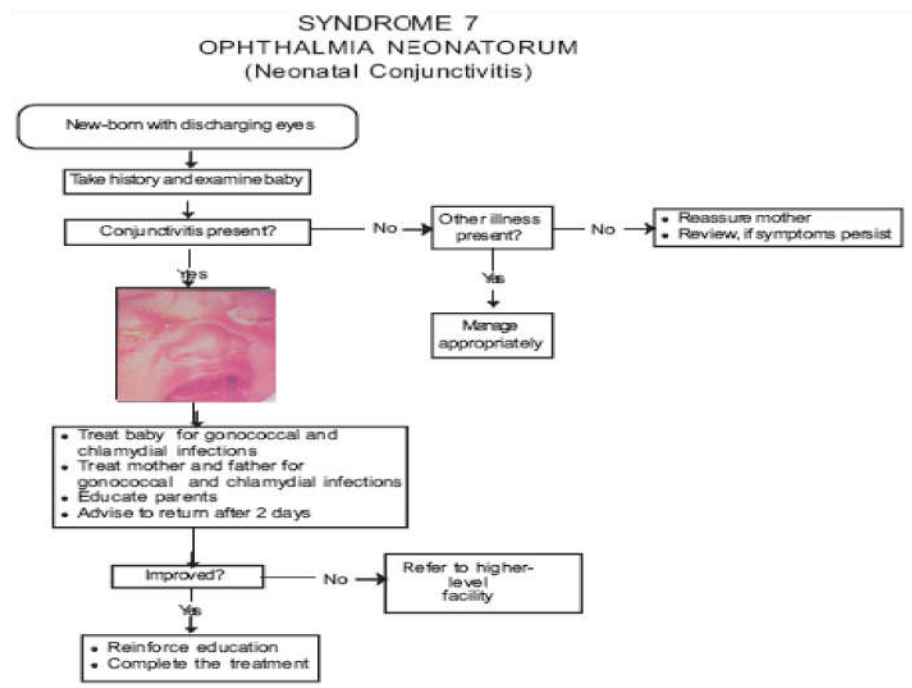
^a Exclude syphilis if the bubos are painless. If syphilis cannot be excluded, add syphilis treatment.

^b Even after an initial ulcer has healed, some chancroid and lymphogranuloma venereum buboes can progress to fluctuation and rupture. Fluid from fluctuating buboes should be aspirated through adjacent normal skin. They should not be incised for drainage.

Syndromic management protocol for a case of Inguinal Bubo

3b.9 OPHTHALMIA NEONATORUM

Ophthalmia neonatorum is the condition, where the baby develops purulent conjunctivitis in one or both eyes within four weeks of birth. It is a medical emergency and unless treatment is initiated within 24 hours there could be permanent damage to the eyes resulting in blindness. The discharge from the eyes may be caused by *N.gonorrhoeae*, *C.trachomatis* and less frequently by other bacteria.



3b.10 Key words

- Urethral Discharge
- Genital Ulcer
- Speculum
- Vagina
- Cervix
- Scrotum
- PID
- Inguinal Bubo
- Neonate

3b.11 Self Assessment Questions

- What is symptom
- What is Sign
- Explain Urethral Discharge
- Write flow chart of understanding inguinal bubo
- Write flow chart of Urethral Discharge

3b.12 Suggested Books

- a. Text Book of Preventive Social Medicine by Park
 - b. NACO Guidelines
- Lesson Writer
Dr.Maruti Sarma Mannava

- Dr.Maruti Sarma Mannava

Unit – 3c

Treatment for Sexually Transmitted Infections

3c.0 Objective :

After studying the lesson, the student will have a clear cut idea about the available treatment for STIs. In case of continuing risk behavior, If the duration of sulfuring is more, the chances of getting HIV infection will be very much. Hence all STIs should be identified and treated promptly.

Structure of the lesson

3c.1 Introduction

3c.2 Urethral Discharge Treatment

3c.3 Genital Ulcers Treatment

3c.4 Vaginal Discharges (Without Speculum) Treatment

3c.5 Vaginal Discharges (With Speculum) Treatment

3c.6 Scrotal Swelling Treatment

3c.7 Lower Abdominal Pain in Female Treatment

3c.8 Inguinal Bubo Treatment

3c.9 Ophthalmia Neonatorum Treatment

3c.10 Key words

3c.11 Self Assessment Questions

3c.12 Suggested Books

3c.1 Introduction

Individuals seeking care for STIs should receive the following comprehensive care package which includes:

History Taking

Patients with problems relating to the genital area tend to be guarded and evasive in giving a history. Adopt a polite and non-judgemental attitude. Ask an open end question to initiate a dialogue. The presenting symptoms, previous treatment, drug allergy and sexual history should be asked.

Behavioral Risk Assessment

Appropriate education and counseling must be preceded by behaviour risk assessment. Make sure that the patient understands that all the information will be kept strictly confidential.

Physical Examination

This is an important step to arrive at a probable diagnosis and will prevent making an incorrect diagnosis based on the patient's history alone. Privacy and confidentiality should be ensured.

Syndromic Diagnosis and Treatment

The current methods of laboratory diagnosis of STI are often time consuming, unreliable and expensive, and require sophisticated equipment and training in their use. In addition, for certain tests, patients are required to return one or two days later. This is not feasible in many settings, where patients must travel long distances to receive health care and even if they return, the probability of developing complications is increased and the period of infectivity is prolonged by the delayed treatment. Few health institutions in our country have the laboratory facilities required for accurate etiological diagnosis. Under the simplified and syndrome-based approach developed and promoted by WHO and currently being used in a large number of countries, diagnosis is based on the identification of a consistent group of symptoms and easily recognizable signs (syndromes) and the provision of effective treatment that will deal with the majority of the organisms responsible for producing each syndrome. When a patient comes with complaints, his/her management can be decided according to the clinical management flow chart

3c.2 URETHRAL DISCHARGE TREATMENT

Treat for both gonococcal and chlamydial infections.

Recommended regimen

Azithromycin 2G orally single dose, under supervision (to treat both gonococcal and chlamydial infections)

Alternate regimens

Option 1

Cefixime 400 mg orally, single dose, under supervision (to treat gonococcal infection)

Plus

Doxycycline* 100 mg orally, 2 times daily for 7 days (to treat chlamydial infection)

Option 2

Inj. Ceftriaxone 250 mg I, M. single dose (to treat gonococcal infection)

Plus

Doxycycline* 100 mg orally, 2 times daily for 7 days (to treat chlamydial infection)

***In individuals allergic/intolerant to doxycycline,**

Erythromycin base/stearate 500 mg orally, 4 times daily for 7 days Treat for Trichomoniasis if discharge persists even after full treatment for gonococcal and chlamydial infections.

3c.3 GENITAL ULCER TREATMENT

Ask all patients to wash genital area with soap and water.

IF VESICLES ARE SEEN OR/AND HISTORY OF RECURRENCES GIVEN

First episode: Acyclovir 200 mg orally 5 times daily for 7 days

Recurrent episodes: Acyclovir ,400 mg orally, 3 times daily for 5 days

Note: There is no known cure of herpes but the course of the symptoms can be modified by acyclovir.

IF VESICLES ARE NOT SEEN AND NO HISTORY OF RECURRENCES GIVEN
Treat for both syphilis and chancroid.

Recommended regimen

Inj. benzathine penicillin,* 2.4 million units I.M, in 2 equally divided doses. Give injection in each buttock, after testing for sensitivity for penicillin (to treat syphilis)

Plus

Azithromycin 1 G, single dose, orally under supervision (to treat chancroid)

Alternate regimen

Option 1

Inj. benzathine penicillin,* 2.4 million units I.M, in 2 equally divided doses ; give one injection in each buttock, after testing for sensitivity for penicillin (to treat syphilis)

Plus

Inj. ceftriaxone, 250 mg, single dose I.M (to treat chancroid)

Option 2 . (Do not use in pregnant women)

Inj. benzathine penicillin,* 2.4 million units, I.M in 2 equally divided doses. Give, one injection in each buttock, after testing for sensitivity for penicillin (to treat syphilis)

Plus

Ciprofloxacin 500mg two times a day orally for 3 days (to treat chancroid)

****In individuals allergic/intolerant to penicillin***

Doxycycline 100 mg, 2 times daily, for 15 days, **but in pregnant women allergic /intolerant to penicillin** Erythromycin base/ stearate 500 mg, 4 times daily for 15 days. Ask these women to bring the new born baby for treatment within 7 days of birth

3c.4 VAGINAL DISCHARGE (WITHOUT SPECULUM) TREATMENT

CERVICITIS :

Recommended regimen

Azithromycin, 2 G orally, single dose, under supervision (to treat both gonococcal and chlamydial infections).

Alternate regimen

Option 1

Cefixime 400 mg, orally, single dose, under supervision (to treat gonococcal infection)

Plus

Doxycycline* 100 mg orally, 2 times daily for 7 days (to treat chlamydial infection).

Option 2

Inj. Ceftriaxone 250 mg I.M, single dose (to treat gonococcal infection)

Plus

Doxycycline* 100 mg orally, 2 times daily for 7 days (to treat chlamydial infection).

VAGINITIS :

Recommended regimen

Metronidazole** 2G orally, single dose, under supervision (to treat trichomoniasis and bacterial vaginosis).

Plus

Fluconazole 150 mg orally, single dose (to treat candidiasis)

Alternate regimen

Metronidazole** 400mg orally 2 times a day, for 7 days. (to treat trichomoniasis and bacterial vaginosis).

Plus

Clotrimazole 500 mg vaginal pessary once only (to treat candidiasis).

*In individuals allergic /intolerant to doxycycline and in all pregnant woman give erythromycin base/stearate, 500 mg orally, 4 times daily, for 7 days nstead of doxycycline.

**Do not give Metronidazole during the first trimester of pregnancy.

3c.5 VAGINAL DISCHARGE (WITH SPECULUM EXAMINATION) TREATMENT

CERVICITIS :

Recommended regimen

Azithromycin, 2 G orally, single dose, under supervision (to treat both gonococcal and chlamydial infections).

Alternate regimen

Option 1

Cefixime 400 mg, orally, single dose, under supervision (to treat gonococcal infection)

Plus

Doxycycline* 100 mg orally, 2 times daily for 7 days (to treat chlamydial infection).

Option 2

Inj. Ceftriaxone 250 mg I.M, single dose (to treat gonococcal infection)

Doxycycline* 100 mg orally, 2 times daily for 7 days (to treat chlamydial infection).

VAGINITIS :

Recommended regimen

Metronidazole* * 2 G orally, single dose, under supervision (to treat trichomoniasis and bacterial vaginosis).

Plus

Fluconazole 150 mg orally, single dose (to treat candidiasis)

Plus

Clotrimazole pessary , 100mg intravaginally, once daiy for six days (to treat candidiasis).

Alternate regimen

Metronidazole** 400mg orally 2 times a day, for 7 days. (to treat trichomoniasis and bacterial vaginosis)

Plus

Clotrimazole pessary , 500mg intravaginally, once only(to treat candidiasis).

In individuals allergic /intolerant to doxycycline and in all pregnant women, give erythromycin base/stearate, 500 mg orally, 4 times daily, for 7 days instead of doxycycline.

**Do not give Metronidazole during the first trimester of pregnancy

3c.6 SCROTAL SWELLING TREATMENT

Treat for both gonococcal and chlamydial infections.

Recommended regimen

Azithromycin 2G orally, single dose under supervision (to treat both gonococcal and chlamydial infections)

Alternative regimen**Option 1**

Cefixime 400 mg orally, single dose under supervision (to treat gonococcal infection)

Plus

Doxycycline* 100 mg orally 2 times daily for 14 days (to treat chlamydial infection)

Option 2

Inj. Ceftriaxone 250 mg I.M, single dose (to treat gonococcal infection)

Plus

Doxycycline* 100 mg orally, 2 times daily, for 14 days (to treat chlamydial infection)

Supportive therapy:

To reduce pain advise bed rest, scrotal elevation with a scrotal support (T-bandage) and analgesics

*In individuals allergic/intolerant to doxycycline, Erythromycin, 500 mg, 4 times daily orally, for 14 days.

3c.7 LOWER ABDOMINAL PAIN IN FEMALES TREATMENT

Treat patient for gonococcal and chlamydial infection as well as for anaerobic bacteria.

Recommended regimen

Azithromycin 2G orally, single dose under supervision (to treat both gonococcal and chlamydial infections).

Plus

Metronidazole** 400 mg orally, 2 times daily, for 14 days (to treat anaerobic bacteria).

Alternate regimen

Option 1

Cefixime 400 mg orally single dose under supervision (to treat gonococcal infection)

Plus

Doxycycline* 100 mg orally, 2 times daily, for 14 days (to treat chlamydial infection)

Plus

Metronidazole** 400 mg orally, 2 times daily, for 14 days(to treat anaerobic bacteria).

Option 2

Inj. ceftriaxone 250 mg I.M, single dose (to treat gonococcal infection)

Plus

Doxycycline* 100 mg orally, 2 times daily, for 14 days (to treat chlamydial infections),

Plus

Metronidazole** 400 mg orally, 2 times daily, for 14 days (to treat anaerobic bacteria)

In individuals allergic /intolerant to doxycycline and in all pregnant/lactating women use Erythromycin base/stearate, 500 mg orally, 4 times daily, for 14 days instead of doxycycline.

**Generally, Metronidazole is not recommended during the first trimester of pregnancy. However, it should not be withheld from a highly acute case of PID, which always represents an emergency.

Caution: PID can be a serious condition. Treating doctor must refer the patient to the hospital if she does not respond to treatment within 3 days and even earlier in case there is worsening of her condition.

3c.8 INGUINAL BUBO TREATMENT

Recommended regimen

Doxycycline 100mg orally, 2 times a day for 21 days .

Alternative regimen

Option 1

Tetracycline 500 mg orally, 4 times a day for 21 days.

Option 2 (for pregnant and lactating women)

Erythromycin base/stearate 500 mg orally, 4 times a day for 21 days.

If bubo becomes fluctuant, aspirate pus with a wide bore needle and syringe. Make entry into the bubo through adjacent normal healthy skin over a non-dependent area. Never incise and drain.

3c.9 OPHTHALMIA NEONATORUM TREATMENT

Clean the eyes with distilled water or saline.

Recommended regimen

Inj. ceftriaxone 50mg/kg body weight, I M single dose, up to maximum of 125mg (to treat gonococcal infection),

Plus

Erythromycin syrup 50mg/kg body weight orally, daily in 4 divided doses for 14 days (to treat chlamydial infection)

Alternate regimen

Inj. Kanamycin 25mg/kg body weight I.M single dose, up to a maximum of 75mg (to treat gonococcal infection),

Plus

Erythromycin syrup 50mg/kg body weight orally, daily in 4 divided doses for 14 days (to treat chlamydial infection)

3c.10 Key words

- Regimen
- Basic Regimen
- Recommended Regimen
- Alternate Regimen

3c.11 Self Assessment Questions

- Write briefly about the treatment for Genital ulcer
- Recommended Treatment for PID

3c.12 Suggested Books

- a. Text Book of Preventive Social Medicine by Park
- b. NACO Guidelines

- Dr.Maruti Sarma Mannava

Unit – 4a

HIV – infection & Risk factors

4a.0 Objectives :

After studying the lesson, the student will have orientation on Magnitude of the problem of HIV/AIDS and contributing factors or risk factors for getting infection to HIV.

Structure of the Lesson

- 4a.1 Introduction
- 4a.2 Problem statement
- 4a.3 Transmission by Sexual intercourse
- 4a.4 Transmission by Mother to new borne
- 4a.5 Transmission by Blood transmission
- 4a.6 HIV not transmitted by
- 4a.7 Key words
- 4a.8 Self Assessment Questions
- 4a.9 Suggested Books

4a.1 Introduction

HIV has been identified as emerging disease in the early 1980. AIDS has rapidly established itself throughout the world. As it can not survive out side the human body the transmission shall occur from individual to individual. All it's transmission is direct contact with each other but not skin to skin. Hence a complex behavior is contributing for it's transmission. Only non behavioral link of transmission is Mother to Child.

4a.2 Problem statement of AIDS:

AIDS is Unknown before 1981*, AIDS has become one of the dominant public health concerns today. It is caused by HIV which is transmitted mainly through sexual intercourse. The virus can also be transmitted through contaminated blood and from mother to child. There is no cure. That the cure will be found before the turn of the century is considered unlikely. Preventive education is, therefore, the only means of preventing HIV/AIDS.

About 1.3 crore people worldwide were infected with HIV in 1993. It is estimated that the figure will go up to 2.6 crore by 2000. More than 90 per cent of these infected persons will be in developing countries. The growing toll from AIDS in these countries may rise to more than 18 lakh deaths annually. The accompanying map gives the State-wise status of HIV in India as of August 31, 1994. What is important to know is that these figures are rising with every report that is received from each State in the country. It is also important to know that as these figures are based on the reported cases, they do not represent the actual cases. WHO estimates that there could be 1million to 1.5 million persons with HIV in India today. The rapid rate of infection poses a serious health challenge for the country.

Global HIV/AIDS epidemic as of December 2006

Number of People Living with HIV in 2006	
Total	39.5 millions
Adults	37.2 millions
Women	17.7 millions
Children under 15 years	2.3 millions

People Newly infected with HIV	
Total	4.3 millions
Adults	3.8 millions
Children under 15 years	0.5 millions

AIDS Deaths reported	
Total	2.9 millions
Adults	2.6 millions
Children under 15 Years	0.38 millions

Women are biologically and socially more vulnerable to the HIV infection than men. Male to female transmission is 2-4 times more efficient than female to male. The low status of women in society inhibits their ability to protect themselves from HIV infection. Even if a woman knows about HIV and how to protect herself, it is not always possible for her either to refrain from sex with her husband if she feels he is unfaithful or to convince her husband to use a condom. In addition, infected mothers can transmit HIV to their foetus and newly born babies. This can have serious impact on our efforts to reduce infant mortality in the country.

How HIV Transmission take place :

It is now quite clear that HIV can be transmitted through semen, vaginal and cervical fluids, and blood.

4a.3 Transmission by Sexual intercourse

The most common route of transmission is unprotected sexual intercourse with an infected partner. It accounts for nearly 80 per cent of the world's HIV infections. HIV is present in semen and in cervical and vaginal fluids and the vagina and penis provide entry points to the body. The rapid spread of HIV/AIDS in the world is attributed to transmission through sex. HIV has been described as the 'latest' Sexually Transmitted Disease. Transmission is made easier by the presence of other STDS, particularly genital ulcer disease such as chancroid and syphilis. In the presence of an STD, particularly where a sore is present, the risk of contracting HIV during unprotected sex with an infected person is very high. This is because semen or vaginal secretions of an HIV infected person can come in contact with open sores easily.

4a.4 Transmission by Infected mother to new-born child

HIV can be transmitted by a woman with HIV to her child before, during birth and after birth. Before birth, it may be transmitted across the placenta to the foetus and during birth it may be transmitted through the mother's blood. The chance of an infected mother passing on HIV to her child is estimated at about 30 per cent. That means one out of three children born to an infected mother is likely to be born already infected with HIV. Few children with HIV survive for longer than 2-3 years.

Risk of transmission is associated with breast Milk.

4a.5 Transmission by Blood

Human blood provides a good medium for the growth of micro-organisms including HIV because of its nutrient value, adequate oxygen content and adequate temperature. Therefore, infusion of blood and blood products which are infected with HIV, is one of the most efficient means of transmission of HIV infection. As such testing of blood for HIV before transfusion is mandatory. This means that before transfusion each and every unit of blood must be tested for HIV. National AIDS Control Organisation in India is, therefore, trying to provide facilities for testing of every unit of blood. As a virus which lives in the blood, HIV may be transmitted by the transfusion of blood from an infected donor. HIV can also be transmitted through the use, without proper sterilization, of needles, syringes, blades, knives, surgical instruments and other piercing instruments that have been used on an infected person. This includes instruments used for circumcision, tattooing, acupuncture, earpiercing and traditional healing practices. Used needles and syringes can be soiled with minute amounts of leftover blood. If these needles and syringes are used, then the infected blood could directly transfer HIV into the blood stream. It should be noted that the possibility of transmission of HIV through normal injections in clinics and hospitals is extremely low. Sharing of syringes among injecting drug users is common. Such a behaviour is highly risky from the point of view of getting HIV infection as injecting drug users often end up giving themselves mini transfusions.

4a.6 HIV transmission does not occur by

We know that HIV is not passed on in these ways:

- shaking hands
- kissing and hugging sharing cups, plates and other eating utensils
- sharing toilet and bathroom facilities
- through coughing or sneezing or through the air we breathe sitting in the same class or canteen
- sharing work instruments or machinery swimming together or playing together
- donating blood to the Blood Bank (with sterilized needles)
- bites by insects, e.g. mosquitoes. Bed bugs, etc.

One cannot get HIV/AIDS through everyday social contact with a person infected with HIV.

4a.7 Key words

- Risk behavior
- Blood transfusion
- Breast feeding
- Needles
- Syringes
- Blades
- Knives
- Surgical instruments
- Kissing
- Hugging
- Chancroid

4a.8 Self Assessment Questions

- Write about the Disease burden of AIDS cases.
- Who are at risk to get HIV infection
- What occupations are having high risk of getting HIV infection
- Is breast milk of HIV positive Mother – safe? Then what will you suggest.

4a.9 Suggested Books

- a. Text Book of Preventive Social Medicine by Park
- b. NACO Guidelines

- Dr.Maruti Sarma Mannava

Unit – 4b**Post Exposure Prophylaxis – PEP****4b.0 Objectives:**

After studying the lesson, student can understand the risk of exposure and can code the exposure risk and can assess Source Code. With the knowledge student can promptly act the risk of getting HIV infection

Structure of the lesson:

4b.1 Introduction

4b.2 General issues of exposure

4b.3 Exposure Code determination

4b.4 Source Code Determination

4b.5 Determination of PEP recommendation

4b.6 PEP drugs recommended by NACO

4b.7 General Guidance

4b.8 Advice to individual on PEP

4b.9 Key words

4b.10 Self Assessment Questions

4b.11 Suggested Books

4b.1 Introduction

Prophylaxis mean the steps involved in preventing specifically against an particular disease. Say if a person must go to Malaria Endemic area and he has to get mosquito bites during they stay. Then he will have a high risk of getting Malaria fever. If he consumes any drugs that will protect him from malaria such activity is known as Prophylactic treatment .

4b.2 General issues of exposure

When ever exposure to the HIV infection is suspected within 2 hour, if Prophylaxis is properly followed the risk of infection is avoided. If the period is crossed more than 72 hours then starting of PEP is not useful.

1. Risk occupations are

Any person whose activities involve contact with patients or with blood or other body fluids from patients in a health care or laboratory setting is at risk.

2. Health care workers :

Medical professionals are vulnerable to occupational exposure to infectious materials and at risk of acquiring life threatening infections despite following universal precautions. The highest load of accidents happen in surgical area (53%). Hospital nurses and surgeons are the most exposed group.

3. The Risk Of Infection Varies With The Type Of Exposure And Other Factors Such As

- The amount of blood involved in the exposure.
- The amount of virus in the patient's blood at time of exposure.
- Whether post exposure prophylaxis was taken within the recommended time.

4. Average Risk Of Hiv Infection After An Occupational Exposure

- Needle stick injury :1 in 300 (0.3%)
- Exposure of eye, nose or mouth :1 in 1000
- Risk with damaged skin :1 in 1000

5. Occupational Exposure

- Percutaneous injury (needle-stick or cut with a sharp instrument).
- Contact of mucus membrane or non-intact skin (skin is chapped, abraded, or afflicted with dermatitis).
- Contact with intact skin when the duration of contact is prolonged (several minutes or more) with blood, tissue or other potentially infectious body fluids
- (semen, vaginal secretions, cerebrospinal, synovial, pleural, peritoneal, pericardial & amniotic fluids).

6. Steps to be taken on exposure to HIV infected blood/ body fluids and contaminated sharps

Immediately Following An Exposure

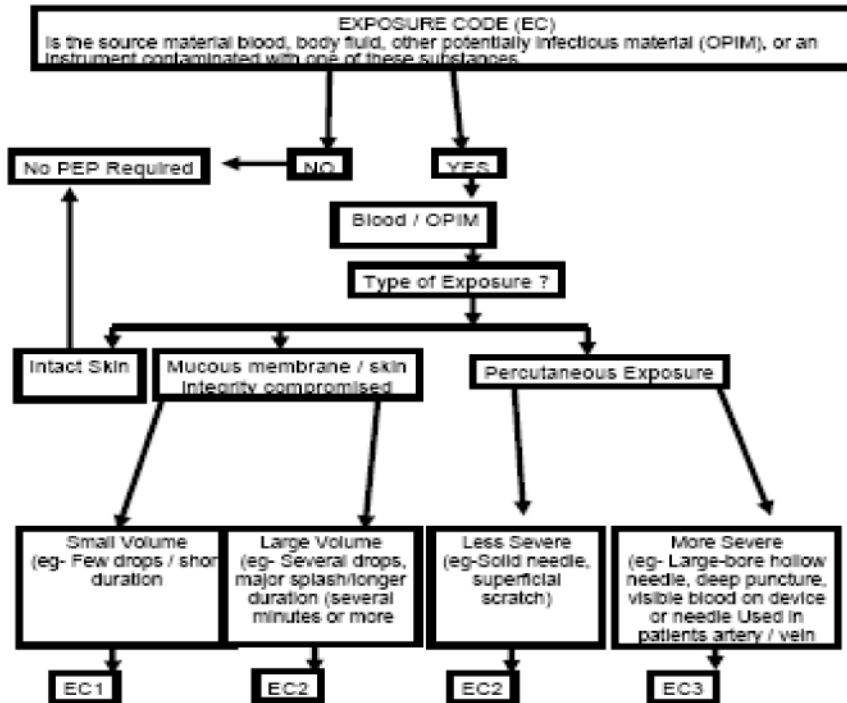
- Do not panic.
- Needle- sticks and cuts should be washed with soap and water.
- Splashes to the nose, mouth or skin should be flushed with water.
- Eyes should be irrigated with clean water, saline or sterile irrigants.
- Pricked finger should not be put into mouth reflexly.

7. REPORTING OF THE EXPOSURE

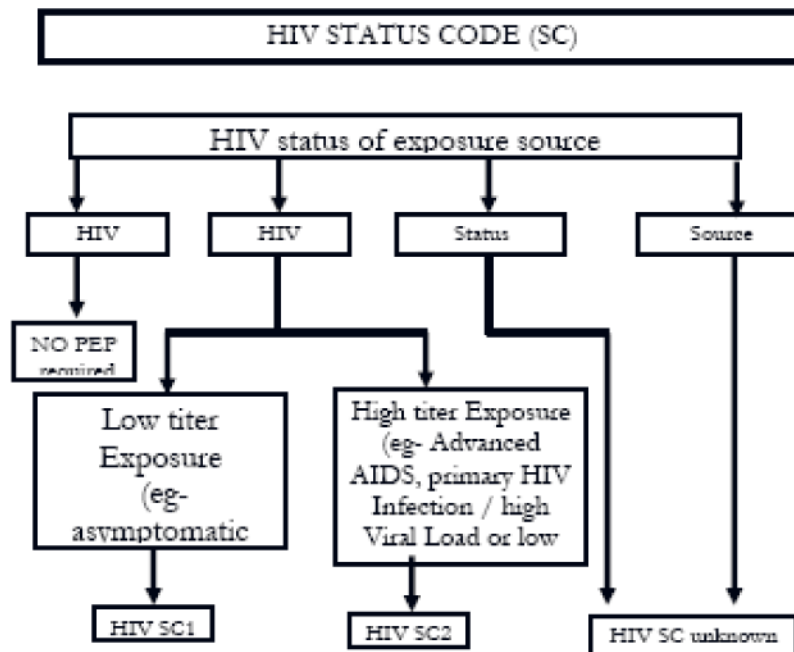
- To the appropriate authority and must be treated as an emergency. prompt reporting is essential as in some cases HIV- PEP may be recommended within a few hours.
- POST EXPOSURE PROPHYLAXIS

8. The decision to start PEP is made on the basis of degree of exposure to HIV and the HIV status of the source from whom the exposure/ infection has occurred. *determination of Exposure Code & HIV Source Code by using flow charts.*

4b.3 Exposure Code determination



4b.4 Source Code Determination



4b.5 Determination of PEP recommendation

EC	HIV SC	PEP RECOMMENDATION
1	1	PEP MAY NOT BE WARRANTED
1	2	CONSIDER BASIC REGIMEN (NEGLIGIBLE RISK)
2	1	CONSIDER BASIC REGIMEN
2	2	RECOMMENDED EXPANDED REGIMEN
3	1 OR 2	RECOMMENDED EXPANDED REGIMEN
2/3	UN KNOWN	IF SETTING SUGGESTS A POSSIBLE RISK (EPIDEMIOLOGICAL RISK FACTORS) AND EC IS 2 OR 3, CONSIDER BASIC REGIMEN

4b.6 PEP drugs recommended by NACO

BASIC REGIMEN:

ZIDOVUDINE (AZT)

600 mg IN 2 OR 3 DIVIDED DOSES FOR 4 WEEKS

+

LAMIVUDINE (3TC)

150 mg TWICE A DAY FOR 4 WEEKS

EXPANDED REGIMEN:

BASIC REGIMEN + INDINAVIR- 800 mg / THRICE A DAY OR ANY OTHER
PROTEASE INIBITOR FOR 4 WEEKS

4b.7 General Guidance

- PEP may be started preferably within two hours. PEP after 72 hrs of exposure is of no use and hence is not recommended.
- PEP can reduce the risk of HIV transmission by 80%
- If the HIV test is found to be positive at anytime within 12 weeks, the individual should be referred to a physician for treatment .

4b.8 ADVICE TO THE INDIVIDUAL ON PEP

- Refrain from donating blood, semen or organs/ tissues.
- Abstinence from sexual intercourse. in case sexual intercourse is undertaken a latex condom should be used consistently.
- Women should not breast- feed their infants during the follow- up period.

4b.9 Key words

- Prophylaxis
- PEP
- Percutaneous injury
- Mucus membrane
- Panic
- Source Code
- Exposure Code

4b.10 Self Assessment Questions

- What is PEP
- Write about the Exposure Code flow chart
- What precautions you advise if any body gets risk of exposure

4b.11 Suggested Books

- a. Text Book of Preventive Social Medicine by Park
- b. NACO Guidelines

- Dr.Maruti Sarma Mannava

Unit – 5**HIV/AIDS Prevention and Control of HIV / AIDS
in the Community****5.0 Objective:**

After studying the lesson, the student will have an understanding about the preventive measures to be taken against HIV/AIDS and its control measures.

Structure of the lesson:**5.1 Introduction****5.2 HIV/AIDS: : ITS PREVENTION AND CONTROL****5.3 SEXUAL INTERCOURSE****5.4 BLOOD****5.5 MOTHER-TO-CHILD****5.6 “NO RISK” BEHAVIOURS****5.7 “RISKY” BEHAVIOURS****5.8 Control :: IMPORTANCE OF COUNSELLING, CARE AND TEACHERS, ROLE****5.9 No Preventive Vaccine or Cure for AIDS****5.10 Living With Persons with HIV and AIDS****5.11 AIDS in the Home****5.12 Key words****5.13 Self Assessment Questions****5.14 Suggested Books****5.1 Introduction****5.2 HIV/AIDS: : ITS PREVENTION AND CONTROL**

How to prevent and control HIV/AIDS is a very difficult question. There is no preventive vaccine or cure. The only option available today is to prevent it by observing practices that are safe. Compliance with such practices can make a significant difference. The discussion in the following pages, therefore, is focussed on the preventive practices regarding three major routes of HIV infection: Sexual Intercourse; Blood; and Mother to Child.

5.3 SEXUAL INTERCOURSE

In most cases, HIV infection is caused by unsafe sex practices. A healthy attitude towards sex and observing responsible sexual behaviour can reduce the chances of getting HIV infection. Abstinence from sex, sticking to one uninfected life partner and not having multiple sexual relations (or not having premarital and extra-marital sexual relations) constitute responsible sexual behaviour which are the best guarantees against HIV/AIDS.

Use of condoms

Sex plays a very important role in a person's growth into adulthood and in his/ her subsequent life. Decisions regarding sex must be based on careful and mature consideration. References to sexual behaviour have been made here only in the context of HIV/AIDS. The use of condom is recommended not only for avoiding unwanted pregnancy but also as a 'protection' against HIV/AIDS and other STDS. Although the use of condom provides good protection, it should be remembered that it does not make sex 100 per cent safe.

5.4 BLOOD

Another route of HIV infection is through blood.

a) Sterilized syringes and needles :

Great care should be taken that instruments with raw blood that are used in activities such as circumcision, tattooing or ear piercing, are sterilized after use if they are to be used again. Instruments can be cleaned by leaving them in a solution of one part bleach* (powder or liquid) to nine parts water (1:9) for 30 minutes or boiling them in water for 20 minutes. Do not get 'injections' from an unqualified doctor. The needles and syringes used by such practitioners are not sterile. If an injection is needed, one must ensure that the syringe and needle are disposable or properly sterilized. There should never be any sharing of needles and syringes while taking an injection.

Blood Safety

The Blood Safety Programme in the country is an integral part of the National AIDS Control Programme. There are more than 1000 blood banks, both government and nongovernments, which collect and supply blood. HIV Zonal blood testing centres have been set up in many cities and towns of the country. The centres receive samples of blood from blood banks for HIV testing. Under the Drugs and Cosmetics Act, it is mandatory to test every unit of blood for HIV. The Zonal blood testing centres/district level blood banks have been provided with testing kits and the necessary equipment for conducting tests. The blood of a donor is discarded, if it is tested HIV positive. In order to know the prevalence and progression of HIV in the community and in the country as a whole, the mechanism of sentinel surveillance has been established. This is being done through screening of the blood samples, collected from sentinel sites including STD clinics, antenatal clinics, drug de-addiction clinics, etc. The surveillance data from different States is compiled at the national level. Efforts are also being made to augment voluntary blood donations and to phase out professional blood donors.

5.5 MOTHER-TO-CHILD

The risk of an HIV infected mother passing the virus to her unborn child is about 30%, the risk being greater if she has symptoms of AIDS rather than if she has no symptoms. The risk of passing HIV through breast-milk is relatively small. Breast-milk has many substances in it that protect an infant's health and the benefits of breast-feeding for both mother and child are well-recognized. Bottle-feeding is not safe because of difficulties in sterilizing the feeding bottles or lack of clean water supplies. In developing countries, the risk of an infant becoming infected through breast-feeding is usually outweighed by the benefits of breast-feeding. A woman who is infected with HIV may wish to consider carefully the pros and cons of pregnancy in the light of a 30% chance of the child getting AIDS.

5.6 “NO RISK” BEHAVIOURS

The following “no risk” behaviours are extremely important:

1. Responsible Sexual Behaviour

(a) Abstinence from sexual intercourse before marriage is a “no risk” behaviour. In this context, the traditional value of ‘no sex’ before marriage is important to stress. Students may be encouraged to discuss the significance of this traditional value in the context of contemporary situation. Abstinence is a responsible behaviour and students need to discuss the reasons for observing abstinence and learn how to resist pressures to have sex.

(b) Sex with one uninfected and mutually faithful partner is another “no risk” behaviour. In this context, it is important to note that this is in consonance with the Indian value which discourages premarital and extra-marital sex.

(c) Use of condoms.

2. Not sharing needles/syringes and using sterilized/disposable needles and syringes for all purposes.

3. Ensuring that one accepts HIV free syringes/blood transfusion, if and when necessary.

5.7 “RISKY” BEHAVIOURS

The following behaviours carry the risk of HIV infection/AIDS:

1. Not sticking to one uninfected partner or having multiple sex partners.

2. Having sex with a person who has multiple sex partners.

3. Sharing unsterilized needles and syringes, accepting untested blood transfusion.

5.8 Control :: IMPORTANCE OF COUNSELLING, CARE AND TEACHERS, ROLE

Importance of Counselling

There is no extra human reservoir for HIV infection. One should get the infection only through infected individuals. If all HIV infected persons are properly identified and guided the transmission of infection can be theoretically stopped and prevalence of HIV can be controlled drastically. With is the counseling has take-up an important activity in controlling the HIV infection. Consulting for HIV/AIDS is a new concept in India. We know about counselling activities associated with Family Planning, but never before has counselling for the prevention of disease been so urgently required, HIV/AIDS counselling aims at preventing transmission of HIV infection and providing psyche-social support to those already affected Prevention and support are complementary to each other.

Counselling implies education but. Unlike just education, it is directed towards the specific needs arising from HIV infection. However, both counselling as well as education aim at changing risk behaviour and rely on communication skills. The expertise required for counselling can be acquired after special training. However, there are some basic ideas of counselling for HIV/AIDS which, even without special training, can be learned by teachers and can form the basis of interaction with students.

A diagnosis of the HIV infection or AIDS brings with it profound emotional, social and medical consequences. The individual and social adjustments required have implications for family life, sexual and social relations, work, education, spiritual needs. Status and civil rights. The adjustment to HIV infection or AIDS involves constant stress management and adaptation. Counselling has to take into account not only the patient's immediate social and medical environment, but also his or her social relationships and attitudes towards HIV/AIDS. Counselling of the family members, friends, employers and colleagues must be based on upto- date and authentic information,

5.9 No Preventive Vaccine or Cure for AIDS

At present there is no preventive vaccine or cure for AIDS. There is no treatment that can fully repair the damage caused to the body's defence system or completely remove the infection from the person's body. But there are several ways of reducing symptoms and of treating many conditions associated with HIV and AIDS. One drug which is being used against HIV itself is Zidovudin (AZT). Because of the use of AZT the life expectancy of people with AIDS who have been treated with the drug, has increased. It works by slowing down and interfering with HIV's capacity to reproduce itself. But it does not eliminate the virus from the body. Unfortunately AZT is expensive and not easily available. It also has various side effects. Although there is no cure for AIDS, there are various steps people with HIV can take to safeguard their health.

In order to maintain good health and delay the onset of the disease syndrome, it is important for people with HIV to:

- seek early medical treatment for health problems such as oral infections and pneumonia, eat a varied balanced diet;
- have regular exercise;
- have enough sleep and rest; relax and enjoy leisure time;
- take good physical care of the body; practise good hygiene;
- maintain morale and a positive self-image; It is also important for people with HIV to:
- avoid further HIV infection through unprotected sex;
- avoid smoking;
- avoid becoming overtired;
- reduce stress and worry;
- avoid other infections.

These are all practical steps that people can take as individuals.

5.10 Living With Persons with HIV and AIDS

The prevalence of HIV/AIDS is such that very soon, many of us will have to address the issues that surround living with HIV/AIDS. Whether one is oneself HIV positive, whether it is a partner, a family member, a friend, workmate or a neighbour, it is a problem which one will be asked to deal with. We know that HIV is not contagious. It is not transmitted through normal everyday contact. But perhaps because the sensitive issues of sex and death are interwoven around AIDS, the negative reaction from the general public to AIDS has been unprecedented. AIDS has produced reactions of fear, hostility and prejudice. It has been suggested that people with AIDS should be isolated and there have been calls for compulsory testing. This, we know, is not an effective way of controlling the epidemic, as it is impossible to identify every person carrying

HIV in addition to the obvious human rights violations that are likely to occur. Since anything linked to sex is a taboo in our society, a person with HIV would be discriminated against and stigmatized. This, in turn, would encourage people with high risk behaviour to avoid testing and go into hiding. Hence, testing should not be made compulsory. There have been cases of persons with HIV/AIDS being evicted from their lodgings, rejected by their families and friends, and losing their jobs. Consequently, people with AIDS are afraid to tell others about their condition for fear of victimization. This increases the danger both for the individual and society. Reactions such as these are often the result of ignorance. The introduction of education about HIV/AIDS should help dispel such negative reactions and produce a higher degree of understanding for those affected by the epidemic.

5.11 AIDS in the Home

The home is a very important place for a person with AIDS. If a person with AIDS is assured of a caring and understanding family, he/she will be much better able to cope emotionally and practically with the illness. A person with AIDS will need both moral support and physical care. The relatives can often give the best care. The patient will feel more secure at home where he or she is amongst loved ones. There is no risk attached to caring for a person with AIDS at home provided that sensible household hygiene measures as stated below are taken. Avoid skin contact with blood of the infected person; if blood gets on to your hands, wash as soon as possible in soapy water. Do the same for other body secretions such as urine or faeces. Cover any cuts or sores on your hands with a waterproof plaster. If plastic or rubber gloves are available, use these to cover your hands when dealing with blood or soiled linen; you could also use plastic bags to cover your hands. Boil laundry soiled with blood for twenty minutes and/or use bleach (one part bleach powder or liquid to nine parts of water) or soak it in a chlorine solution to kill any virus present. Providing physical care to someone with AIDS is a very sure way of showing them you love them. It is also important to be ready to listen and to talk to them. Sit and talk with patients, giving them the opportunity to chat or remember old times if they want to. Find out what patients need and want, e.g. to eat, to pass the time, or who they would like to see.

5.12 Key words

Sexual intercourse

Condom

Blood safety

No risk behavior

Counseling

LWHA

5.13 Self Assessment Questions

- Write briefly about the personal protective measures
- What are the control measures you follow in controlling the HIV/AIDS problem in your area

5.14 Suggested Books

- a. Text Book of Preventive Social Medicine by Park
- b. NACO Guidelines

- Dr.Maruti Sarma Mannava