CHAPTER-I

INTRODUCTION

Human Immuno Deficiency Virus, Acquired Immuno Deficiency Syndrome (HIV/AIDS) has been the silent cause of death and epidemic in India during the recent past (Anderson, 2002). HIV/AIDS has killed at least 26 million people and orphaned more than 12 million children. The virus has affected 40 million people directly or indirectly (UNAIDS, 2006). The illness was first officially recognized and registered in United States in 1981. According to reports from NACO and UNAIDS (2002), over 5 million people and one percent of the general population is affected by the illness in our country (Garrett, 2005). It has its origin in the Great Lakes region of Africa since the 1970s. India is now heading towards becoming the World’s largest HIV/AIDS population. The crisis has worsened due to social apathy, ignorance, taboo, secrecy, stigma and discrimination. HIV/AIDS is the most complex disease humanity has ever faced. Now it has grown into pandemic proportions. The global prevalence of HIV has stabilized at 0.8% with 33 Million people living with HIV/AIDS, 2.7 million cases of new infection and 2.0 million AIDS death in 2007. In India, the situation is assessed and monitored through regular annual sentinel surveillance (CDC: 2005:1-46).

1.1 ORIGIN OF HIV/AIDS

The first report of AIDS came from the Centre for Disease Control in Atlanta, Georgia, in the United States. The centre is responsible for investigating epidemics and new or unusual disease. They described the cases of five young, previously healthy homosexuals who had been treated in Los Angeles hospital for the rare infection of the lungs called Pneumocystis pneumonia. This type of pneumonia is caused by Pneumocystis Carinii, a small organism (protozoa) which invades the lungs and as a result makes breathing very difficult. The opportunity for infection by this organism usually occurs only in individuals whose immune system is damaged or profoundly impaired (Grmek, 1990)

Why AIDS did not appear until the late 1970’s is a scientific mystery, but in the present years AIDS has become an epidemic throughout the Western World and
almost all parts of Equatorial Africa. In India too, it is spreading very fast. No one knows where HIV came from, though there are a few scientific opinions about the origin of HIV. However it is more important to know the ways for preventing its spread than to know where HIV came from. It is now highly active in our country and is spreading with a rapid pace. One has to learn to protect oneself the defense system (immune system) of the body develops germ fighters, called antibodies to fight off viruses and germs that invade it. The presence of particular antibodies in a person’s blood indicates that the person has been exposed to that infection. For example, when a blood test reveals that the antibodies to HIV are present in the blood, it means that the person is infected with HIV virus. According to standard theory of the origin of AIDS, a Simian Immunodeficiency Virus (SIV) carried by an African monkey was transmitted to and survived in a human to become human immuno deficiency virus (HIV). This transmission could have happened in any of a number of ways to the blood from a butchered monkey entering a human blood through a cut, monkey blood being injected into human as part of sexual customs, a human eating undercooked African monkey meat or a monkey biting a human. (Hardy, 1987 and Karmas, 1990). However, there is large number of other theories, such as (a) the development of HIV by biological warfare laboratories (Lederer, 1987); (b) AIDS originated from polio vaccines used in Africa in the late 1950s. After reflection and study of the medical literature, with considerable evidence hypothesis (Pascal, 1987), Pascal noted that polio vaccines are cultured on monkey kidneys and therefore that SIVs from an infected monkey could have a contaminated a batch of vaccine. An infected monkey could easily have been used, since monkey with SIVs may show no sign of disease. Polio vaccines could not be screened for SIV contamination before 1985, the year in which SIVs were discovered.

There is a documented precedent for contamination of polio vaccines. Since the early 1960s, it has been known that the monkey virus SV40 was probably transmitted to tens of millions of people through polio vaccination campaigns. (Shah & Nathanson, 1976)

Pascal (1991) points out that in order for a virus to infect different species, it is helpful to reduce the resistance of the new host’s immune system. Koprowski’s polio vaccine was given to many children less than one month old, before their immune
systems were fully developed. Furthermore, these infants were given the adult dosage because they produce antibodies less easily.

Although HIV is transmitted most readily through exchange of blood or semen, it can be transmitted orally, especially via breastfeeding or when mucosal immunity is impaired. The virus could have entered the blood through mouth ulcer or lesions.

There is much more that could be said about this hypothesis, including a whole series of rebuttals and replies. Like any moderately complex theory, there is latitude for elaboration and modification in the face of challenge (Lactases, 1992)

1.2 EPIDEMIOLOGY OF HIV IN INDIA

India has the largest number of people living with HIV outside Africa estimated at 5.1 million by the end of 2003. Till March 2005, about 1,03,000 cases of AIDS cases have been reported to NACO. Heterosexual route is the predominant mode of transmission, followed by injecting drug use. The national adult HIV prevalence is 0.9%. Although the overall prevalence of HIV is below 1 % due to the large population size, India has a larger number of people living with HIV/AIDS. In India out Of 35 States, 6 states are High prevalence, four in Southern India (Andhra Pradesh, Tamil Nadu, Maharashtra, and Karnataka) and two in north eastern India (Manipur and Nagaland) have generalized epidemic with HIV prevalence rates of above 1 % among pregnant women. These six states account for nearly 80% of all reported AIDS cases in the country.

HIV stands for Human Immunodeficiency Virus that causes AIDS.

H: HIV infects only human beings.

I: Immunodeficiency virus weakens the immune system and increases the risk of infection.

V: Virus attacks the body.
HIV breaks down the body’s defense against infection and disease i.e., the body’s immune system by infecting some of the white blood cells CD4 or T4 cells, leading to a weakened immune system. When the immune system becomes weak or compromised, the body loses its protection against illness as time passes, the immune system is unable to fight infection and the person can develop serious and deadly diseases, including infections and some types of cancers. When a person is infected with HIV, the person is known as “HIV infected” or ‘HIV positive’ the person having HIV, virus multiplies rapidly in the blood and the immune system produces antibodies. The HIV-positive person might have no sign of illness but can still infect others. NACO, (2007)

1.3 TYPES OF PROGRESSION IN HIV/ AIDS

HIV positive symptomatic period, AIDS, description pertains to a typical progressor. People infected with HIV may progress typically as above, may progress slowly or may progress very rapidly. Most people infected with HIV are Typical Progressors.

1.3.1 Rapid Progressor,

Death occurs within 2 years.

1.3.2 Slow progressors

This infection has been known to survive for 10-15 years without treatment. The progression of the HIV infection is dependent on the pre-existing immune status of the person, the type and number of virus, the presence of other infections etc

1.3.3 Viral load

The person has unprotected sexual intercourse with another HIV infected person. For this person even if two partners (husband and wife) are HIV positive, they must use condoms. The person receives untested blood which could be HIV infected or use of injectable drugs with a reused needle. The person has any other infection, such as common cold and cough, viral fevers, STDs or TB. Prompt and complete treatment of STDs or TB reduces the viral load.
### Table 1.1: Progression of HIV among Typical Progressors.

<table>
<thead>
<tr>
<th>Stages of illness</th>
<th>Acute Retroviral Syndrome</th>
<th>Window Period</th>
<th>HIV Positive asymptomatic period</th>
<th>HIV positive symptomatic period</th>
<th>AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>Fever, skin rash, constitutional symptoms (seen in about 60% of persons newly infected with HIV)</td>
<td>Nil</td>
<td>Nil</td>
<td>Prolonged fever, recurrent common infections, TB, diarrhea, generalized lymphadenopathy</td>
<td>AIDS defining illness, Opportunistic infections Wasting Syndrome Dementia</td>
</tr>
<tr>
<td>HIV test ELISA/WB</td>
<td>Negative</td>
<td>Negative</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
</tbody>
</table>

### 1.4 NATURAL HISTORY AND TRANSMISSION OF HIV

#### 1.4.1 Routes of HIV transmission

HIV gets transmitted from one HIV infected person to another, by four routes:

1. By having unprotected sex. Unprotected sex means sex without a condom though the risk is variable; HIV can be transmitted by vaginal, anal or oral sexual activity.

2. By receiving a transfusion of untested blood or blood products. Untested blood is blood that has not been tested for HIV, Hepatitis B or other infections. Contact between HIV infected blood and broken skin (wound or cuts) can also transmit HIV.

3. By sharing needles and syringes to inject drugs or using unsterilized needles, syringes or other surgical or dental instruments. Unsterilized needles, syringes or instruments are those, which have not been cleaned and boiled or steamed under pressure or treated with chemicals.

4. By maternal transmission. HIV may be transmitted from an infected mother to her infant during pregnancy, delivery or through breastfeeding.
Though the virus is present in almost all body fluids, only four body fluids transmit the infection: blood, semen, vaginal secretions and breast milk. For HIV to be transmitted there must be contact between these infective secretions and mucous members (thin skin) or broken skin. Mucous membrane is seen in the mouth, anal canal and the vagina.

1.4.2 Different levels of risk of HIV transmission

**Vaginal intercourse** is the most common way the virus is transmitted across World. HIV is transmitted more easily from the male to the female during vaginal intercourse. The risk for HIV infection increases, if either of partners has a sexually transmitted disease (STD). It is also possible for either sex partner to become infected with HIV during **anal sex**. Receptive anal intercourse is the most risky type of contact. In general, the person receiving the semen is at greater risk of getting HIV because the lining of the rectum is thin and may allow the virus to enter the body during anal sex. Moreover, rectal or anal canal tears occur which make it easy for the virus to enter. However, a person who inserts his penis into an infected partner also is at risk because HIV can enter through the urethra (the opening at the tip of the penis) or through small abrasions, or open sores on the penis. Having unprotected (without a condom) anal sex is a considered to be a very risky behavior. It is possible for one to become infected with HIV through performing **oral sex**. The risk increases if one has cuts or sores around or in the mouth or throat, if the sexual partner ejaculates in the mouth or throat, if the sexual partner has another sexually transmitted disease (STD). Open-mouth kissing is considered a very low-risk activity for the transmission of HIV. However prolonged open-mouth kissing could damage the mouth or lips and allow HIV to pass from an infected person to a partner and then enter the body through cuts or sores in the mouth. Because of this possible risk, open-mouth kissing with an infected partner is not recommended. The presence of a sexually transmitted disease (STD) increases both the person’s risk of becoming infected with HIV and the infectivity of a person with HIV. Whenever the STD causes genital discharges (syphilis, trichomonosis), HIV is transmitted and received more easily in the presence of STD. CDC, (1993)
1.4.3 HIV is NOT transmitted

By casual contact such as touching, holding hands, body contact in crowded places, shaking hands, working or playing together, sharing food, vessels and cloths, eating food cooked by an infected person, mosquito and other insect bites, swimming pools and toilets. A person coughing or sneezing, insect bites, hugging, drinking water, kissing, going to a public booth, going to school with an HIV-infected person using, telephones, sharing cups, glasses, plates or other utensils, who donates blood is not at risk of getting infected with HIV.

Various personal and public health strategies to prevent transmission of HIV are shown in Table 1.2.

Table 1.2: Personal Strategies to prevent HIV Infection.

<table>
<thead>
<tr>
<th>Blood to blood transmission</th>
<th>Engages in Safe Behaviors (no risk of HIV transmission)</th>
<th>Reduce Risky Behaviors (can decrease but does not eliminate risk)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accept only HIV screened blood for transfusion.</td>
<td>Minimize the use of syringes and needles if alternative procedures.</td>
</tr>
<tr>
<td></td>
<td>Donate blood in advance of surgery if a blood transfusion may be needed (autotransfusion)</td>
<td>Follow universal precaution.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Follow universal precautions.</td>
</tr>
<tr>
<td>Sexual Contact</td>
<td>Abstain from sexual contact</td>
<td>Use of barriers consistently and correctly</td>
</tr>
<tr>
<td></td>
<td>Limit sexual activities to those in which the penis, vagina, mouth and rectum have no contact with the partner’s penis, vagina, mouth or rectum.</td>
<td>For oral intercourse on a male, use non lubricated condoms.</td>
</tr>
<tr>
<td></td>
<td>Have sex only in a mutually monogamous relationship with an uninfected partner.</td>
<td>For oral intercourse on a female, use dental dam, plastic wrap, latex panties.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For vaginal intercourse, use male for female condoms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For anal intercourse, use male condoms or female with their inner ring removed.</td>
</tr>
<tr>
<td>Drug Use</td>
<td>Do not inject drugs.</td>
<td>Clean used injecting equipment before re using it.</td>
</tr>
<tr>
<td></td>
<td>Use only clean, unused equipment.</td>
<td>Seek treatment for drug dependence.</td>
</tr>
<tr>
<td>Prenatal</td>
<td>The concern is relevant only if</td>
<td>Use birth control that includes a</td>
</tr>
</tbody>
</table>
Transmission

mother is HIV infected.
Know your HIV status: if HIV positive use PPTCT interventions.

barrier method.
Plan pregnancy early, when mother’s CD4+ count is high and viral load is low.
Receive antiretroviral (ARV) treatment during pregnancy, labor, delivery, and breastfeeding.
Receive ARV prophylaxis to infant within 72 hours after birth.
Consider elective cesarean section, if safe and feasible.

<table>
<thead>
<tr>
<th>Table 1.3: Public Health Strategies to prevent HIV Infection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engages in Safe Behaviors (no risk of HIV transmission)</strong></td>
</tr>
<tr>
<td>Blood to blood transmission</td>
</tr>
<tr>
<td>Sexual Contact</td>
</tr>
<tr>
<td>Drug Use</td>
</tr>
<tr>
<td>Perinatal Transmission</td>
</tr>
</tbody>
</table>

1.5 RISK FACTORS FOR TRANSMISSION

Viral, maternal, obstetrical, fetal and infant related factors all influence the risk of pptct. The most important factor for pptct of HIV is the amount of virus in the mother’s blood, known as the viral load. The risk of transmission to the infant is greatest when the viral load is high—which is often the case with recent infection of with advanced HIV/AIDS.

Some of the risk factors are the same and some are different during pregnancy, labour and delivery and breastfeeding. These similarities and differences are summarized in table 1.4

Table: 1.4: Material Factor That May Increase the Risk of HIV Transmission

<table>
<thead>
<tr>
<th>Pregnancy</th>
<th>Labour and Childbirth</th>
<th>Breastfeeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>High maternal viral load (new or advanced HIV/AIDS).</td>
<td>High maternal viral load (new or advanced HIV/AIDS).</td>
<td>High maternal viral load Duration of breast feeding</td>
</tr>
<tr>
<td>Viral, bacterial, or parasitic placental infection (especially malaria).</td>
<td>Rupture of membranes for then 4 hours</td>
<td>Mixed feeding of infants</td>
</tr>
<tr>
<td>Sexual transmitted infections (STIs).</td>
<td>Invasive childbirth techniques that increase contact with mother’s infected blood</td>
<td>Brest abscesses nipple fissures</td>
</tr>
<tr>
<td>Maternal malnutrition (indirect cause).</td>
<td>First infant in multiple birth</td>
<td>Poor maternal nutritional status</td>
</tr>
<tr>
<td></td>
<td>Acute chorioamnionitis</td>
<td>Oral disease in the infant</td>
</tr>
</tbody>
</table>

1.6 TYPES OF HIV

HIV-1 and HIV-2 are two types of virus. Both types are transmitted the same way, and both are associated with similar opportunistic infections and AIDS. HIV-1 is more common worldwide. HIV-2 is found predominantly in West Africa, with some pockets in Angola and Mozambique.

1.6.1 Difference between HIV-1 and HIV-2

HIV-2 is less easily transmitted than HIV-1, and it is less pathogenic, meaning that the period between initial infection and illness is longer. As the disease advances, HIV-2 infectiousness seems to increase: however, the duration of HIV-2 infection is shorter. In some areas, a person can be infected with both HIV-1 and HIV-2.
1.6.2 Natural history of HIV infection

Most people with HIV rarely know that they are infected right away. People infected with HIV usually develop antibodies 4 to 6 weeks after being infected but it may occasionally take as long as 3 months for antibodies to develop. Some individuals will not test positively for the presence of antibodies until 6 months or longer after the initial infection (although this is unusual).

**Sero-conversion** occurs when a recently infected person develops antibodies that can be measured using a laboratory test. Unlike most diseases, having antibodies for HIV does not indicate protection but indicates infection. Some people may experience a glandular fever illness, rash, joint pains, and enlarged lymph nodes at the time of sero-conversion. A person whose blood test result shows HIV infection is said to be sero-positive. HIV testing detects antibodies or antigens associated with HIV in whole blood, saliva or urine. The period of time between when a person is infected with HIV and when the antibody test is positive is called the “window period”. “A person who tests HIV negative but who has engaged in risk behavior within the past 3 months that places him or her at risk for HIV should be tested again in 3 month.

1.6.2.1 Asymptomatic HIV Disease

An infected person who looks and feels healthy is asymptomatic. None of the physical signs or symptoms that indicate HIV infection is present. The asymptomatic phase varies greatly from person to person. Some adults may take as long as 10 years or more. Whether they have symptoms or not, HIV-infected people can still pass the virus to others.

1.6.2.2 Symptomatic HIV Infection

A person who has developed physical signs of HIV and reports symptoms related to HIV disease is symptomatic. The immune system weakens and CD4+ count decreases during this phase. The progression of HIV depends on the type of virus and certain host characteristics including general health nutritional and immune status.
1.6.3 HIV testing is necessary in the following conditions

1.6.3.1 Blood transfusion

A single ERS (ELISA/Rapid/ Simple) test is sufficient to ensure transfusion safety. The objective does not require the identification of the donor.

1.6.3.2 Surveillance

The objective of surveillance is achieved by unlinked anonymous testing with 2 ERS tests on different principles or antigen preparation.

1.6.3.3 Diagnosis of HIV/AIDS

For diagnosis of HIV infection in asymptomatic individuals who voluntary initiated or health provider initiated to undergo an HIV test, 3 ERS must be performed for confirmation of diagnosis and should be accomplished with pre-test and post-test counseling. However for the diagnosis of suspected HIV/AIDS cases with any defining illness, 2 ERS is sufficient. As per NACO guideline 3 basic tests compulsory to detect and declare as HIV positive. If first test positive then only other tests will be conducted.

1.6.3.4 Research

HIV testing for research purpose should allow the ethical standards which primarily involves full explicit consent of the patient. The only way to know for sure if one has HIV is to have a HIV test done. The most common blood test for detection of HIV is the ELISA, Rapid tests and the Western Blot. All these tests detect only the antibody against HIV. They will be positive in all stages of the disease, except in the window period and sometimes in the clinical last stages. To detect the presence of HIV itself, tests such as the PCR or P24 antigen tests are done. These tests are expensive, but can tell whether a person is infected with HIV or not, even in the window period. The P24 antigen test is positive after 72 hours of infection. PCR can detect virus after about a week of infection. HIV testing is available at Integrated Counseling and Testing Centers (ICTC), or any labs that have HIV testing facilities. Most of these ICTC use the ELISA or the Rapid tests. A test result can be HIV negative, HIV positive, or Indeterminate. If the test of a person is HIV-negative, it
could mean that the person is not infected. That person took the test too soon after exposure of HIV for the antibodies to have developed.

A person is labeled as HIV positive, only if
At least 3 ELISA, rapid tests are all positive in a person with or without symptoms.

Out of three tests if any one of the test results is Indeterminate, then the person is labeled as Indeterminate. The test may be repeated after 3-6 months. The person must be counseled for risk behavior during this period. Risk behavior reduction includes promoting correct and consistent use of condom, reducing the number of sexual partners, reducing the frequency of sex, and getting early and complete treatment of STDs. Before getting tested, it is important to think about what the test result will mean. Most people need help with this, so one has to see a counselor, psychologist or doctor for advice. This is pre test counseling.

Following the test the person again requires counseling. This is post test counseling and is required whether the test is positive or negative. If any person’s test is negative, he or she may want to talk about how to reduce the future risk called post test.

If any person’s test is positive, such person will need help in deciding what to do. HIV infection is not a death sentence. It does mean that the person will need to take special care of his or her health. It also means that the infected person will have to take special care not to infect anyone else with the AIDS virus. The counselor and Doctor at the ICTCs can give this kind of Counseling and Referral help for them.

If the test is positive, the HIV infected person has to tell his or her sexual partner and or needle-sharing partners that they too need to be tested. But it is not necessary to tell everybody else. The infected person may tell only those people who can support him. If the infected person has children, he should talk with a counselor about what to tell them, how and when. Confidential dialogue between a client and a care provider is aimed at enabling the client to cope with stress and take personal decisions related to HIV/AIDS. The counseling process includes an evaluation of personal risk of HIV transmission and facilitation of preventive. This information, education and psychological support and allows individuals to make decisions that facilitate coping and preventive behaviors. (WHO2006).
1.7 CLINICAL STAGES OF HIV INFECTION

WHO Staging System for HIV Infection and Disease in Adults and Adolescents,

1.7.1 Clinical Stage I

1. Asymptomatic.
2. Persistent generalized lymphadenopathy (PGL).
   Performance Scale 1: asymptomatic, normal activity.

1.7.2 Clinical Stage II

1. Weight loss of less than or equal to 10% of body weight.
2. Minor mucocutaneous manifestations (seborrhea dermatitis, prurigo, fungal nail infection, recurrent oral ulcerations, angular cheilitis).
3. Herpes zoster within 5 years.
4. Recurrent respiratory tract infections (e.g. bacterial sinusitis).
   And or Performance Scale 2: symptomatic, normal activity.

1.7.3 Clinical Stage III

1. Weight loss of more than 10% of body weight.
2. Unexplained prolonged fever (intermittent or constant) lasting for more than 1 month.
3. Oral candidacies (thrush).
4. Oral hairy leukoplakia.
5. Pulmonary tuberculosis within the past year.
6. Severe bacterial infection (e.g., pneumonia, pyomyositis).
   And/or Performance Scale 3: bedridden less that 50% of the day during the past month.

1.7.4 Clinical Stage IV

1. HIV wasting syndrome.
2. Pneumocystis carinii pneumonia.
3. CNS toxoplasmosis.
4. Cytomegапulmonary (CMV) disease of an organ other than liver, spleen, or lymph nodes.
5. Herpes simplex virus (HSV) infection, mucocutaneous lasting for more than 1
month, or visceral any duration.
6 Progressive multifocal leukoencephalopathy (PML).
7 Any disseminated endemic mycosis (e.g., histoplasmosis, coccidiodomycosis).
8 Candidacies of the oesophagus, trachea, bronchi, or lungs.
9 Disseminated atypical mycobacterium.
10 Non-typhoid salmonella septicemia.
11 Kaposi’s sarcoma (KS).
12 HIV encephalopathy.

1.8 HIV AND CD4 COUNT

CD4 T-cells in the body organizes and directs other white blood cells in the fight against infection. These cells are responsible for the cells mediated immunity. There are two types of T-cells, helper T-cells, which are known as CD4 T-cells and the cytotoxic T-cells, CD4 cells. In response to infections and antigens, these cells respond by secreting certain soluble proteins that help other types of immune system cells, such as B-cells and thus help to rid the body of invaders (viruses, bacteria, etc.). Cytotoxic T-cells, CD8 T-cells kill other cells infected with viruses and other germs. This killing of infected cells helps prevent spread of infection in the body by stopping the replication of pathogens. CD4 is a protein found on the surface of different cell types and is the receptor for the HIV virus acquired through any route of transmission targets the T-lymphocytes with CD4 receptor (CD4 T-lymphocytes, dendritic cells, macrophages and monocytes.). CD4 T lymphocyte cells are however considered as the primary targets of HIV. This binding is the first contact between HIV and the target cell. Cd4 cell count is an indicator for the immune competence of the individual.

Normal CD4 count in all adults ranges from 500-1500 cells of blood. Anti-retroviral treatment in HIV Positive individuals is indicated when CD4 count falls to < 200 cells.

1.8.1 HIV replication in the body

HIV inserts itself into the genes of the cells it infects and then produces many copies of new viruses before killing the infected cell. The viral RNA and proteins are synthesized inside the human cells that it enters. These are assembled into versions; now go on to infect other cells. Therefore, HIV exists as two forms in the body, as
free virus outside of cells and as provirus as DNA inside cell. As the infection progresses more and more CD4 cells are affected and this produces a progressive decline in immune function. The persistent and depletion of CD4 T-cells is central to the pathogeneses of HIV infection. Mortality results from opportunistic infections that overwhelm the weakened immune system.

### Table 1.5: Signs and clinical features

<table>
<thead>
<tr>
<th></th>
<th>Signs and clinical features</th>
<th>Typical</th>
<th>CD4 T-cells count Range/µl</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acute primary HIV infection</td>
<td>1-2 weeks</td>
<td>1000-500</td>
</tr>
<tr>
<td>2</td>
<td>Asymptomatic, No signs other than Lympadenopathy.</td>
<td>10 years</td>
<td>250-500</td>
</tr>
<tr>
<td>3</td>
<td>Early symptomatic (Non life-threatening infection or chronic or intermittent symptoms)</td>
<td>0-5 years</td>
<td>500-100</td>
</tr>
<tr>
<td>4</td>
<td>Late symptomatic (increasingly severe symptoms, life threatening infection, malignancies)</td>
<td>0-3 years</td>
<td>200-50</td>
</tr>
<tr>
<td>5</td>
<td>Advance AIDS (serious opportunistic infections, increasing hazards of death)</td>
<td>1-2 years</td>
<td>50-0</td>
</tr>
</tbody>
</table>

### 1.9 AIDS

**AIDS is the abbreviation for Acquired Immuno Deficiency Syndrome.**

**Acquired:** This means that the disease is ‘got’ and not caught- HIV cannot be caught from the air like common cold or cough. It spreads only by few specific routes.

**Immuno Deficiency:** means that the capacity of the immune system to respond and fight against infection is lost. The immune system is the system in our body that helps us to fight against common infections. The HIV slowly destroys the body’s defense system. It kills an important kind of blood cell- the CD4 T lymphocyte, or T cell. Without these important defenses, a person with AIDS cannot fight off germs and cancers. The HIV infected person therefore falls prey to a number of common infections and disease.
**Syndrome** means a collection of signs and symptoms. AIDS is a disease that presents with different kinds of signs and symptoms. The diseases are caused because of the immune deficiency. Almost all HIV infected people will ultimately develop HIV related disease and AIDS, the end stage of HIV infection.

As HIV infection progresses, the CD4+ count continues to decrease and the infected opportunistic infections are illness caused by a germ that might not cause illness in a healthy person, but will cause illness in a person who has a weakened immune system. Persons living with advanced HIV infection suffer from opportunistic infections of the lung, brains, eyes, and other organs. Common opportunistic infections in persons diagnosed with AIDS are tuberculosis (TB) Pneumocystis Carinii Pneumonia (PCP) cryptosporidiosis, histoplasmosis other parasitic, viral and fungal infections, and some types of cancers, such as Kaposi’s sarcoma. HIV can also directly infect the brain, gut and heart causing dementia wasting and cardiomyopathy respectively. Prophylaxis, treating opportunistic infections and ARV treatment help preserve the CD4+ cells, lower viral load (the amount of virus in the blood), and prolong the time it takes for HIV disease to progress to the symptomatic phase and ultimately. AIDS Referred to as **Opportunistic Infections** (OI). When people with HIV get these infections or when their CD4T cell levels became very low.

### 1.9.1 Differences between HIV, HIV infection and AIDS

1. HIV is the virus that causes infection.
2. The HIV positive person might have no sign of illness.
3. When immune system becomes affected by HIV, the illness progresses to AIDS.
4. AIDS is a serious group of illness and opportunistic infections that develop after being infected for a long period of time.
5. Blood tests or the appearance of specific infections that develop after being infected for a long period of time.
6. Blood tests or the appearance of specific infections can indicate that the HIV infection has progressed to AIDS.
A diagnosis of AIDS can be based on certain clinical criteria and laboratory test results.

Most HIV infected people will develop AIDS after being infected for a period of time, which can be several months to more than 15 years.

1.9.2 Acute Retroviral Syndrome

A person infected with HIV usually develops an acute viral fever flulike syndrome called (ARS- Acute Retroviral Syndrome) within 2 to 4 weeks of getting the infection. The ARS presents as a fever, body ache and skin rashes. Most persons infected with HIV develop ARS. ARS passes off within a week or two as any other kind of viral fever. If the HIV is done during this period it will be negative. **Window period**: The person remains healthy after this. The HIV test too will remain negative for about 6 weeks after infection. This period of time the HIV infected person,

1. Is healthy- he or she has no complaints.
2. Had a negative HIV test – The Elisa and Western blot test will be Negative.
3. Is highly infectious. His or her viral load, number of virus in the blood is extremely high.

This period is called the Window period. The window period usually lasts for about 6 to 12 weeks. It must be remembered that during the window period, the HIV infected person is highly infectious because his viral load is very high.

1.9.3 HIV positive asymptomatic period

The HIV test will become positive after 6 weeks of infection. This is because the commonly used HIV tests usually detect only antibodies to HIV and not the virus itself. Antibodies are substances that are produced by the body to defend the body against various germs. The HIV infected person remains healthy without any complaints for period up to 3 to 5 weeks. This period is when the HIV test is positive but the person remains without symptoms or complaints are called the HIV Positive Asymptomatic period.
1.9.4 HIV Positive Symptomatic Period

The HIV continues to multiply in the body. As it multiplies, it continues to destroy the CD4 cells or the immune or defense system of the body. Symptoms therefore begin to appear. Fevers and diarrhea, which would normally last only 2-3 days in normal person, now last for almost 2-3 weeks. Opportunistic infections are sometimes common during this period. This period when the HIV test is positive and the person has symptoms suggestive of immune deficiency, is called the HIV Positive symptomatic period. A normal person has CD4 T cell count of 450 to 1200 cells per micro liter. HIV infection reduces the CD4 cell count. When T cell counts drop to 200 or lower, they reach the stage of AIDS. Most often people seek medical help only when they have AIDS. CD4 and CD8 ratio and viral load (PCR) are tests used to monitor the progress of HIV/AIDS or to assess the efficacy of treatment. NACO PPTCT MANUAL. (2004).

1.10 COUNSELING ASPECT OF HIV

1.10.1 Content of counseling

The main functions of counseling are the provision of support and information to those affected by HIV, AIDS or diseases. In addition, the counselor may be called on to provide information and support to those seeking prevention of infection or re-infection. Certain basic information on HIV/AIDS will have to be provided in all such counseling. Information must often be repeated to clients over the course of different session. Basic information about HIV infection and associated diseases, and means of transmission assessment of level of risk of HIV infection, review of possible source of a client’s infection, specific information on risk reduction by changing risk behavior. Example; through protected or safer sex, exploration of cultural and value obstacles to changing risk behavior or adopting safer sexual practices etc. Information about what testing can and cannot the HIV antibody do and assessment of the consequences of having HIV-antibody test. Handling hostility, fear and feelings about having HIV infection or being diagnosed as having AIDS, when a person is diagnosed with HIV, counseling must also include supporting the process of anticipatory grief, planning for continued involvement of the client in self care. Establishing or re-establish a support network to provide physical and emotional care, exploring ways of taking care of
survivors and accepting fear of death and continuing to provide emotional support. Decock et al (2000).

1.10.2 Counseling and HIV counseling

Two people who are not related to each other meet to resolve a crisis, solve a problem, or make decisions involving highly personal and intimate matters and behavior. The counselor’s emotional detachment in assessing the client’s case is extremely important. However, a continuous gradation between detachment and closeness, within which the counselor must find the correct balance is important in promoting the well-being and problem solving skills of the client. For a client talking to a stranger about personal matters may be frightening, intimidating or culturally prohibited. The counselor should begin, therefore by finding out what the client knows about counseling and expectations of the counselor. If necessary, the counselor should explain the process briefly, illustrating it with examples, discuss the client’s fears about it, and then listen to the client’s own account of the problem. It is important to understand that counseling is about helping people, and that as all people are different there can be nothing universal or predetermined.

1.10.2.1 Methods of counseling.

The need of prevention and commitment to providing support to people already affected by HIV are present in all cultures and contexts. HIV/AIDS counseling objects are (1) to provide psychological support at times of crisis. (2) Prevent HIV infection by changing life styles and life style behavior. Counseling seeks to enhance self-determination, self-confidence, and improve family and community relationships and quality of life. HIV/AIDS counseling therefore also means providing support to families and loved ones, so that they, in turn, can help to encourage and care for people with HIV infection. Prevention and support are mutually complementary. In HIV counseling, prevention efforts that are not accompanied by some type of support are unlikely to be effective. The acceptance of prevention message is always provided when these messages are made personally relevant to individual needs and life styles. The way in which those messages are provided in counseling context should also be encouraged. A feeling of trust and understanding make behavior modification attractive and sustainable. Counseling is
concerned with individual, couples, and groups. Counseling involves helping people to define for themselves the nature of the problems they are facing and then make realistic decisions about what they can do to reduce the impact of these problems on themselves and their family and friends. Therefore, helping people to achieve the confidence to make lifestyle changes is an integral part of the counseling relationship.

1. Ensure passing on correct information.
2. Providing support at times of crisis.
3. Encourage change when change is needed for the prevention or control of infection.
4. Help clients focus and identify for themselves their immediate and long-term needs.
5. Propose realistic action suitably adapted to the different clients circumstances
6. Assist clients to accept the act on information on health and wellbeing.

Counseling involves much more than a single occasional informal discussion. The need for continued support and help with problem solving is a common feature of most HIV related situations and should be a key aspect of most counseling relationship, being diagnosed as having, recognizing the possibility of, or suspecting the existence of HIV infection or AIDS all have profound emotional, social, behavioral and medical consequences. The type of personal and social adjustment required in the context of HIV infection often has implications for family life, for sexual and social life relations for work and education, for spiritual needs, for legal status and for civil rights. During the course of HIV infection, a broad range of physical needs and problems are likely to be experienced. These are not necessarily constant, and will progressively become more serious and difficult to handle. They call for increased and different resources, both for those who are infected and for the people looking after them. The changing nature of these needs imposes a variety of psychological and emotional strains on individual and those closest to them, which may threaten identity, independence, privacy and social status. They can also involve fears of loneliness of dying and death, of guilt and anger. Dealing with HIV disease also imposes direct and indirect financial costs, particularly when economic productivity is affected by illness, much of the stress experienced by people infected when HIV may reflect underlying anxieties about economic independence and family obligations.
Counseling must therefore take into account not only the most immediate social and medical environment of clients, but also their social relationship and attitudes and beliefs about HIV/AIDS. Counseling must also ensure that factual education and information are provided in a way that is truly relevant to the day to day life of the person concerned. It must take into account such things as the sexual needs and history of the patients, occupation, education, aspirations and hope, together with what will be needed to inspire new and perhaps different approaches to safer sex and responsible social relationship.

Counseling the family, lovers, friends, employers, or colleagues of people with HIV must include providing up-to-date, technically correct information. It should also take into account the lifestyle of the person with HIV and seek to explore the opportunities for and constraints on changes in behavior and constructive adaptation to HIV infection.

If counseling is effective, it must first of all be seen as acceptable. Its acceptability will always be improved if it clearly takes into account the nature of the many social relationships, commitments and obligations most individuals have. Each of those relationships may have the potential for motivation and support.

1.10.3 Counseling people about HIV infection needs and its Importance

Infection with HIV is lasting for life. A diagnosis of HIV infection can create enormous psychological pressures and anxieties that can delay constructive change or worsen illness, especially as the HIV epidemic has given rise to fear, misunderstanding and discrimination.

Behavior change can prevent a person acquiring HIV infection or transmitting it to others.

1.10.4 Main functions of counseling

Have two main functions, the provision of (me) social and (II) psychological support to those affected by HIV and the prevention of HIV infection and its transmission to other people.
1.11 WOMEN

UNAIDS estimated that at the end of 2000 more than 10 million women World-wide had been infected with HIV since the start of the epidemic, out of a total of over 25 million infected adults. Women accounted for 42% of the over 21 million adults living with HIV. In industrialized countries, practically all infections used to occur in men. While women comprised around 12% of the AIDS cases were reported in France in 1985, ten years later this figure rose to around 20%. In Spain, women’s share of reported AIDS cases more than doubled over the 18 in some ten-year period from around 7% to 19% . Today, nearly one in four HIV positive cases is a woman. Studies are indicating that women in a stable marital relationship are vulnerable as their partners are having extra marital sex. They, in turn, are passing on the infection to their children. In addition, women do not have access to HIV/AIDS information, do not have negotiating power within sexual relations and have been socially conditioned to accept the extra-marital activities of their husbands. It is well known that women are the care-givers in most HIV/AIDS cases while HIV positive women are not recipients of the same level of care from their male counterparts and family members. UNAIDS (2000).

1.11.1 Biological and social vulnerability of women

Research shows that the risk of becoming infected with HIV during vaginal intercourse without a condom is as much as 2 to 4 times higher for women than men. Women are also more vulnerable to other sexually transmitted infections. As compared to men, the vaginal surface of women is bigger, therefore more exposed during intercourse and semen infected with HIV typically contains a higher concentration of virus. This makes male to female transmission more efficient than female to male. Younger women and adolescent girls are at even greater biological risk because their cervix is physiologically mature. Further scant vaginal secretions put up less a barrier to HIV. Tearing and bleeding during intercourse, whether from rough sex, rape, multiplies the risk of HIV infection. Women run a similar risk from unprotected anal intercourse. Sometimes this route of sexual intercourse is preferred because it preserves virginity and avoids the risk of pregnancy. This form of sex often tears the delicate tissues and affords easy entry to the virus. Another important
biological factor is an untreated STI in either partner, which multiplies the risk of HIV transmission of STI cases in women go unrecognized because the sores or other signs are absent to notice. Even when symptomatic, STIs in women often go untreated.

More than four fifths of all infected women get virus from heterosexual transmission. The others may become infected from a blood transfusion or from injecting drugs with a contaminated needle. Studies in Africa and elsewhere have shown that many married women have been infected by their one partner - their husbands. Simply being married is a major risk factor for women who have little control over abstinence or condom use at home or their husband’s sexual activity outside (Hankins, 2002).

1.11.2 Psycho-Social Vulnerability of Women

Women have little socio-economic power in a patriarchal society like India that subsequently limits their decision-making capacities. This is especially true in the area of sexual decision-making where women cannot control or even readily negotiate safe sex, contraception, including condom use or demand lifelong mutual fidelity from the husband. They also have little levels of literacy and restricted access to them in the media. This has implication in terms of accessing the disseminated information on HIV/AIDS. Women’s greater vulnerability to rape, battering and other forms of sexual violence not only directly increases their chance of contracting HIV but also places them in an inferior “bargaining position” when negotiating for safer sex.

1.11.3 Women as Care Givers

Between couples the care giving responsibility usually falls on the female partner. In developing countries, the women are conditioned to take up the responsibility of nurturing and socializing their young, homemaking and ensuring the healthy husband. The wife is usually powerless within sexual relationship in negotiating safer emotional plane, wives experience feeling of acquiring the infection. On diagnosis it would reveal that the husband’s extramarital activities, his visit to commercial sex workers and his homosexual activities. This affects the quantum and quality of care. In case of newly married couples, this could lead to the termination of relationship, though in the Indian context this is not very common as the female partner is expected to carry younger, female and unmarried siblings is often seen
when the, HIV positive member is unmarried. Other relatives such as aunts or a female are involved in care giving but this may depend upon their sense of obligation in caring and the likely impact of the disease on them.

It has been observed that there is a clear gender bias in AIDS care giving with women showing AIDS symptoms before their HIV positive husbands more likely to be sent back to their relatives or abandoned. Care tends to be given more readily and generously to adult male member who also happen to be earning members. There is evidence to show that quantum of care depends on the age, gender, earning status of HIV positive individual and his or her relationship to the main caretaker. An adult male tends to be provided maximal care while the economically and socially dependent female is lowest in this hierarchy.

1.11.4 Counseling Women

The issue for women as for men is clearly a survival issue. In order to survive, individual will need to know they are at risk and that they have choices. The first choice is being to say ‘no’ to risk behaviors. The most important condition to make this possible is the empowerment of the women. The empowerment of the individual women in situations where she is dependent on others for food and shelter and in which it is the male partner who completely controls the sexual intercourse is very difficult. The choices available to her to prevent infection or once she becomes infected are much more limited and thereby she is at much greater risk of all the medical and social complications which may attend HIV/AIDS infection. In the reeducation of risk of HIV, abstinence, faithfulness and particularly the condom has become the mainstay of protection for all sexual activity individuals. However, in the case of women, this involves promoting protective messages that are not under women’s control.

The most important point about risk for all woman (and men) is the fact that a woman may be at risk if her sexual partner has had unprotected sexual relations with someone at risk. In fact the majority of infected women were not infected through their own behavior through they are often blamed as the source of infection. The stigma and discrimination associated with this disease rests often with women.
1.12. PSYCHOLOGICAL SUPPORT

People diagnosed as having HIV infection and HIV related illness, including AIDS, and those close to them are confronted by a host of problems that call for emotional and or practical support. Anxiety about having spread infection, physical isolation, hospitalization, discrimination within the community or family, loss of housing, interruption of education, financial problems, the physical effects of illness, disease progression, loss of relationship, bereavement, anger, loneliness and depression are all concerns that may have to be managed.

These problems may be periodic, both for the person with HIV/AIDS and those providing care for them. The fact that they are not always constant and not always predictable produces physical and emotional stress. Counseling can be particularly helpful in identifying the circumstances under which these concerns are likely to be present and in helping the person plan how to best deal with them in a proactive fashions. Where this is not possible, counseling can help the person react to those problems as and when they arise. It is important to remember that counseling incorporates a process of empowerment for the person with HIV. Living with HIV infection or disease does not mean living despite though counseling, the personal strength and resource to face and manage such concerns can be identified and mobilized, so that living with HIV may include periods of constructive enrichment quite independent of the crisis of infection or illness. Counseling may not be required for this purpose, but where people cannot see beyond the infection, it can assist person with normal aspects of their lives that they may otherwise overlook. Counseling should help those affected to live fully and productively by enabling them to resume or assume, authority over their own lives and decisions making problem. Problem can often be placed in a new light allowing a more creative approach to problem-solving and decision making. Counselors may often find themselves in the role of patient advocate, generating a therapeutic strength in individual, families, communities by their support.

Enabling people to remain active in their work, education, families, and friends help to reduce the extent of psychological problems.
1.12.1 Prevention

Determining whether the behavior of an individual or group of individuals involved high risk of infection; working with the people concerned so that they understand and acknowledge the risks associated with their behavior; defining with them how their life, attitudes values and self-image is linked to his behavior; helping individuals to defying their potential for attitude shifts, behavior modification and change; working with individuals to introduce and sustain the modified behavior. Within any culture or social groups, high risk behaviors are likely to be influenced by a variety of factors. Peer group pressure to perform in a particular way, financial pressures, and culture as beliefs about what is acceptable and expected, opportunity to innovate, and lack of knowledge about the risks involved may all play a role, depending on the person and situation concerned. Counseling requires a substantial input of health education, but health education messages need to be made personally relevant and in the context of achievement goals. They also need to be presented in the context of detailed and sympathetic discussion. Counseling seeks above all to encourage individuals and groups to make choices about personal life-styles and responsibilities. In order to be effective, consistently accessible support or group being counseled must be available. Where there is no feeling of dialogue or exchange between the counselor and the client, and no feeling of genuine support, the essence of the preventive message can often be lost.

1.13: PSYCHOLOGICAL ISSUES FACED BY PEOPLE WITH HIV INFECTION

The psychological issues faced by most people with HIV infection revolve around uncertainty and adjustment. With HIV infection, uncertainty emerges with regard hopes and expectations about life in general, but it may focus on family and job. An even more fundamental uncertainty may concern the quality and length of life, the effect of treatment, and the response of society. All these are relatively unpredictable in terms of their long-term out come. They need to be discussed openly and frankly, but care should always be taken to encourage hope and positive outlook. In response to uncertainty, the person with HIV must make a variety of adjustments. Even the apparent absence of a response of a response may, in itself, be an adjustment
through denial. People with diagnosed HIV infection and HIV related illness including AIDS, and those close to them are confronted by many different problems. All of them require emotional support. Anxiety about having infection, physical isolation, hospitalization, discrimination within the community or family is quite common. On being diagnosed HIV positive, different people give different responses. Most people are frightened of HIV/AIDS. Some feel shocked. Some feel angry. The feeling of HIV/AIDS patient varies, and changes often. One day they may feel rejected and lonely. The next day that may feel hopeful. This is normal. Mentioned below are some of the feelings of HIV positive (WHO, 2006)

### 1.13.1 Fear and loss

People with HIV infection or disease have many fears. The fear of dying and particularly, of dying alone and in pain is very often evident. Fear may be based on the experiences of loved ones, friends or colleagues who have been ill with or died of AIDS. It may also be due to not knowing enough about what is involved and how the problems can be handled. As most of psychological concerns, fear and the pressures such fear it creates can often be managed by bringing them clearly and sensitively into the open. They should be discussed in the context of managing the difficulties, along with the help of friends and family or with the counselor.

Lots of people with HIV disease experience feelings of loss about their lives and ambitions, their physical attractiveness and potency, sexual relationships, status in the community, financial stability and independence. As the need for care increases, a sense of loss of privacy and control over life is also experienced. Perhaps the most common loss that is felt is the loss of confidence. Confidence can be undermined by many aspects of life with HIV, including fear for the future, anxiety about the coping abilities of loved ones and caregivers, by the negative or stigmatizing actions of others. For many people, of HIV infection it will be the first occasion that forces them to acknowledge their own mortality and physical vulnerability.

### 1.13.2 Guilt and depression.

A diagnosis of HIV infected person often provokes a feeling of guilt over the possibility of having infected others, or over the behavior that may have resulted in the infection. There is also guilt about the sadness the illness will cause to the loved
ones and family, especially children. Previous events that may have caused pain or sadness to others and remained unresolved will often be remembered at this time and may cause even greater feeling of guilt.

**Depression:** Depression may arise for a number of reasons namely- the absence of a cure and the resulting feeling of powerlessness, the loss of personal control that may be associated with frequent medical examinations, and the knowledge that a virus has taken over one’s body. Similarly, knowing others or about those who have died or are ill with HIV, and experiencing such things as the loss of potential for procreating and for long-term planning may contribute to depression.

1.13.3 Denial and grief

Some people may respond to the news of their infection or disease by denying it. For some people, initial denial can be a constructive way of handling the stock of diagnosis. However if it persists, denial can become counterproductive, since people may refuse to accept the social responsibilities that go with being HIV positive.

**Grief:** people with HIV infection often have profound feelings of grief about the losses they have experienced or are anticipating. They may also suffer the grief that is projected on to them by close family members, lovers, spouses and friends. Often these same people are supporting and taking care of them on a day to day basis, and watching their health decline.

1.13.4. Anxiety

Anxiety can quickly become a fixture in the life of a person infected with HIV, reflecting the chronic uncertainty associated with the infection. Many of the reasons for anxiety reflect the issue discussed above and concern the following:-

1. Prognosis in the short and long term.
2. Risk of infection with other disease.
3. Risk of infection others with HIV.
4. Social, occupational, domestic and sexual hostility and rejection.
5. Abandonment, isolation and physical pain.
6 Fear of dying in pain or without dignity.
7 Inability to alter circumstances and consequences of HIV infection.
8 How to ensure the best possible health in the future.
9 Ability of loved ones and family to cope.
10 Availability of appropriate Medical/Dental treatment.
11 Loss of privacy and concern over confidentiality.
12 Future social and sexual unacceptability.
13 Declining ability to function efficiently.
14 Loss of physical and financial independence

1.13.5. Suicidal activity or thinking and self esteem

People who are HIV infected may have a tendency towards suicide. Suicide may be seen as a way of avoiding pain and discomfort or of lessening the shame and grief of loved ones. Suicide may be active (i.e., deliberate self-injury resulting in death) or passive (i.e., concealing or disregarding the onset of a possibly fatal complication of HIV infection).

Self-esteem: Self-esteem is often treated early in the process of living with HIV. Rejection by colleagues, acquaintances and loved ones can quickly lead to loss of confidence and social identity and thus reduces feelings of self-worth. This can be compounded by the physical impact of HIV related diseases that cause, for example, facial disfigurement, physical wasting and loss of strength or bodily control.

1.13.6. Hypochondria and obsessive behavior and Spiritual concern

Preoccupation with health and even the smallest physical changes or sensations can result in hypochondria. This may be transient and limited to the time immediately after diagnosis, or it may persist in people who find difficulty in adjustment to the disease.

Spiritual concerns: Concern about impending death, loneliness and loss of control may give rise to an interest in spiritual matters and a search for religious support. Expressions of sin, guilt, forgiveness, reconciliation, and acceptance may appear in the context of religious and spiritual discussions.
Many of these and other concerns will appear to become pronounced when a diagnosis of AIDS is made. The appearance of new infection, cancers and periods of severe fatigue all has a significant emotional and psychological impact. The effect is likely to be even greater if the person with AIDS has been rejected by family or friends and has withdrawn from normal social relationships.

1.13.7 Acceptance and Hope

After sometimes most people with HIV/AIDS accept their situations. This is helpful. They often feel more serene. They are able to plan the best way to lead their life or plan for future.

Hope: Being hopeful it once sprites and gives them strength to face each situation. Hope can help a person to fight HIV and AIDS and live longer. Hope to live a long time, of cure being found, of treatment being made available etc. (WHO, 2006)

1.14 SOCIAL ISSUES FACED BY PEOPLE WITH HIV INFECTION.

1.14.1 Social issues

Social pressures, such as loss of income, discrimination, social stigma (if the diagnosis becomes commonly known), relationship changes and changing requirements for sexual expression, may contribute to post diagnosis psychosocial problems. The patient’s perception of the level and adequacy of social support is of vital concern and may become a source of pressure or frustration. HIV/AIDS has immense stigma attached. There is great fear of contracting HIV and therefore people isolate the HIV positives. There are many instances of the entire families of HIV positive being isolated by the villages, people been thrown out of the jobs, asked to vacate the houses etc. Spouses and family have deserted HIV positive women even when she has contracted the infection from her husband. Health care providers have hurriedly discharged patients on one pretext or the other as soon as they found out the HIV status. Widespread HIV testing of patients is being done prior to surgery, for the protection of the health care provider, which is unnecessary. As the most common mode of spread is Sexual Intercourse with an infected person, all HIV positives are looked at suspiciously. Each and every HIV infected person is thought to have multiple sex partners and considered to be immoral. It is especially more distressing
for women who has contracted the infection from the faithful relationship with her husband. There are few people who have contracted the HIV infection through transfusion of infected blood, but nobody believes in them and is looked down upon as a person with loose character. HIV positive children are not given admission in school or isolated in the class. Children of HIV infected parents are not cared for by other family members after the death of parents. HIV positives are being exploited by many dubious people proclaiming to have cure for HIV. They have incurred huge debts to buy antiretroviral drug and other drugs. HIV/AIDS related stigma is increasingly recognized as the single greatest challenge to slowing the spread of the disease at the global, the national, and community provider level. Three phases of the HIV/AIDS are epidemic of stigma, discrimination, and denial. Stigma refers to unfavorable attitude directed toward someone or something. Family health survey, (2001)


HIV/AIDS related stigma refers to all unfavorable attitudes and beliefs directed toward people living with HIV/AIDS, those perceived to be infected, as well as their significant others and loved one, close associates, social groups and communities. Stigmatizing attitudes are often directed not only towards HIV itself, but toward behavior believed to have caused the infection. Stigma and discrimination have been documented in association with other disfiguring or incurable infectious disease, including tuberculosis, syphilis, and leprosy. However, HIV/AIDS related stigma appears to be much more severe than the stigma associated with most other life threatening conditions. Stigma is particularly pronounced when the origin of a disease or condition is perceived to be under the control of individual behaviors. HIV/AIDS has disproportionately affected people who often are already socially marginalized, including poor people, sexual minorities e.g. homo sexual, sex workers and injection drug users. In other words, the stigma associated with HIV disease often overlays already existing stigmas.

HIV/AIDS related stigma reinforces and is reinforced by constructs of power and control in which certain groups are devalued. In other words, the stigma associated with HIV disease often overlays already exiting stigma. HIV/AIDS related stigma reinforces and is reinforced by constructs of power and control in which
certain groups are devalued. The most marginalized and excluded groups, including drug users, men who have sex with men, and sex workers, frequently bear the brunt of HIV/AIDS related stigmatization. Moreover, HIV positive people are often assumed to be member of these groups, whether they are or not.

1.14.3 Discrimination

Discrimination is the treatment or consideration of an individual or group with partiality or prejudice. Discrimination is often defined in terms of legal and human rights, and entitlement in various spheres including healthcare, employment, and the legal system, social welfare, and reproductive and family life. Stigma and discrimination are often interlinked. Stigmatized individuals may suffer discrimination and human rights violations. Stigmatizing thoughts can lead a person to act or behave in a way that denies services or entitlements to another person.

1.14.4 International Human Rights and HIV-related stigma

Freedom from discrimination is a fundamental human right founded on principles of natural justice that should be universally applied to people everywhere. According to recent United Nations Commission on Human Rights resolutions, “discrimination on the basis of HIV/AIDS status, actual or presumed, is prohibited by existing human rights standards”. In other words discrimination against PLWHA or people thought to be infected is a clear violation of human rights. The forms of stigma and discrimination faced by people with HIV/AIDS are varied and complex. Individuals are stigmatized and discriminated against not only because of their HIV positive status, but also because of what that status implies. For example UNAIDS sponsored research in India and Uganda showed that women with HIV/AIDS may be doubly or triply stigmatized- as women, as PLWHA, and as the spouse of an HIV infected person or widow of a person who died at AIDS. A woman may face additional stigmatization as an HIV infected woman who is pregnant and or has children. For example, she may be treated poorly or denied medical and psychosocial support service (Human Rights Commission, 2008).

1.14.5 Protect, respect and fulfill human rights in relation to HIV

All women and men, irrespective of their HIV status, have a right to determine the course of their sexual reproduction, lives and to have access to information and
services that allow them to protect self and their family’s health. Women and girls have a right to information about HIV/AIDS and to access to the means to protect themselves against HIV infection. Women have a right to know their HIV status and to have access to HIV counseling and testing that is voluntary and confidential. Women have a right to make decisions about infant feeding, based on full information and as wide a range of choices as possible, and appropriate support for the course of action they choose. Children have right to survival, development and health. (UNICEF, 2002)

1.15 INDIAN SCENARIO

Abstinence and condom use are usually not the options available to women since social norms are that women are not supposed to be sexually knowledgeable. This is compounded in respect of sex workers who are doubly stigmatized and marginalized.

Prevalent notions of masculinity and femininity generally mean that women have little control or negotiating power in their sexual relationships, including marriage. Women have poor access to information and education, which is critical in the context of HIV since behavior change is the key to controlling the epidemic. This is further accentuated among poverty-stricken communities. Violence against women and HIV/AIDS continue to be inextricably linked, rape, incest, assault by family members or friends, violence in the course of trafficking or at workplace expose them to HIV infection. Women have poor access to health services as a result of lower priority given to their health and their lack of decision-making powers within the family. Also, women usually have poor mobility, which inhibits access to information and services. (NACO 1998), the National Institute of Health and Family Welfare and the National Institute of Medical Statistics (NIMS) bring out estimates of India’s population living with HIV and AIDS represent the most accurate reading of India’s HIV and AIDS numbers. The process of enumeration and the results have been attested to and backed by international agencies (UNAIDS WHO 2006). Estimates suggest national adult HIV prevalence in India is approximately 0.36 percent, amounting to between 2 and 3.1 million people. If an average figure is taken, this comes to 2.5 million people living with HIV and AIDS, almost 50 percent of the previous estimate of 5.2 million. More men are HIV positive than women. Nationally,
the prevalence rate for adult females is 0.29 percent, while for males it is 0.43 percent. This means that for every 100 people living with HIV and AIDS (PLWHA), 61 are men and 39 women. Prevalence is also high in the 15-49 age group (88.7 percent of all infections) indicating that AIDS still threatens the cream of society, those in the prime of their working life. While adult HIV prevalence among the general population is 0.36 percent, high-risk groups, inevitably, show higher numbers. Among Injecting Drug Users (IDUs), it is as high as 8.71 percent, while it is 5.69 percent and 5.38 percent among Men who have Sex with Men (MSM) and Female Sex Workers (FSWs), respectively. In India, women account for around one million out of 2.5 million estimated number of people living with HIV/AIDS. Their heightened vulnerability has both biological and socio-economic reasons. Early marriage, violence and sexual abuse against women are the major socio-economic reasons of their vulnerability to HIV infection. Their biological construct makes them more susceptible to HIV infection in any given heterosexual encounter.

1.16 ANTI - RETROVIRAL THERAPY

This is the main type of treatment for HIV or AIDS. It is not a cure, but it can stop people from becoming ill for many years. The treatment consists of drugs that have to be taken every day for the rest of someone’s life. To understand more about treatment you need to have some knowledge of HIV and AIDS. HIV is a virus and like other viruses when it is in a cell in the body it produces new copies of itself. With these new copies, HIV can go and infect other previously healthy cells. It is easy for HIV to spread quickly through the billions of cells in the body, if it is not stopped from reproducing itself. Antiretroviral treatment for HIV infection consists of drugs, which work against HIV infection itself by slowing down the reproduction of HIV in the body. The drugs are often referred to as:

1. Antiretroviral drugs
2. Anti-HIV drugs
3. HIV antiviral drugs.

For antiretroviral treatment to be effective for a long time, it has been found that you need to take more than one antiretroviral drug at a time. This is known as Combination Therapy. The term Highly Active Antiretroviral Therapy (HAART) is
used to describe a combination of three or more anti-HIV drugs. The general recommendation is to use minimum of two antiretroviral drugs. If one drug is taken on its own, it has been found that, over a period of time, the drug stops working. HIV reacts to the drug in the person’s body and changes, so that the virus is no longer affected by the drug. The virus then starts reproducing itself the same way as before. This is known as the virus becoming resistant to the drug. If two or more antiretroviral drugs are taken together it vastly reduces the rate at which resistance develops. When a person’s immune system is damaged by HIV, then certain infections or cancers will develop, which the body would normally fight off quite easily. These are known as Opportunistic Infections. Treatment for Opportunistic infections is usually provided when antiretroviral are not available, or when the antiretroviral drugs are no longer effective as the person is resistant to them. Bhana et al. (2002)

1.17 CLASSIFICATION OF ANTI RETRO VIRAL THERAPY

Anti-retroviral drugs

There are currently 15 approved antiretroviral drugs in the UK and many more in the expanded access programmes and trials. Each antiretroviral drug usually has three names. Sometimes the drugs are referred to by their research or chemical name, for example AZT. The second name for all the drugs with the same chemical structure, for example AZT, is also known as zidovudine. The third name is the brand name given by the pharmaceutical company. One of the brand names for zidovudine is Retroviral. The drug names listed here are those that are most commonly used or for salvage therapy. Those with are not yet approved but available on an expanded access program me. This list does not contain new drugs that are currently under development and still in clinical trials. There are four main groups of anti HIV drugs. Each of those groups attacks HIV in a different way. WHO,(2003).

1.17.1 Nucleoside Reverse Transcriptase Inhibitors

The first group of antiretroviral drugs is the Nucleoside Reverse Transcriptase Inhibitors (NRTIs). They were the first type of drugs available to treat HIV infection in 1987 and are better known as nucleoside analogues or nukes. HIV needs an enzyme called reverse transcriptase in order to be able to infect healthy cells and reproduce itself in person’s body. As the name says, NRTIs inhibit reverse transcriptase enzyme and make HIV unable to infect cells and duplicate itself.
### Table 1.6: Nucleoside Analogues (NRTIs)

<table>
<thead>
<tr>
<th>Name</th>
<th>Brand &amp; Other Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>d4t</td>
<td>Zerit, Stavudine</td>
</tr>
<tr>
<td>AZT</td>
<td>Retroviral, zidovudine</td>
</tr>
<tr>
<td>ddi</td>
<td>Videx, didanosine</td>
</tr>
<tr>
<td>3TC</td>
<td>Epivir, lamivudine</td>
</tr>
<tr>
<td>Abacavir</td>
<td>Ziagen,1592,ABC</td>
</tr>
<tr>
<td>ddc</td>
<td>HIVid, zalcitabine</td>
</tr>
<tr>
<td>Combivir</td>
<td>(AZT/3TC together)</td>
</tr>
<tr>
<td>Trizivir</td>
<td>(AZT/3TC/abacavir together)</td>
</tr>
<tr>
<td>Tenofovir* (Nucleotide analogue)</td>
<td>Viread</td>
</tr>
</tbody>
</table>

#### 1.17.2 Non- Nucleoside Reverse Transcriptase Inhibitors

The second group of antiretroviral drugs is the Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs). These drugs started to be approved in 1997 and are generally referred to as non-nucleosides with the non-nukes. This group of drugs also stops HIV from infected cells by intervening with the transcriptase of the virus. The non-nucleoside drugs work slightly differently from the nucleoside analogues in that they bind in a different way to the cell’s reverse transcriptase. The non-nucleoside drugs block the duplication and the spread of the HIV.

### Table 1.7: Non-Nucleoside Reverse Transcriptase inhibitors (NNRTIs)

<table>
<thead>
<tr>
<th>Name</th>
<th>Brand &amp; Other Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efavirenz</td>
<td>Sustiva</td>
</tr>
<tr>
<td>Nevirapine</td>
<td>Viramune</td>
</tr>
<tr>
<td>Delavirdine</td>
<td>Rescriptor</td>
</tr>
</tbody>
</table>
1.17.3 Protease Inhibitors (PI)

The kind of antiretroviral is the Protease Inhibitors (PI) group. They were first approved in 1995. Protease Inhibitors, as the name says, inhibit protease. Almost every living cell contains protease. Protease is a digestive enzyme that breaks down protein and is one of the many enzymes that HIV uses to reproduce itself. The protease in HIV attacks the long healthy chains of enzymes and proteins in the cell and cuts them into smaller pieces. These infected smaller pieces of proteins and enzymes continue to infect new cells. The protease inhibitors take effect before the protease in HIV has chance to break down the protein and enzymes. This way the protease inhibitors slow down the duplication of the virus and thus prevent the infection of new cells. The NRTIs and NNRTIs only have an effect on newly infected cells. Protease inhibitors are able to slow the process of immature non-infectious virus becoming mature and infectious. Protease inhibitors also work in cells that have been infected for a long time, by slowing down the reproduction of the virus.

<table>
<thead>
<tr>
<th>Name</th>
<th>Brand &amp; Other Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indinavir</td>
<td>Crixivan</td>
</tr>
<tr>
<td>Nelfinavir</td>
<td>Viracept</td>
</tr>
<tr>
<td>Ritonapine</td>
<td>Norvir</td>
</tr>
<tr>
<td>Saquinavir</td>
<td>Fortovase (soft cell capsule). Invirase (hard cell capsule)</td>
</tr>
<tr>
<td>Amprenavir</td>
<td>Agenerase</td>
</tr>
<tr>
<td>Lopinavir/ Ritonavir</td>
<td>Kaletra, ABT-378/r</td>
</tr>
</tbody>
</table>

1.17.4 Fusion Inhibitors (FI)

The fourth group of antiretroviral drug is called Fusion or Entry Inhibitors. These drugs are yet to be approved and are currently going through clinical trials in the UK and the USA. The surface of HIV carries proteins called gp41 and gp120. These are the proteins, which allow HIV to attach itself to, and enter into cells. By blocking one of these proteins, fusion inhibitors slow down the reproduction of the virus. For example, T-20 the fusion inhibitors that is closest to approval, sticks to the
protein gp41. The T-20 fusion inhibitor differs from the other antiretroviral in that it needs to be injected. T-20 is a protein and cannot be taken orally, since it would be digested in the stomach. It is hoped that the results from the T-20 trials across the USA and Europe will be completed and returned to the Federal Drug Agency (FDA) by autumn 2002.

Table 1.9: Fusion or entry inhibitors

<table>
<thead>
<tr>
<th>Name</th>
<th>Brand &amp; Other Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-20</td>
<td>Pentafuside</td>
</tr>
</tbody>
</table>

1.18. OPPORTUNISTIC INFECTIONS (OI’s)

In our bodies, we carry many germs, bacteria, protozoa, fungi, and viruses. But when the immune system is weakened by HIV disease or by some medications, these germs can get out of control and cause health problems.

Infections that take advantage of weakening in the immune defenses are called “opportunistic infections” often shortened to “OI”.

1.18.1 Testing for OI’s.

A person can be infected with an OI, and “test positive” for it, even though the person don’t have the disease. For example, almost everyone with HIV tests positive for Cytomegalovirus (CMV). It is very rare for CMV disease to develop unless the T-cell count drops below-50, a sign of serious damage to the immune system. To see if a person is infected with an OI, the person’s blood might be tested for antigens (pieces of the germ that causes the OI) or for antibodies (proteins made by the immune system to fight the germs). If either the antigens or the antibodies are found, it means he/she is infected. If a person is infected with a germ that causes an OI, and if the person’s T-cells are low enough to allow that OI to develop, the doctor will look for signs of active disease. These are different for the different OIs. Granich (2001).
1.18.2 OI’s and AIDS

People who are not HIV infected can develop OIs if their immune systems are damaged. For example, many drugs used to treat cancer suppress the immune system. Some people who get cancer treatments can develop OIs. HIV weakens the immune system so that opportunistic infection can develop. If a person is HIV-infected and develop opportunistic infections, he or she might have AIDS.

1.18.3 MOST COMMON OIs

In the early years of the AIDS epidemic, OIs caused a lot of sickness and deaths. Once people started taking combination antiviral therapy, however a lot fewer people got OIs. It’s not clear how many people with HIV will get a specific OIs. The most common OIs are listed here, along with the disease they usually cause, and the T-cell count when the disease becomes active:

**Candidacies** (Thrush) is a fungal infection of the mouth, throat or vagina. T-cell range can occur even with fairly high T-cells.

**Cytomegalovirus** (CMV) is a viral infection that causes eye disease that can lead to blindness. T-cell range: under 50.

**Herpes simplex** viruses can cause oral herpes (cold sores) or genital herpes. These are fairly common infections, but if a person had HIV the outbreaks can be much more frequent and more severe. They can occur at any T-cells count.

**Mycobacterium avium complex** (MAC or MAI) is a bacterial infection that can cause recurring fevers, general sick feelings, problems with digestion, and serious weight loss. T-cell range: under 75.

**Pneumocystis Pneumonia** (PCP) is a fungal infection that can cause a fatal pneumonia. T-cell range: under 200.

**Toxoplasmosis:** Is a protozal infection of the brain. T cells range: under 100.

**Tuberculosis** (TB) is a bacterial infection that attacks the lungs, and can cause meningitis. T-cells range: Every one with HIV who tests positive for exposure to TB
should be treated. Active Tb disease is the most common among HIV infected individual to prevent Tb effective diagnosis and treatment to people with infection Tb this interrupts the chain of transmission for disinfected patient.

1.18.4 Preventing OIs

Most of the germs that cause OIs are quite common, and one may already be carrying several of these infections. He or she can reduce the risk of new infections by keeping clean and avoiding known sources of the germs that cause OIs.

Even if a person infected with some OIs, he or she can take medications that will prevent the development of active disease. This is called prophylaxis. The best way to prevent OIs is to take strong anti HIV drugs.

1.18.5 Treating OIs

For each OI, there are specific drugs, or combinations of drugs, that seem to work best. Strong antiviral drugs can allow a damaged immune system to recover and do a better job of fighting OIs.

1.19 POST EXPOSURE PROPHYLAXIS

Post Exposure Prophylaxis (PEP) is short-term antiretroviral treatment to reduce the likelihood of HIV infection after potential exposure, either occupationally or through sexual intercourse. Within the health sector PEP should be provided as part of comprehensive universal precautions packages that reduces staff exposure to infection hazards at work (WHO, 2008).

1.19.1 Importance:

The risk of transmission of HIV from an infected patient through needle pricks where the skin is punctured by a sharp needle is less than 1%. The risk for transmission from exposure to infected fluids or tissues is believed to be lower than for exposure to infected blood.

The risk of exposure from needle prick and other means exists in many settings where protective suppliers are limited and the HIV infection in the patient population is high. The availability of PEP may reduce the occurrence of
occupationally acquired HIV infection in health care workers. It is believed that the availability of PEP for health workers will serve to increase staff motivation to work with people infected with HIV, and may help to retain staff concerned about the risk of exposure to HIV in the workplace. There is significant debate on the need to use PEP after sexual exposure. The UN offers PEP to its staff in cases of rape when the likelihood of HIV exposure is considered high. The proper use of supplies, staff education and supervision needs should be outlined clearly in institutional policies and guidelines. Regular supervision in health care setting can help to deter or reduce risk of occupational hazards in the workplace. If injury or contamination result in exposure to HIV infected material, post exposure counseling, treatment, follow-up and care should be provided. Post exposure prophylaxis (PEP) with antiretroviral treatment may reduce the risk of becoming infected.

1.19.2 PREVENTION OF EXPOSURE

Prevention of exposure remains the most effective measures to reduce the risk of HIV transmission to health workers. The priority must be to train health workers in prevention methods (universal precaution) and to provide them with the necessary material and protective equipment. Staff should as well be knowledgeable about risks of acquiring HIV sexually, and be easily able to access condoms and confidential STI treatment services.