

# AIDS – A TRANSMITTED DISEASE

## INTRODUCTION-

There are several ways in which one can get infection with HIV. It is very important to know the routes of HIV transmission. This will help us to avoid the spread of HIV. In other words, understanding how HIV passes from one person to another will enable us to protect ourselves. It will also help us to plan and implement programmes for the prevention and control of HIV/AIDS.

Persons infected with the HIV can pass on the virus to those who are not infected. Most transmission occurs from persons who are infected but without symptoms of AIDS. Therefore it is essential that everyone is aware about the transmission of HIV. It is also important to know who can get infected and how one can get infected. HIV is present in all body fluids like blood, genital secretions, (semen, cervical and vaginal) saliva, tears and breast –milk. The HIV and AIDS virus can pass on to an individual through the following three defined routes-

1. Sexual exposures.
2. Contact with HIV/AIDS, contaminated blood and blood products.
3. Mother to child through pregnancy, child birth and breast milk.

## HIV TRANSMISSION THROUGH SEXUAL ACTIVITIES-

Sexual activity, whether homosexual or heterosexual, is the major route of transmission of the HIV throughout the world. The virus can be transmitted by any penetrative sexual act in which HIV-infected semen, vaginal or cervical secretions or blood is introduced into the body through a break in the mucosa. The sexual activities where this type of transmission occurs are:

- a) Penetrative penile- vaginal intercourse;
- b) Penile –anal intercourse; and
- c) Oral-genital contact.

### a. PENETRATIVE PENILE- VAGINAL INTERCOURSE-

This is the most common form of sexual activity. Transmission of HIV from men to women and from women to men is well documented. However, transmission rate through heterosexual contact is reported to be high among females.

The transmission from men to women is fairly well understood. Semen from an infected man contains HIV that is most likely associated with infected lymphocytes. HIV introduced into the vagina must take its way into the lymphatic to initiate viral reproduction. Small breaks in the linings of vagina are presumed to be portals of entry to the lymphatic. Women are more susceptible to infection than men after a single exposure to HIV. This difference may be because the vaginal mucosa has a larger surface area and the vagina acts as a vessel for the seminal secretions. The seminal fluid has a greater contact time with the vaginal mucosa. Moreover, small cuts or break in the mucosa go unnoticed.

Other factors that increase the transmission during the sexual act are the presence of ulcers on the male and female genitalia. Women who have infections in their pelvic organs are more prone to develop infections. Chemical irritation of the vaginal mucosa that occurs due to use of barrier contraceptives may increase the chance of the women getting infected. Although male to female transmission clearly occurs, the means of transmission of HIV from women to men is less clear.

#### b. PENILE – ANAL ACTIVITY –

This mean penetration of penis into the anus. It appears to be the primary means by which HIV is transmitted among men having sex with men. This is sometimes referred as rectal activity and in turn often leads to breaks in the lining of rectum. The rectal mucosa is delicate. These breaks in the rectum lining make it easier for HIV to enter into the lymphatic. Laboratory studies suggest that cells that line the rectum may also become directly infected with the virus.

c. ORAL-GENITAL CONTACT- This means contact between the mouth and genitals. The role of oral genital sex as a route of transmission of HIV is poorly studied in populations other than homosexuals. It is because individuals who engage in oral genital sex rarely do so to the exclusion of other forms of sexual contact. It is difficult to attribute transmission of HIV to oral sex and not to other types of sexual exposures.

#### FACTORS RESPONSIBLE FOR CAUSING INFECTIONS-

The risk of becoming infected with HIV as a result of sexual activity depends upon the following factors:

- A) Whether the sexual partner is infected.
- B) The type of sexual contact involved.
- C) The presence is either partner of other sexually transmitted diseases or genital lesions.

#### TYPES OF SEXUAL CONTACTS INVOLVED-

- A) SEXUAL INTERCOURSE- All forms of sexual activity in which any type of contact with body fluid is involved carries a risk of HIV transmission. While existing data suggests differences in the relative risk of various forms of activity, the precise level of risk associated with each is not yet known. Trauma to the mucous membrane of the rectum or vagina may facilitate transmission of HIV, but is not essential for transmission to occur.
- B) KISSING- Kissing has been shown to pose a risk of transmission. Nevertheless, while not substantiated, there is a theoretical risk of HIV transmission during “wet kissing” in which saliva is exchanged and if there are cuts and pores in the mouth.
- C) MASTURBATION- Self- masturbation obviously posses no risk of HIV transmission. However,, mutual masturbation, which may involve exposure to semen, or cervical and vaginal secretions, may pose a theoretical risk of HIV transmission if there are cuts , wounds, etc. In parts of the body, which may be exposed to such body fluids.
- D) AMOUNT OF VIRUS PRESENT IN THE BLOOD OR SECRETION OF THE INFECTED PARTNER- HIV infected individuals are thought to become more infections as they progress to overt disease i.e., AIDS. Similarly during the window period the concentration of HIV is the highest and the person is highly infectious. Therefore exposure during window period can be highly risky .
- E) PRESENCE OF OTHER SEXUALLY TRANSMITTED DISEASE( STDs)- There is increasing evidence that the presence of another sexually transmitted disease in one or both partners may increase the risk of HIV transmission. Genital ulceration may occur with chancroid, syphilis or herpes virus infection. Ulcerative disease appears to increase the

susceptibility to infection of uninfected individuals and to enhance the infectivity of those who are already infected.

- F) COMMERCIAL SEX WORKERS- It is always risky to have sex with commercial sex workers (CSWs) in India. Reports indicate that most of the sex workers suffer from STDs and a large number of CSWs are also found to be HIV infected across the country. The only sure way to avoid HIV is for a couple to remain mutually faithful to each other or the practice of abstinence. Sex education is the need of the hour.

#### TRANSMISSION OF HIV THROUGH BLOOD-

In the previous section we have already studied transmission of HIV through sex, here we shall study transmission of HIV through blood. The magnitude of transmission through blood is very less when compared to transmission through sex.

##### A) BLOOD TRANSMISSION-

HIV reproduces itself in the CD4 lymphocytes, which circulate in the blood and other body fluids. Blood collected for transfusion contains these lymphocytes. HIV is not only present within these cells but it is also present in serum( blood un-associated with cells). Thus, introduction of blood from infected person to uninfected persons will transfer the virus that is present both in the cells as well as the serum. Of all the forms of exposure to HIV, blood transfusion is the most effective means of transmitting the virus from person to person. No barrier of any kind exists between the infected person and the individual who receives contaminated blood directly into the blood stream. However, if the blood banks take adequate precautions, this risk can be reduced to a considerable extent.

##### B)TRANSMISSION OF HIV THROUGH BLOOD PRODUCTS-

Blood that is collected from a donor can be separated into different components using a cell separator. One unit of blood will be separated into red blood cells, platelet concentrates and plasma. These components can be used as and when required.

##### C) TRANSMISSION THROUGH ORGAN TRANSPLANTATION-

HIV can be transmitted through infected organs. HIV is found in the blood as well as the tissue of an infected organ. Before any organ is transplanted the donor has to be screened for HIV. In cadaver (removal of organs from brain dead patients) transplantations, the donor has to be checked. This route of transmission is very rare in practice. Since an infected person's body fluids contain HIV it is essential that screening for HIV is carried in cases of organ transplantation of any kind such as kidney, bone marrow, eyes, skin, semen, etc.

##### D) HIV TRANSMISSION THROUGH INTRAVENOUS DRUG USE ( IVDU)-

Intravenous drug use acts as a source of transmission of HIV because drug users frequently share syringes and needles to inject drugs. These instruments are not sterilized before use. Small volumes of contaminated blood remains inside previously used needles and syringes thereby providing opportunities to transmit the virus via their blood contents. In the early years of the epidemic, studies found links between HIV drug users and male homosexuals who were already infected with HIV. The overlap of these two groups facilitated in the introduction of HIV into drug using population and then to the sex partners of the drug users.

E) CULTURAL INVASIVE PRACTICES- These are as follows-

- 1) TATTOOING, EAR OR NOSE PIERCING- Tattooing, ear or nose piercing is an old customs of India. Nose and ear piercing is very common in India. Tattooing is more common among the Tribal communities. It can be seen in cities also, These procedures should be done with clean instruments.
- 2) CIRCUMCISION OR GENITAL MUTILATION- Practises of circumcision are found among several groups in India. A circumcision needs to be done with extra care. Using clean instruments and if a trained person does the operation the chances of the infection can be reduced.

MOTHER TO CHILD TRANSMISSION OF HIV- There are various stages of transmission. Like:

a) WOMB- The foetus receives nutrition from the mother through the placenta. When the mother has a high viral concentration in the blood , some of the virus can pass from the mother to the foetus through the placenta. It is possible through out the period of pregnancy. A small number of babies acquire the infection through this route.

b) AT THE TIME OF BIRTH-

The lining of the birth canal(vagina) contains a high concentration of HIV. The baby may sustain minor cuts in the process of birth. Hence, the baby can get infected. It has also been known that the maximum chance of infection of the foetus occurs during the time of delivery. About 20 percent of children born to HIV mothers become infected at the time of delivery.

c) BREAST MILK- About 14% of children who are breast-fed by the HIV infected mothers will contract the infection. Hence, practices which change breast-feeding reduce HIV transmission.

THE RISK OF MOTHER-TO-CHILD TRANSMISSIONS(MTCT)- The rates of mother-to-child transmission of HIV under different circumstances are as follows:

- 1) Where no drugs are administered and the baby is breast fed by its HIV –positive mother, the risk of infection generally is around 30-35%.
- 2) Where no drugs are administered and the baby is not breast fed by its HIV-positive mother, the risk of infection is around 20%.
- 3) Where a one-month course of AZT is administered and the baby is not breast fed, the risk of infection is around 10%.
- 4) Where a one-month short course of AZT is administered and the baby is breast fed by its HIV-positive mother, for up to six months, the risk of infection is about 18% at the age.

CONCLUSION- In this paper various means of transmission of HIV through sex, blood, and mother to child have been discussed. Sex is one of the known routes of HIV transmission. This is also the largest mode of transmission. This mode of transmission generally occurs in three ways. Through proper concerned, proper practices, and safety and security is essential for prevention of HIV.