



About HIV/AIDS

AIDS (Acquired Immune Deficiency Syndrome) is a medical condition. People develop AIDS because HIV has damaged their natural defences against disease.

HIV is a virus. Viruses infect the cells that make up the human body and replicate (make new copies of themselves) within those cells. A virus can also damage human cells, which is one of the things that can make a person ill. HIV can be passed from one person to another. Someone can become infected with HIV through contact with the bodily fluids of someone who already has HIV. HIV stands for the 'Human Immunodeficiency Virus'. Someone who is diagnosed as infected with HIV is said to be 'HIV+' or 'HIV positive'.

WHY HIV DANGEROUS

The immune system is a group of cells and organs that protect your body by fighting disease. The human immune system usually finds and kills viruses fairly quickly. So if the body's immune system attacks and kills viruses, what's the problem? Different viruses attack different parts of the body - some may attack the skin, others the lungs, and so on. The common cold is caused by a virus. What makes HIV so dangerous is that it attacks the immune system itself - the very thing that would normally get rid of a virus. It particularly attacks a special type of immune system cell known as a CD4 lymphocyte. HIV has a number of tricks that help it to evade the body's defences, including very rapid mutation. This means that once HIV has taken hold, the immune system can never fully get rid of it. There isn't any way to tell just by looking if someone's been infected by HIV. In fact a person infected with HIV may look and feel perfectly well for many years and may not know that they are infected. But as the person's immune system weakens they become increasingly vulnerable to illnesses, many of which they would previously have fought off easily. The only reliable way to tell whether someone has HIV is for them to take a blood test, which can detect infection from a few weeks after the virus first entered the body.

AIDS.ORG operates with a very small staff and dedicated volunteers. When money is lacking, more of our time and energy has to be used in searching for funding. So your donation, be it large or small is greatly appreciated.

When HIV causes AIDS

A damaged immune system is not only more vulnerable to HIV, but also to the attacks of other infections. It won't always have the strength to fight off things that wouldn't have bothered it before. As time goes by, a person who has been infected with HIV is likely to become ill more and more often until, usually several years after infection, they become ill with one of a number of particularly severe illnesses. It is at this point in the stages of HIV infection that they are said to have AIDS - when they first become seriously ill, or when the number of immune system cells left in their body drops below a particular point. Different countries have slightly different ways of defining the point at which a person is said to have AIDS rather than HIV. AIDS is an extremely serious condition, and at this stage the body has very little defence against any sort of infection.

How long does HIV take to become AIDS?

Without drug treatment, HIV infection usually progresses to AIDS in an average of ten years. This average, though, is based on a person having a reasonable diet. Someone who is malnourished may well progress to AIDS and death more rapidly. Antiretroviral medication can prolong the time between HIV infection and the onset of AIDS. Modern combination therapy is highly effective and, theoretically, someone with HIV can live for a long time before it becomes AIDS. These medicines, however, are not widely available in many poor countries around the world, and millions of people who cannot access medication continue to die.

How is HIV passed on?

HIV is found in the blood and the sexual fluids of an infected person, and in the breast milk of an infected woman. HIV transmission occurs when a sufficient quantity of these fluids get into someone else's bloodstream. There are various ways a person can become infected with HIV.

Ways in which you can be infected with HIV :

➤ Unprotected sexual intercourse with an infected person Sexual intercourse without a condom is risky, because the virus, which is present in an infected person's sexual fluids, can pass directly into the body of their partner. This is true for unprotected vaginal and anal sex. Oral sex carries a lower risk, but again HIV transmission can occur here if a condom is not used - for example, if one partner has bleeding gums or an open cut, however small, in their mouth.

➤ Contact with an infected person's blood If sufficient blood from an infected person enters someone else's body then it can pass on the virus.

➤ From mother to child HIV can be transmitted from an infected woman to her baby during pregnancy, delivery and breastfeeding. There are special drugs that can greatly reduce the chances of this happening, but they are unavailable in much of the developing world.

➤ Use of infected blood products Many people in the past have been infected with HIV by the use of blood transfusions and blood products which were contaminated with the virus - in hospitals, for example. In much of the world this is no longer a significant risk, as blood donations are routinely tested.

➤ Injecting drugs People who use injected drugs are also vulnerable to HIV infection. In many parts of the world, often because it is illegal to possess them, injecting equipment or works are shared. A tiny amount of blood can transmit HIV, and can be injected directly into the bloodstream with the drugs.

It is not possible to become infected with HIV through :

- sharing crockery and cutlery
- insect / animal bites
- touching, hugging or shaking hands
- eating food prepared by someone with HIV toilet seats

HIV / AIDS - INTRODUCTION

The acquired immunodeficiency Syndrome (AIDS) was first recognized in 1981 and has since become a major worldwide epidemic, AIDS is caused by the human immunodeficiency virus (HIV), A virus is a very small living thing that can reproduce & spread. Viruses cannot survive on their own they need an animal or person to live within; When a virus finds home within a living organism, it replicates within this organism's cell. A virus can damage the cells and, thus,

can make the infected become. Different viruses attack different part of the body but HIV virus is dangerous because it attacks the immune system itself, the very thing that usually finds and kills viruses fairly quickly. Person who is infected with HIV is said to be 'HIV+' or HIV positive. This process isn't visible, but a BLOOD TEST can detect the virus in the blood from an about three months after infection.

AIDS IN THE WORLD

AIDS is now seen in vitally every country in the world. Commutative number of AIDS cases reported to the world health organization's global programme of AIDs by the end of 2001 was 151628. However, taking into account under diagnosis, under reporting and delays in reporting, the real figure is more likely to be a least 3 million AIDS cases world wide. There quarters of current AIDS cases are in developing counters. The number of adults currently infected with HIV throughout the world is shown in the following picture. The major pandemic wave of HIV infection and AIDS occurred from 1995 in the world. This increases is a combined result of two forces - the continued spread in already areas (North America, Latin America, the Caribbean. Western Europe, Sub-Saran Africa) and the accelerating incidence of HIV infection in the most densely populated regions of the world south east and north east Asia.

HIV / AIDS IN INDIA

The HIV infection was identified at Chennai in the year 1986. Since then the epidemic has shown an upward trend. India is one of the high prevalent countries in the world and is having the largest number of HIV infected persons next only to South Africa.

The AIDS has spread rapidly to all parts of the country from population at higher risk to the general population from urban to rural areas and now to increasing numbers of women. There is no state of the country that is untouched by the epidemic, and there are paid increase in-groups with no predictable risk factors. The National Aids Control Organisation have already identified high risk groups for the epidemic and one of them is transport workers along with National Highways. The transport workers are the persons, who are actively in transportation of Commercial sex workers (CSW) from one place to another. This way they are the carrier of AIDS virus. The natures of the job of transporters are very much different. Their life is on wheels and after 2 to 3 months they visited their hom and meet their family. And between these periods to satisfy their sexual urge they visited the roadside dhabas or the some point, where CSW's are available and this way they became heterozexual and HIV positive. Transporters are a mobile population and moreover their life style of abuse of alcohol and sexual promiscuity put them at high risk or Contracting STD/HIV. There is strong need to work with these transporters and we have to provide a preventive mechanism to them with in their community.

It is estimated that India is having 5.12 million HIV infected persons and last year alone 0.54 million were infected. As HIV affects the economically active years of an individual it poses problems to both the social and economic life of the person as well as his/her family, society and the country the UN Population Division projects that India's adult HIV prevalence will peak at 1.9% in year 2019.

REASONS :

1. Low literacy
2. Urbanization
3. Imprisonment
4. High mobility
5. Migration and separation from families
6. Drug use & Alcohol use

USE OF CONDOM :

The link workers and volunteers will identify the high risk and vulnerable groups, families, individuals and promote condom use by distributing to those in need on a continuous basis, imparting knowledge on correct utilization of condoms and ensuring that the condom depots are fully stocked. Besides promotion of condom, they will also be responsible for demand generation and access to condoms.

- ◆ Increase condom use during sex with non-regular partner, which is the key to limiting HIV spread through sexual route.
- ◆ Increase the number of condoms distributed by social marketing programmes.
- ◆ Increase the number of the free condoms distributed through STI and SD clinics, reaching those who are at the highest risk of acquiring or transmitting HIV.
- ◆ Increase access to condoms, especially to men who have sex with non-regular partners.
- ◆ Increase the number of commercial condoms sold.
- ◆ Increase the number of non-traditional outlets for socially marketed condoms, e.g., paan shops, lodges, etc. in strategically located hotspots of solicitation.

SERVICES:

From the perspective of HIV control, these populations (Group) need to have access to variety of services and supplies

These are:

1. Information services: They need information on the risks that they are being exposed to and how to reduce those risks. This information needs to be provided through routes, which are acceptable and accessible to the populations.
2. Condom supply: They need to have access to condoms (and in case of IDUs Kits For safe injection). The availability of condoms in the place where the community reside need not necessarily mean that the population has access to condoms. For example commercial brand of condom may be priced out of reach or community norms might prevent them from procuring condoms from markets.
3. STD services: Treatment of STDs (Sexually Transmitted Diseases) also is a vital part of Targeted Intervention.
4. Access to basic rights: Since many of the populations for whom Targeted Intervention cater to are engaged in socially disapproved behaviors, it could result in 'unofficial social ostracism' of such communities. In many places, sex workers find it difficult to start an account in a bank though there are no official instructions that sex workers do not have right to start a bank account. Similar is the case of education of children of sex workers.

Biology Project On AIDS

Contents:

1. AIM OF THE PROJECT

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The aim of the project on "AIDS" is small endeavour in the direction of scientific exploration of this deadly disease. It is very much necessary to create an awareness about its causes and consequence, as it is day by day increasing the death toll.

AIDS is posing a great menace to the human society, and if left unchecked can threaten the existing of human life, in the near future. So efforts should be taken to curb its devil roots.

2. HIV AND AIDS UPDATE

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The news about Human Immunodeficiency Virus (HIV) and the terrible disease it causes Acquired Immuno Deficiency Syndrome [AIDS] is both good and bad. The good news is that new treatments are prolonging life and improving its quality for people infected with the virus, as well as those with full-blown AIDS. Since 1996, the number of deaths has decreased every year, usually by at least 20%. The bad news is that the 2.6 million HIV-related death worldwide in 1999 is the highest number since the epidemic began more than 25 years ago. Since HIV was identified in the 1970's more than 50 million people around the globe have been infected with the virus and more than 16 million people have died from AIDS. About 33.6 million adults and children were living with HIV infection or AIDS at the end of the 20th century.

3. AIDS

ADIS DEIFNITION

Acquired immunodeficiency syndrome (AIDS) is an illness that weakens the body's immune system. The immune systems of people with AIDS are not able to fight off certain infections and cancers.

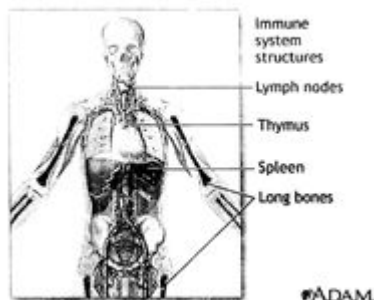
How do HIV infection and AIDS differ?

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4. CAUSE AND THE IMMUNE SYSTEM

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CAUSES ♦ AIDS caused by the human immunodeficiency virus (HIV), which destroyed important immune system cells. HIV is spread through contact with HIV-infected blood or other body fluids including semen, vaginal fluid, and breast milk.

HIV is spread through :

- * Sexual contact with an HIV-infected person.
- * Transfer of HIV from a mother to child during pregnancy childbirth, or breastfeeding.
- * Being pricked by an HIV- contaminated needle.
- * Blood transudion with HIV-infected blood (rare today, due to testing of all donated blood for HIV infection beginning in 1985)

Rarely, HIV can be spread through :

- * Blood from an HIV-infected person getting into an open wound of another person.
- * Being bitten by someone infected with HIV
- * Sharing of personal hygiene items with an HIV-infected person (razors, toothbrushes, etc.)

Who is at high risk of HIV infection and AIDS?

- * Anyone who has sexual intercourse with an HIV infected person.
- * Anyone who received infected blood (even a very small amount), such as through blood transfusion or by sharing intravenous drug syringes or from dirty tattoo needles.
- * Any infant exposed to HIV before birth.

5. SYMPTOMS

Symptoms

HIV may not cause symptoms for a number of years. Early symptoms that you may experience a month or two after becoming infected may last couple of weeks.

These include :

- * Rapid weight loss
- * Dry cough
- * Recurring fever
- * Night sweats
- * Extreme, unexplained fatigue
- * Swollen lymph nodes in armpits, neck, or groin
- * Headache
- * Rash
- * Depression
- * Irritable mood
- * Memory loss or other neurological disorder

After these initial symptoms are gone, there may be no symptoms for months to year. Then, the following symptoms may occur over the course of 1-3 years :

- * Swollen lymph glands all over the body
- * Fungal infections of the mouth, fingernails, toes
- * Weight loss
- * Chronic diarrhoea

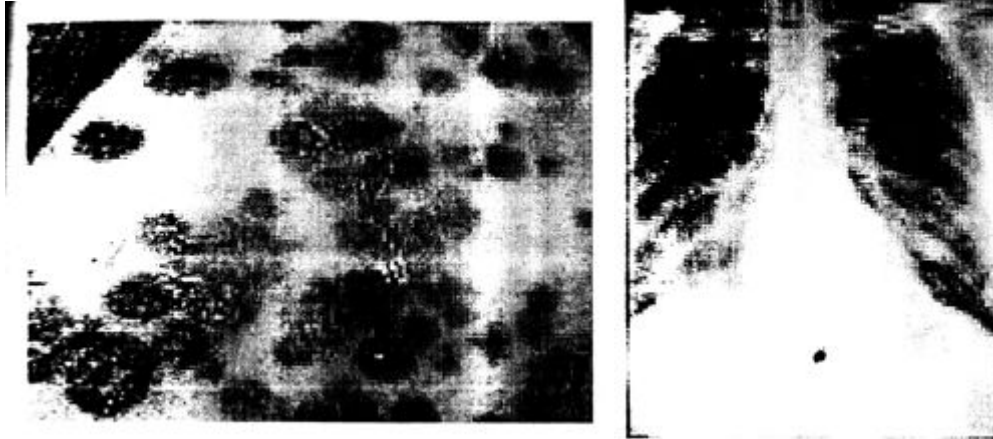
Once HIV has progressed to AIDS, the immune system has become quite weakened. Opportunistic infections are infections that people with a normal immune system don't usually get.

These infections occur in patients with AIDS because the immune system isn't able to fight them off. Examples of opportunistic infections and other complications of AIDS include :

- * Thrush (an overgrowth of yeast)
- * Pneumonia (particularly *Pneumocystis carinii* pneumonia)
- * Tuberculosis
- * Kaposi's Sarcoma
- * Intestinal infections,
- * Severe weight loss (wasting syndrome)
- * Severe skin rashes
- * Reaction to medications
- * Psychiatric problems, including depression and dementia

Other opportunistic infections

AIDS patients often develop opportunistic infections that present with non-specific symptoms, especially low-grade fevers and weight loss. These include infection with *Mycobacterium avium-intracellulare* and Cytomegalovirus (CMV). CMV retinitis can cause blindness. Penicilliosis due to *Penicillium marneffei* is now the third most common opportunistic infection (after extrapulmonary tuberculosis) in HIV-positive individuals within the endemic area of Southeast Asia.



6. ORIGIN OF HIV

ORIGIN OF HIV

Three of the earliest known instances of HIV infection are as follows :

1. A plasma sample taken in 1959 from an adult male living in what is now the Democratic Republic of Congo.
2. HIV found in tissue samples from a 15 years old. African ♦ American teenager who died in St. Louis in 1969.
3. HIV found in tissue samples from a Norwegian sailor who died around 1976.

Two species of HIV infect humans : HIV-1 and HIV-2. HIV-1 is more virulent and more easily transmitted. HIV-1 is the source of the majority of HIV infections throughout the world. while HIV-2 is not as easily transmitted and is largely confined to West Africa. Both HIV-1 and HIV-2 are of primate origin. The origin of HIV-1 is the Central Common Chimpanzee found in southern Cameroon. It is established that HIV-2 originated from the Sooty Mangabey an Old World ♦ monkey of Guinea Bissau, Gabon and Cameroon.

7. INFECTION BY HIV

INFECTION BY HIV



AIDS is the most severe manifestation of infection with HIV. HIV is a retrovirus that primarily infects vital components of the human immune system such as CD4+ T cells (a subset of T cells), macrophages and dendritic cells. It directly and indirectly destroys CD4+ T cells. CD4+ T cells are required for the proper functioning of the immune system. When HIV kills CD4+ T cells so that there are fewer than 200 CD4+ T cells per microliter (mL) of blood, cellular immunity is lost, leading to the condition known as AIDS. In the absence of antiretroviral therapy, the median time of - progression from HIV infection to AIDS is nine to ten years and the median survival time after developing AIDS is only 9.2 months, However, the rate of clinical disease progression varies widely between individuals, from two weeks upto 20 years. Many factors affect the rate of progression. These include factors that influence the body's ability to defend against HIV such as the infected person's general immune function. Older people have weaker immune systems, and therefore have a greater risk of rapid disease progression than younger people. Poor access to health may predispose people to faster disease progression.

The existence of coexisting infections such as tuberculosis also person's genetic inheritance plays an important role and some people are resistant to certain strains of HIV.

MINIMISATION OF RISK

The safest way, is to maintain a monogamous sexual relationship with an uninfected and monogamous partner. The more partners, the greater the risk. A condom provides some protection, but not a guarantee, against HIV.

People who take drugs through a needle or syringe -- whether medicinal or street drugs -- should use only their own needles and syringes and should never share the equipment with anyone.

Blood transfusions pose very little risk of infection today, because blood tests can detect HIV in donor blood. However, the virus may not show up in the blood of a newly infected person, so transfusions still present a small risk.

8. DIAGNOSIS

DIAGNOSIS

A blood test called in ELISA test is used to detect HIV infection. If an ELISA test is positive, the Western blot blood test is usually done to confirm the diagnosis. The ELISA test may be negative if a person is infected with HIV recently. Many people (95%) will have a positive test within three months. Most people (99%) will have a positive test within six months. If an ELISA test is negative, but if a person thinks they have HIV, they should be tested again in 1 ♦ 3 months.

PRINCIPAL OF ELISA

The presence of antibodies specific to HIV in the serum of suspected patients is detected by using a preparation of HIV proteins in the ELISA. The positive cases are subjected to western blot analysis for confirmation. In western blot assay, a preparation of HIV proteins is

subjected to electrophoresis. The proteins are then transferred from the gel and fixed onto a nitrocellulose membrane. This membrane is incubated in the serum of the ELISA-positive patients, and antigen - antibody interaction is detected by using a labelled anti-antibody. This assay provides information on the specific HIV proteins for which antibodies are present in the serum of the patients. Antibodies against HIV appear after 2 to 12 weeks of infection by the virus, regardless of whether clinical symptoms are present or absent.

9. TREATMENT

TREATMENT

With medication, the development of AIDS can be prevented, delayed or controlled in many people infected with HIV.

Drugs That Fight HIV

There are some drugs which help to fight against HIV. These drugs are often given in combination, referred to popularly as "AIDS cocktails." They include :

Nucleoside reverse transcriptase inhibitors :

AZT (zidovudine or ZDV)

DDC (zalcitabine)

Non-nucleoside reverse transcriptase inhibitors :

◆ Delvaridine (Rescriptor)

◆ Nevirapine (Viramune)

Treatment has improved

Before 1996, only four drugs were approved for use against HIV/AIDS by the US Food and Drug Administration. Since then, the number of drugs available has more than tripled, and there are now three classes of anti HIV/AIDS medications.

Use of a combination of various drugs, often called an "HIV cocktail," may reduce growth of the virus to undetectable levels for extended periods with this treatment, the number of AIDS- related deaths has dropped dramatically. However, the number of new cases has not fallen in recent years, possibly because the new treatment has caused many people to become complacent about risks. It is important to remember that this treatment is not a cure, and AIDS is far from conquered.

Prevention is still the key

No vaccine currently prevents HIV infection, and no cure is known at this time. The only prevention is avoiding risky behavior and ensuring that HIV- infected blood, semen, vaginal fluid, or breast milk does not enter your body.

Early detection is important

HIV usually is detected by a screening test (ELISA), which checks blood for the presence of specific proteins that fight HIV. If the screening test implies exposure to HIV, another test called the Western blot is used to confirm the diagnosis.

Early detection of HIV infection allows a greater chance to preserve the immune system and prevent opportunistic infections. It also should alert the affected person to avoid risky behavior that could spread the disease - HIV testing can be done at most hospitals, clinics or doctor's offices. Anonymous testing is available to protect confidentiality.

EPIDEMIOLOGY

10. EPIDEMIOLOGY

EPIDEMIOLOGY



UNAIDS and the WHO estimate that AIDS has killed more than 25 million people since it first emerged. In many regions of the world, the AIDS epidemic claimed an estimated 2.8 million (between 2.4 and 3.3 million) lives in 2005 of which more than half a million (570,000) were children.

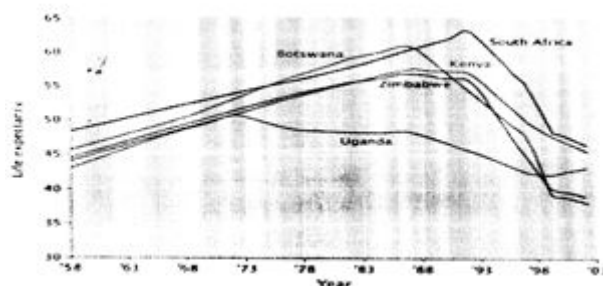
Globally, between 33.4 and 46 million people currently live with HIV. In 2005, between 3.4 and 6.2 million people were newly infected and between 2.4 and 3.3 million people with AIDS died, an increase from 2003 and the highest number since 1981.

Sub-Saharan Africa remains by far the worst affected region, with an estimated 21.6 to 27.4 million people currently living with HIV. Two million [1.5-3.0 million] of them are children younger than 15 years of age. South & South East Asia are second worst affected with 15%. AIDS accounts for the deaths of 500,000 children in this region. Two-thirds of HIV/AIDS infections in Asia occur in India, with an estimated 5.7 million infections surpassing South Africa's estimated 5.5 million (4.9 - 6.1 million 11.9% of population) infections, making it the country with the highest number of HIV infections in the world.

The development of HAART as effective therapy for HIV infection and AIDS has substantially reduced the death rate from this disease in those areas where it is widely available. This has created the misperception that the disease has gone away. In fact, as the life expectancy of persons with AIDS has increased in countries where HAART is widely used, the number of persons living with AIDS has increased substantially. In the United States, the number of persons with AIDS increased- from about 35,000 in 1988 to over 220,000 in 1996.

11. ECONOMIC IMPACT

ECONOMIC IMPACT



Changes in life expectancy in some hard-hit African countries.

Botswana

Zimbabwe

Kenya

South Africa

Uganda

HIV and AIDS related economics growth by destroying human capital. UNAIDS has predicted outcomes for sub-Saharan Africa to the year 2025. These range from a plateau and eventual decline in deaths beginning around

2012 to a catastrophic continual growth in the death rate with potentially 90 million cases of infection. Without proper nutrition, health care and medicine that is available in developed countries, large numbers of people in these countries are falling victim to AIDS. They will not only be unable to work, but will also require significant medical care. The forecast is that this will likely cause a collapse of economics and societies in the region. In some heavily infected areas, the epidemic has left behind many orphans cared for by elderly grandparents.

The increased mortality in this region will result in a smaller skilled population and labour. This smaller labour force will be predominantly young people, with reduced knowledge and work experience leading to reduced productivity. An increase in workers' time off to look after sick family members or for sick leave will also lower productivity. Increased mortality will also weaken the mechanisms that generate human capital and investment in people, through loss of income and the death of parents. By killing off mainly young adults, AIDS seriously weakens the taxable population, reducing the resources available for public expenditures such as education and health services not related to AIDS resulting in increasing pressure for the state's finances and slower growth of the economy. This results in a slower growth of the tax base, an effect that will be reinforced if there are growing expenditures on treating the sick, training (to replace sick workers), sick pay and caring for AIDS orphans.

On the level of the household, AIDS results in both the loss of income and increased spending on healthcare household. The income effects of this lead to spending reduction as well as a substitution effect away from education and towards health, funeral spending.

12. CONCLUSION

CONCLUSION

AIDS is a disease which has almost spread thorough out the globe, in the present scenario. It has taken up all the sections of our society into its wild roots. It is a fatal disease and up till now, inspite of the technological advancement, no drug can cure this terrible disease. So the only way to not to be inflicted by this deadly disease is by taking certain precautionary measures.

Lastly I would like to mention that the death toll is rising day by day due to AIDS. It is a subject which should never get neglected. The young minds should be well taught about it moreover we should always remember that "Prevention is better than cure", and going by this proverb we can make an "AIDS FREE SOCIETY".

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