

*AIDS EPIDEMIC IN INDIA...*

*Social, Technological and Economical Impacts*

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## INTRODUCTION

AIDS, or the Acquired Immune Deficiency Syndrome has been one of the most threatening diseases of the 20th century. Ever since it has been discovered in 1981, it has been constantly infecting men, women and adults, newly born children, homosexuals and heterosexuals. It is an extremely serious disorder, which directly attacks the immune system of the person, leaving him or her viable to many diseases. Slowly and gradually, the health condition deteriorates and many diseases infect the person at once, ending the life painfully. Even though AIDS was born in an era of sophisticated medical and surgical developments, it still remains incurable.

India has had a sharp increase in the estimated number of HIV infections, from a few thousand in the early 1990s to a working estimate of between 3.8 million and 4.6 million children and adults living with HIV/AIDS in 2002. With a population of over one billion, the HIV epidemics in India will have a major impact on the overall spread of HIV in Asia.

The spread of HIV within the country is as diverse as the societal patterns between its different regions, states and metropolitan areas. In fact, India's epidemic is made up of a number of epidemics, and in some places they occur within the same state. The epidemics vary from states with mainly heterosexual transmission of HIV, to some states where injecting drug use is the main route of HIV transmission. Both tracking the epidemic and implementing effective programs poses a serious challenge to the authorities and communities in India.

India has a large population and population density, low literacy levels and consequently low levels of awareness, and HIV/AIDS is one of the most challenging public health problems ever faced by the country.

Globally India is second only to South Africa in terms of the overall number of people living with the disease.

Although HIV/AIDS is still largely concentrated in at-risk populations, including commercial sex workers, injecting drug users, and truck drivers, the surveillance data suggests that the epidemic is moving beyond these groups in some regions and into the general population.

In India, as elsewhere, AIDS is perceived as a disease of "others" - of people living on the margins of society, whose lifestyles are considered 'perverted' and 'sinful'. Discrimination, stigmatization and denial are the outcomes of such values, affecting life in families, communities, workplaces, schools and health care settings. Because of HIV/AIDS related discrimination, appropriate policies and models of good practice remain underdeveloped. People living with HIV and AIDS continue to be burdened by poor care and inadequate services, whilst those with the power to help do little to make the situation better.

In India the social reactions to people with AIDS have been overwhelmingly negative. For example, in one study 36 % of people felt it would be better if infected people killed themselves, the same percentage believed that infected people deserved their fate. Also, 34% said they would not associate with people with AIDS, and one fifth stated that AIDS was a punishment from God

Educating people about HIV/AIDS and prevention is complicated as India has many major languages and hundreds of different dialects. So although some HIV/AIDS prevention and education can be done at the national level many of the efforts are best carried out at the state and local level.

Our report includes the Societal, Technological and Economical Impacts of AIDS on India. We had also analyzed our interview with Dr Atul K Patel, an AIDS specialist and gained an in-depth knowledge of Social and Technical aspects of AIDS.

## **GETTING FAMILIAR**

### **The Acronyms**

To begin with, let us look as to how the two Acronyms got their meaning, and how some much unrelated terms came close to form what now poses a major challenge to the very existence of Human Life.

**H** - Human: It can infect only human beings.

**I** - Immuno-deficiency: Its effect is to create a deficiency within the body's immune system.

**V** - Virus: The organism causing it is a virus, which means it is incapable of reproducing by itself. It reproduces by taking over the machinery of the human cell.

**A** - Acquired: It is a condition that one acquires or gets infected with and is not transmitted through the genes.

**I** - Immune: It affects the body's immune system, the part of the body which usually works to fight off germs such as bacteria and viruses

**D** - Deficiency: It makes the immune system weak.

**S** - Syndrome: A person with AIDS may experience a wide range of different diseases and opportunistic infections.

HIV, a member of family of viruses called Lentiviruses is the one that causes AIDS. In due course of time, infection with HIV can weaken the immune system to the extent that it finds it difficult to fight certain infections. These types of infections are known as opportunistic infections. The immune system of a person with AIDS could then weaken to a point that medical intervention would become necessary to prevent or treat serious illness.

Currently, the average time between HIV infection and the appearance of signs that could lead to an AIDS diagnosis is 8-11 years. This time varies from person to person and depends on many factors including his health status and behaviour. As with other diseases, early detection offers more options for treatment and preventative health care.

## **THE PROCESS OF INFECTION**

When HIV infects the body, it attacks certain cells of our defense system, called helper T cells which are a fundamental part of our immune system. The virus almost fully specializes on these white blood cells since these helper T cells have CD4 molecules on the surface to which the AIDS virus binds.

The virus then anchors itself to a special protein (CD4) on the surface of the helper T cell. This causes the viral membrane to fuse with the host cell's membrane. This way the genetic information of the virus gets inside the cell. This is encoded as RNA and thus has to be reverse transcribed into DNA. The tools for this are delivered by the host cell itself, except for a little helper protein which the virus brings with itself. The DNA is now legible for the cell and is transferred to the nucleus. This process is already finished by a half of a day after infection, and goes for about three month and is known as Acute phase.

At the beginning of AIDS, the viral DNA is transcribed to form many RNA molecules--the signal which causes this is yet unknown. The accruing RNA is carried to the cytoplasm of the cell, where it can start making proteins. The RNA, with the help of the host's resources, begins to make many copies of the different parts of the AIDS virus. The virus prevails over the antibodies for next five month known as Early period.

After everything has been copied, thousands of bubbles like these are produced, which migrate to the cell membrane surface and fuse with it. Finally, a copy of the RNA genetic information is added to the bubble. Then this section of the cell membrane turns inside out and new viruses leave the cell. Naturally, the release of the new AIDS viruses significantly weakens the host cell which soon dies. That is how the immune system weakens and AIDS starts.

## **SYMPTOMS**

The symptoms of AIDS can be broadly classified into two categories, called major and minor signs. A person could fear an infection, if at least 2 major signs in combination with at least 1 minor sign show up. The various signs under the above classification are:-

- **Major signs:**
  - Weight loss of at least 10% of body weight
  - Chronic diarrhoea for > 1 month
  - Prolonged fever for > 1 month
- **Minor signs:**
  - Persistent cough for > 1 month
  - Generalized pruritic dermatitis
  - History of herpes zoster
  - Oropharyngeal candidiasis
  - Chronic progressive or disseminated herpes virus infection
  - Generalized lymphadenopathy

## **DISCOVERY OF AIDS**

The first case of HIV infection was registered in 1981 in NIH Hospital, Chicago, but it is believed that it originated in Central Africa. People have long been trying to map the origin of the virus, and it is now generally accepted that HIV is a descendant of Simian (monkey) Immunodeficiency Virus (SIV), and in the 5<sup>th</sup> International Conference on Retroviruses and Opportunistic Infection at Chicago in 1999, it was concluded that it was associated with *Pan troglodytes* - a subspecies of the common chimpanzee which lives in central Africa.

Beatrice Hahn led the research team investigating HIV and its precursors in apes. The researchers say that the genetic analysis suggests that strains of SIV in the monkeys appear to have combined in the chimpanzees to create a new strain. The theory makes sense, they say, because chimpanzees hunt the monkeys, and the disease is spread through blood.

### **VOYAGE OF AIDS IN INDIA**

The first case of AIDS in India was reported in Chennai in 1986. In the following years, it spread among the High Risk Groups like Sex workers and STD clinic attendants in Maharashtra and amongst Injecting Drug Users in Manipur, and subsequently to newer regions like Gujarat. Spreading its reach into the general population, the infection crossed 1% in six states in 2001, which accounted for 75% of the country's estimated HIV cases and the Prime Minister had to address the Chief Ministers of these states and urge them to intensify prevention activities. But there has been no looking back for the disease, as 6 lakh new infections were reported in 2003. Statistically, India continues to be in the category of low prevalence countries with overall prevalence of less than 1%, but given our large size, the situation is really alarming for us.

### **RURAL AND URBAN DIVIDE**

AIDS, in the Indian scenario is now no more limited to just being called a disease, but is increasingly being recognized as a crisis. Attributed the wide diversities of our motherland, viz historical, geographical and cultural, we face a much more complex version of this crisis. In all these years, the model of development we chose has further complicated the issues with the creeping in of the economic disparities as well. The country has witnessed an unbalanced development, and an unprecedented lagging behind of our villages in terms of economic, educational and health care conditions. Thus it emphasizes for having a greater understanding of our varied land, while planning the policies to combat AIDS.

#### **Lifestyle**

Certainly, the lifestyle of the people in villages is much different from those residing in the cities and towns. There could again be two possible perspectives to look into this context: Economical and Social. Generally implied by the difference in the populations of these two human settlements, the rural life is free from the hustle bustle associated with the cities. Correspondingly, people to people contact in villages is much greater than the cities. Also, Indian villages are closer to the traditional culture of monogamy. The two factors imply that the possibilities of unsafe contacts are low in the rural areas.

Contrastingly, life in metropolis is quite fast and strenuous. Unequal economic opportunities, poor living conditions and opposite social environment have forced a large no. of women/girls to work as sex workers. Again due to the large numbers and inadequate awareness, it may quite often lead to unsafe sexual contacts, and this is the mode of transmission, which has had the major contribution to the resultant state of AIDS in the urban areas.

But, there is a hind side too. There is a lack of openness of thought in the Indian villages. In a social system, where an extra-marital affair is a crime dreadful enough to lead one to communal ouster, it becomes really impossible for a person to share his/her ailment and seek medical counseling/ treatment in the context of AIDS. At the same time, due to the



mindset and lack of awareness, it is also generally difficult to get new messages or practices across to them.

### **Treatment Opportunities**

Not to mention, in India the medical awareness as well as facilities still have to cover a lot of ground in terms of the penetration of quality services. The government runs most of the Health Centers in the rural areas, where expert counseling/medication is not always available. Although the public sector for health care is large, it is surrounded by a thriving private sector, which is the preferred option even for the very poor who sees it as more effective than the overcrowded, politicized, bureaucratized, and inefficient government sector. The private sector has, for obvious reasons concentrated on the urban centers, and thus the rural areas have been left out, irrespective of they forming the bulk of the population of our land. The government does conduct certain awareness programmes periodically, but a full time counseling/advising service is certainly missing, which could cost dearer in the long-term perspective.

### **Information**

Knowledge of HIV is particularly weak in rural areas and among women. It has been observed that the knowledge of AIDS is directly related to the level of education of an individual. The Literacy rate is lower in rural India as compared to the urban regions, which adds up to lack of information on the disease and an increased risk. Literacy rates are higher for the urban areas, but the gender disparities remain strong, which make the situation grim. These problems are confounded by the masses being uninformed about the health services, their appropriateness and quality. The need of the hour is to take public education campaigns through to the masses and make them aware of the dangers.

## **REGIONAL DIVIDE**

### **Migration**

The quest for livelihood propels considerable migration from the rural to the urban areas. While earlier, migration was directly to the metropolitan centres, the rapid growth of smaller towns and cities in recent years reveals a step-by step pattern of migration, as individuals and households seek to improve their lifetime earnings. While some cultural/regional groups or totally property less groups may migrate with their families or acquire families once they come to live in the city, several large regions of the country have a tradition of male only migration, where the urban networks are used to have further income earning opportunities in order to repatriate money home to the village.

This has another associated problem, as the men without their families often come in contact with the sex workers, and thus are on a great risk of getting infected. The problem does not end here, but is also carried back to the "labour bank" regions when these people come back in the off seasons to spend time with the family. Starting this way, even the distant regions also become exposed to the disease, and quite often, it takes a good amount of time before it is realized because of the social environment already discussed, and by the time the infection has already multiplied. Thus we find that migrant workers and rapid transport facilities have increased the chances of spread of HIV from urban to rural areas and from one state to another. Once again, a differential policy making keeping the diversity of the situations is required.

### **Variation among States**

Huge social inequalities, based on caste and gender relations, exacerbate the role of economic disparities in making for unequal access to these important human development inputs. The states vary hugely on all major human development and economic indicators, depending on their social, political and developmental history

According to the available data, HIV infected individuals were found in whichever states testing facilities were available for surveillance, blood testing or research. The more urbanized states, with their greater concentration of facilities and technical skills, therefore, showed higher rates, such as Maharashtra, Tamil Nadu, Karnataka, and Gujarat. In 1993-94 the sentinel surveillance system was adopted. But epidemiological data remains a major weakness affecting policy planning and even today, they tell us virtually nothing about what is happening in the rural areas. The major concentration of AIDS cases is in Maharashtra and Tamil Nadu, with Maharashtra alone accounting for almost half the number of cases. Along with Manipur, these three states count for 77 per cent of total cases in the country. Perhaps, with the penetration of technology, more cases of the disease could be "*discovered*" in these backward states. Despite this concentration, HIV is present in all the states of the country, not to mention the role of migration and other people to people contacts just mentioned.

Sex workers form the bulk of the people suffering from the disease, patients attending STD clinics come next with rising rates among them, too, and recipients of blood/blood products come third. These trends are all India in character, although the rates are highest in two states – Tamil Nadu and Maharashtra - followed by Gujarat and Karnataka. Other discernible epidemics are among injecting drug users. This is localised in one state at present, Manipur where 54% of IVDUs are estimated to be HIV positive.

### **MYTHS AND MISCONCEPTIONS**

In the past, people have had good reason to be afraid of "catching" diseases. Although they had many explanations about why people became ill and died, they did not know what caused a disease, or how to avoid it. Now, we have the benefit of science to provide us with answers. We now know how to prevent HIV infection. However, myths and misconception continue to develop.

Some common myths regarding how you can get HIV are by:

- Sharing food with an infected person
- Hugging an infected person or
- An insect bite

Science has provided us with answers to these myths. HIV is not transmitted through casual contact. Even in family members where there is on-going close contact there have been no cases of non-sexual transmission. Insects are not able to transmit HIV. Finally, the highest increases in new infections are in black men, women, heterosexuals, and teens. HIV does not discriminate as to age, sex, race, or sexual orientation. Not everyone who is HIV positive knows they are infected!

#### **HIV is passed to others by**

- Direct intimate contact with body fluids, such as blood, vaginal secretions, or semen
- An HIV-infected mother to her baby during pregnancy
- Having sexual intercourse without a condom with an HIV-positive partner

- Sharing contaminated needles

The spreading of HIV is completely preventable, if every person takes proper responsibility.

Cultural taboos insist that women are ignorant about sexual matters.

These taboos, which keep women away from these kinds of discussions, make them unaware of the relations of their partners.

Many people believe that, their identity as men is defined by their sexual prowess. Women are expected to accept men's demands and condoms are seen as unmasculine or as restricting a man's pressure.

### **Concept of Masculinity**

Men spread HIV with widely accepted concepts of the so-called "Masculinity" or "*Purushatva*" in the Hindu Mythology. Masculinity brings with it privileges and in many societies, freedom denied to women.

There is a biological argument, which says that, because a woman bears children, she needs only one man to look after her children but man can have many contacts with women so that at least one of them would give birth to his child. Men are expected to be strong and daring, to be the primary provider of their families' food and shelter and to defend themselves, their families and their societies from aggressors. Man's need for sex is beyond his control, with young men in particular suffering physical and mental damage if intercourse is denied

Another argument says, "**Real Men don't get sick**"!

The need to prove themselves masculine propels men towards risky behavior; abstinence is seen as unnatural and refusal to use condoms is rationalized in many ways.

Although there is a general agreement on the role of "masculinity", there is very little systematic information to help guide the development of intervention in India. For example very little is known on the social construction of masculinity and the process through which they are acquired, reinforced and enacted in young men's life. The concept and practice of masculinity needs to be reconstructed in ways that fit new socio-economic realities like AIDS. A new way of perceiving manhood would empower men to live their sexuality differently and to take active community responsibility.

Broadly speaking, men are expected to be physically strong, emotionally robust, daring and virile. Some of these expectations translate into attitudes and behaviors that endanger the health and well being of men and their sexual partners with the advent of AIDS. Other behaviors and attitudes, on the contrary, represent valuable potential that can be tapped by AIDS programs.

There are sound reasons why men should become more fully involved in the fight against AIDS. All over the world, men tend to have more sex partners than women, including more extramarital partners, thereby increasing their own and their primary partners' risk of contracting HIV, a risk compounded by the secrecy, stigma and shame surrounding HIV. This stigma may keep men and women from acknowledging that they have become infected. Focusing the campaign on men also acknowledges the fact that men are often less likely to seek health care than women.

## **AIDS – A SOCIAL PERSPECTIVE**

The word AIDS itself induces a lot of fear and makes us shiver. AIDS being an incurable and 'contagious' disease is supposed to be a mass murderer. AIDS is spreading like an epidemic, and it can infect anyone irrespective of the person's sex, caste, social status and health conditions. So far there is no cure for AIDS, and once a person is infected his or her health will go down constantly and death is inevitable. As AIDS is mostly spread by unsafe sex, society holds a very blunt outlook towards this disease and towards those who are infected by it. Sex is socially a taboo subject, and anything related to it is dealt very precariously.

Being an AIDS patient is 'socially' considered to be a sin. Though AIDS is basically transmitted in four ways like sexual intercourse, lactation, infected blood or needles and mother-to-child-transmission (MTCT), but the sexual reasons are predominant. The moment an AIDS patient is spotted, probably the first impression that comes in our mind is that so and so person has a loose character, or adulterer or something like that. But actually it is quite possible that the person got AIDS by some undesired ways which were unforeseen and unknown to him or her. Society is never willing to accept an AIDS person normally, because the unscientific, irrational fear, which prevails in the minds of, narrow people. It is very well known to most of us living in a hybrid society, that AIDS is not spread normally by touching, kissing or eating together but the way it affects the minds of common people adversely, creates a lot of panic and discrimination. The fact that it *spreads quickly* and it is *incurable* is good enough to refrain a normal person from having interactions with an AIDS patient.

## **SOCIAL PRACTICES AND DISCRIMINATION**

AIDS has aroused a lot hysterical fears and a number of controversies and ethical questions related to the patient's rights, doctor's rights and the right of the public at large. There are many practices prevalent in society to deal with such cases. However there is a kind of disagreement between two distinct classes of people based upon their way of thinking. While some people think that AIDS patients should be isolated in air tight packed rooms, alienated from the rest of the world, others find it totally illogical and unscientific ways of doing discrimination against patients. The second class of people (though comparatively smaller in number but gradually increasing) feel that patients must also have the right to lead a normal life that must be respected by all the public, and government.

Although AIDS is not more contagious than any other disease, its patients are suffering both social and medical discrimination, and that is not only unethical but could also cause an increase in the spread of the disease. The fact that AIDS is no more contagious than any other disease, makes the reasons behind the people's fear of AIDS totally illogical. All people are thinking of is that it's a deadly virus, but there is a lot more to know about AIDS than this. People must be more educated about this virus and how it may be transmitted in order to protect themselves and avoid their persistent fear about AIDS patients. AIDS, unlike many diseases, is not transmitted by shaking hands, or through coughs, or by swimming in the same pool with an HIV positive. It has also been proven that even the exposure to body fluids such as saliva through deep kissing wouldn't transmit the virus. This is because the HIV is found to be very weak in open air; it can easily be killed by ordinary household disinfectants. Many people who cared for AIDS patients and helped

them in their daily jobs like bathing, dressing, eating, and sharing toilets etc. are still found to perfectly healthy and HIV negative. The risk involved is much lesser than other viral diseases like Hepatitis. So it is perfectly logical to say that there is no scientific basis for this kind of discriminate, panicky behaviour but despite all of the principles, AIDS patients still suffer due to harsh treatment by the society.

HIV positives suffer a lot of discrimination from the public at large, as well as receive harsh attitudes and maltreatment, disrespecting their pride and that they are humans who still have some rights. Once they are labeled as AIDS patients, they lose their jobs, rented apartments, and many other social services; in addition, they become rejected by the family circles and friends and even expelled from schools or universities. Unfortunately these attitudes do not help by any means but in fact they further degrade the already burning situation making it even worse.

## **HUMAN PSYCHOLOGY**

"It is difficult to be a woman with AIDS," says an American lady after she was divorced, expelled from job and forced to lose her property when she revealed that she has AIDS. Women even suffer more psychologically. A foster home concerned with AIDS infected children was set fire by some people in New York. This shows the kinds of mentality people are having towards AIDS. It was rightly said in the academy award winning movie *Philadelphia* "Social death, which precedes the actual physical death". It is obvious that shame and discrimination are the two feelings that HIV patients unwillingly will have to face within their society. This kind of inhumane attitude can be justified precariously if the discriminator is unaware about the technical knowledge like how it spreads, how it affects etc. But how can doctors (physicians in particular) nurses and other persons related to medical, justify the discrimination? It is certain that they are fully aware about nature of the illness and its mode of transmission. AIDS patients are being forbidden to get the right health care that includes both physicians' treatment and medical insurance, even worsening their health status. Many physicians refuse to treat patients with AIDS because of fear of infection. Patients would also be very cautious in going to that doctor so as not to get infected from the contaminated tools he uses with AIDS patients, or even from sitting beside them in the waiting room. Discrimination against AIDS patients is violation of ethics and principles of medical profession. Apart from being unethical, this discrimination does lots of injustice because it can victimize innocent people. All these facts clarify that doctors would prefer to avoid any AIDS patient in their clinic willingly or unwillingly.

Medical Insurance companies have a very capitalistic approach in this field. Their major motive is to make their own personal fortunes and they exploit AIDS patients financially. Initially the cost of treatment, which gave patients a few more breaths, was very high, that is, much above the affordable range of middle class but nowadays it has gone down by a considerable factor so it is within the reach of common people.

The social discrimination will lead to a very serious and dangerous consequence. First of all, people know that AIDS is going to affect not only them but their families and that they will lose not only their health but also their jobs, insurance, home and friends if they get the disease. And so people will be afraid of testing to find out if they are infected or not, and if they are infected, they will be scared to announce it in order to avoid discrimination and isolation by the society. In fact "it was declared that those infected with AIDS are less dangerous in the spread of the disease than the hundreds who are infected but not

identified". This means having the threat of the increase of undetected AIDS patients who may spread the virus out of their ignorance, frustration, or revenge from the discriminating society. It has been reported that at many places there are groups which carries infected needles in public places like bus, local train, subways etc and they infect normal innocent passerby. They are themselves AIDS infected, who out of their frustration are carrying out this illegal and immoral crime of very serious nature.

## **OVERCOMING SOCIAL DISCRIMINATION**

The first thing, which has to be done, is to remove myths and misconceptions regarding AIDS. We can boast of the fact that the present scenario is better than ever before but still a lot is to be done. Society is still developing, development is an on-going process, and there is no upper limit. What we have learnt from the past, we need to apply to make things better. We had a long chat with Dr. Atul K Patel, HOD, Dept. of infectious disease, Sterling Hospital, Gurukul, Ahmedabad and he told us that presently the social discrimination has gone down by a great factor and people are getting more liberal in their attitude and logical in their thinking. He is one of the five eminent AIDS doctors in India and he has been working this field since last 15 years or so. Slowly society is accepting an AIDS patient as a part of it but still it is not the case everywhere. Still at many places the discrimination is an integral part of the 'code of conduct' towards an AIDS patient.

One great idea can be making provisions for an AIDS infected man to marry an AIDS infected woman. This will prove to be quite a happier life for both of them. As both of them are already HIV+, and their health condition is going down so there is no such risk of further infection. What I mean to say is that there will be no hesitation in living together because they can't get this disease from each other, like a normal healthy person can do. If such a marriage is done they can well prove to be help for each other, leading a consoling life together. Further more, they can make babies but it involves some moral debates. One moral theory says that they should not be encouraged to have kids, because there are high chances of AIDS infection to the newly born baby and no one holds the right to victimize an innocent baby. But I feel somewhat contrary to this. Mother to child transmission rate is normally one out of four, which means 25-30 % in bulk. If Anti Retroviral Therapy (ART) is started right from the fourth month of pregnancy then the chances of mother to child transmission can be reduced to 6-7 % and even 1 % in some cases. It means that out of 100 children born from infected parents, 7 will be HIV+ and rest 93 will be normal ones. Apparently, just to save 7 kids we can't afford to lose 93 kids. The counterargument can be that even a normal couple can make 20 babies but they restrict it to just 2. Does this mean that they are killing 18 kids? The basic fallacy in the logic is that, after having two kids the couple doesn't need any more. When there is no need, you avoid things no point in unnecessarily adding troubles to life. But from an AIDS infected couple's point of view they really need a baby to carry on their life and property or whatever. Especially when they know that their life will end in a span of few years, their feelings must be respected.

## **PATIENT'S FEELINGS**

An AIDS patient is left with no option. He just has to live, tolerate the physical pain and mental agony, and wait for the inevitable to come. The AIDS infected person considers himself to be responsible for this day. He feels that due to his mistakes or rather sin 'god' is punishing him. Not only his health conditions deteriorate day by day, but also his mental strength fades away constantly. If the person reveals that he got this disease by being

unfaithful to his or her sexual partner, then the person is constantly taunted by society. Even in some cases, family members hold a very attacking stance against the victim. Psychologically the person feels very low. The basic reasons for this are: -

- (a) He knows that he is going to die very soon.
- (b) His health conditions keep on degrading, giving him a lot of physical pain.
- (c) The person is most often criticized by society for his misdeeds, even if he got AIDS by the reasons unknown to him.
- (d) Economically also a lot of money is spent in the treatment process, and his financial status declines.
- (e) In many cases the victim is forced to leave his job, forced away from social gatherings and all sorts of maltreatment.

All these factors forces the person to live in a kind of isolation, which is self-induced by him. Basically the person doesn't want others to know about his disease because of the fear of social death. He also wants to be safe, so that no other close associate of him gets this deadly disease transmitted. It is known that in many cases support from family has been called off and the person is forced to live completely alone from rest of the world. As he is unable to take care of himself properly, he goes for a premature death, even if he could have a few more years with this deadly disease. There are many reported cases where parents expelled their teenage kids, husband divorces wife etc which lead to be a break up in family giving everyone mental trauma whose effects will last forever. The same case applies to educational institutes and organizations. Students are expelled from their respective institutions after when they reveal that they are HIV+. Many companies fired their employees after knowing their HIV+ status. The physical pain and mental breakdown of AIDS patients just goes on, make him worse and nearing his death by every moment.

## **Gender Dimension of AIDS**

In societies where the legal and social status of women is inferior to that of men; where educational opportunity is curtailed for women; and where women have no or little control over their sexuality, the sexual behavior of their male partners and the use of condoms; women are much more vulnerable.

In such societies it is essential to analyze the role of both women and men in spreading the virus. A general observation is that women are more affected by the consequences of HIV/AIDS than men. It is because women form the weaker part of society in terms of sex. Once a woman comes to know that she had contracted the virus, she suffers more than a man does. She will be abandoned by her long-term partner or even accused by her in-laws for not being truthful or for bringing the virus into the family, but the fact that men spread the virus still remains the same. It is the sexual and drug taking behavior of men which spreads the virus rapidly.

Today, more men than women are HIV positive. But 10 or 15 years down the lane; the situation may be worsened, as the virus is transmitted from these men to their partners. Partly MTCT also adds to the increased number of HIV positive people. Though we have many medicines today to control MTCT, the fact to be noted here is that most of the women in our country are not even aware of AIDS! Many women in rural areas are uneducated and poor. They don't even know that this kind of disease exists and that they

had contracted this virus. So they continue reproducing and hence the virus is transmitted to their children also.

Men are more likely to pass the virus than women do because many of them have one long-term partner and many casual partners. So they pass the virus easily. On the other hand, women being more faithful to their partners are less likely to pass on the virus and transmit the same. Men share needles with other men but women rarely do so. So men are at risk and should be very careful.

Even if some women know about AIDS and its consequences, they are denied to protect themselves. Women have the fear of losing their partners and so have to undergo risky sex. They don't have the courage to ask their partners to use condoms or stop relations with other partners. Victims of rape can anyway not protect themselves from HIV.

In most of the societies women are restricted to control their own sexual lives. Poverty, illiteracy and traditional customs do not enable women to take wise decisions in their sexual lives. Women who earn income are more independent and have the freedom to take decisions in their sexual lives more freely than dependent women. When their unfaithful partners neglect them, women generally search for alternate means to look after their children. In this process they are forced to exchange sex for money with men.

Another sector where women are exploited is warfare. In addition to being the victims of rape and other physical abuse, they constitute more than three in four of the world's refugees. Women also have to cope with the effect of destruction of family units; they nurse the wounded, care for the orphaned and play a central part in rebuilding shattered communities.

Women's emotional involvement with her partner often prevents her from discussing sex or using condoms. Fear of being looked down and losing the relationship prevent girls from communicating about HIV/AIDS and sex.

Nevertheless there remains considerable ignorance over a range of STIs including AIDS.

There has been significant improvement in the status of women in the recent years. Many women are poor and hence men dominate their sexual lives. Most of the times they are not even allowed to decide with whom they should have intercourse and consequently are prone to AIDS.

Majority of women are dependent throughout their life. They depend on their parents in childhood and on their husband after marriage. Women are more committed, honest and tolerant. When their partners contract HIV, women do not leave them, rather are committed to serve them, but in the other case it often happens that women are ill treated once they contract the virus.

When women contract the virus, they will stop having sexual relations with their partners but some of the men hide the fact and continue their relations with regular or casual partners thus transmitting the virus. In this case women are more honest to their partners. They are also faithful and do not maintain more than one sexual partner. But men often keep their women ignorant of their contacts with other women.

Sometimes sex workers are blamed for spreading HIV. But it is only because of the demand from men that sex work exists. All women may not choose sex work willingly. Some women are forced into it by raping; their parents to brothel-keepers may sell others.



Half of the women contract the virus before they reach the age of 25 mostly because of improper care during sexual intercourse and partly victimized in rape cases. Ignorance of women leads to early pregnancies, which is more dreadful and can even lead to early deaths.

Women should overcome gender constraints, or organize themselves, depend on themselves, make the spaces to meet and interact, exchange experiences, gain strength and support from each other. For this, we need proactive policy-makers and sensitive role models

There are many prevention programmes, which have targeted women and have become successful but still a large part of women are dominated by men and often are unable to convince their partners.

The most important factor, according to Dr Ahmed Al Sabir of the government's national Institute of Population Research and Training (NIPORT), was the employment of 23,000 Women Family Welfare Assistants (FWAs) to take family planning messages to married women across the country. FWAs have easy access to mothers and supply contraceptives free of charge. Their job itself acts as a role model and encourages women to work outside the family. A parallel development –the creation of income-generating activities for women by non-governmental organizations (NGOs)-has enabled more mothers to contribute to the family income and have a greater say in decisions, such as the preferred number of children.

## **Youth and AIDS**

There are a variety of physical, social, psychological and economic attributes that contribute to making young people vulnerable to HIV/AIDS. They are frequently economically dependent and socially inexperienced and as a result have very marginal access to competent health care. Health care facilities have a poor record of serving youth, particularly in the reproductive health realm. Youth frequently lack necessary knowledge and skills and often do not know how to protect themselves from infection. Societal norms, values and policies contribute to the problem by taking the view that youth should not be (are not) involved in sexuality and other behaviors that can transmit infection.

Despite global calls for action, the barriers to young people's access to information, counseling skills and services related to reproductive health, HIV/AIDS and substance abuse remain. Many young men and women continue to see health services as inaccessible and irrelevant. For Sexually active youth, particularly those who are not married, obtaining relevant reproductive health services is often difficult. Adult discomfort with young people's sexuality is almost universal, and there are similar difficulties in speaking about substance abuse openly.

Sex is rather considered a socially tabooed issue and includes strong precepts and misinformation against self-stimulation. These perceptions and misinformation are often accountable for enormous burden of sexual related guilt and anxieties. A majority of youth therefore begin their sexual career on a conflicting note, characterized by engagement in self-stimulation on one hand and heavy sense of guilt, shame and fear on the other. Young people, particularly young girls, deserve special attention because they have the highest rate of new HIV infections in the developing world. Reducing new infections in this

age group is probably one of the most effective strategies for slowing the spread of the epidemic.

Young people face many special constraints in adopting safe behavior. They are sometimes hard to reach, particularly those who are not in school. They are less likely than adults to have skills, economic resources, and access to information that they need to protect themselves. They are also less likely to have access to services, particularly those that meet their needs in a non-stigmatizing, non-discriminatory, and user-friendly manner. Most important, they are less likely to have the power within relationships to insist on safe sex.

### **Why are young people at such high risk for infection?**

Around the globe, youth are at increased risk of HIV infection for a number of reasons, many of which are beyond their control. In many parts of the world, youth do not receive adequate education regarding their sexual health. They may not know about HIV and sexually transmitted diseases, or they may not have access to condoms. Young people, especially girls, may be unable to defend themselves against sexual abuse. It is estimated that over 100 million youth under the age of 18 live or work on the streets. These precarious conditions subject young girls and boys to exchange sex for money or food, as well as a heightened risk for alcohol and drug.

Concerns such as unwanted pregnancy, HIV/AIDS and other sexually transmitted diseases (STDs), and the rising wave of drug intake in the region, justify the call for giving increased attention to this age group. The age between 15 and 24 years is a critical stage in a person's life, representing the transition from childhood to adulthood. During this period, certain decisions that have an impact on an individual's future are made, including whether to stay in school, find employment, initiate sexual relations, or try drugs, to name a few.

Boys and girls as young as eight years old are often left to raise siblings and generate a family income when one or both parents die of AIDS. In addition to the pressures of caring for siblings and working to raise money to feed the family, AIDS orphans often face a great deal of discrimination as a result of their parents' death.

Young people affected by HIV/AIDS often lose the opportunity to receive an education. This can occur for many reasons, including a need to work for survival and a lack of money to pay school fees. Extra burdens of caring for sick adults may cause children to drop out of school, or achieve inadequate grades as a result of low concentration and performance.

The psychological impact on young people affected by HIV/AIDS is rarely given the attention that it deserves. This is the least visible effect, but one of the most significant. Young people affected by HIV/AIDS often suffer from emotional concerns about their futures, loss of parental nurture, and an inability to understand what is happening to them and their family. It is essential that communities and educators be sensitive to the psychological needs of youth infected and affected by HIV/AIDS.

Children must work to supplement family's income, as more money is spent on health care. Coping with HIV/AIDS in their families and communities, many young people are

forced to take on increased responsibility at early ages. Many young people may be required to leave school, care for sick family members, or seek employment to support themselves and their family.

The future of the HIV epidemic is in the hands of young people. The behavior they adopt now and those they maintain through their lives will determine the course of the epidemic for decades to come. Research has shown that when young people are provided with education and skills to protect themselves, in conjunction with an access to condoms, they will adopt safer sexual behavior. The increasing adoption of safer behavior by young people is having an impact on the HIV epidemic. In order to successfully combat HIV/AIDS, it is critical that programmes target young people and promote their participation in the planning, design and implementation of activities.

Clear communication between parents and young people about sex is an important step in helping adolescents adopt and maintain protective sexual behaviors. Because risk behaviors do not exist independently, topics such as HIV, STDs, unintended pregnancy, tobacco, nutrition, and physical activity should be integrated and ongoing for all students in kindergarten through high school. The specific scope and content of these school health programs should be locally determined and consistent with parental and community values.

Research has clearly shown that the most effective programs are comprehensive ones that include a focus on delaying sexual behavior and provide information on how sexually active young people can protect themselves. Evidence of prevention success can be seen in trends from the Youth Risk Behavior Survey conducted over an 8-year period, which show both a decline in sexual risk behaviors and an increase in condom use among sexually active youth. The percentage of sexually experienced high school students decreased from 54.1% in 1991 to 49.9% in 1999, while condom use among sexually active students increased from 46.2% to 58.0%. These findings represent a reversal in the trend toward increased sexual risk among teens that began in the 1970s and point to the success of comprehensive prevention efforts to both delay first intercourse among teens and increase condom use among young people who are sexually active.

Many students report using alcohol or drugs when they have sex, and 1 in 50 high school students reports having injected an illegal drug. Surveillance data from the states with integrated HIV and AIDS reporting systems suggest that drug injection led to at least 6% of HIV diagnoses reported among those aged 13-24 in 2000, with an additional 50% attributed to sexual transmission.

Furthermore, youth should be seen as part of the solution rather than a problem, in the context of sexual and reproductive health and prevention against HIV/AIDS and substance abuse. Often, young people have proved the most able to speak openly about these health concerns.

## **EDUCATION AND AIDS**

Despite the increasing commitment to promoting the health and learning of school children, progress on these fronts is seriously threatened by HIV/AIDS. As the pandemic grips the developing world, HIV/AIDS is debilitating not only health, but also social, economic and cultural systems. Symptoms of this are clearly manifested through the

education sector. The capacity to supply schooling services has decreased where large numbers of teachers and other staff have become infected and affected by HIV/AIDS.

Quality of education has been jeopardized where teachers are affected by family trauma or AIDS-related illness themselves, where families lose purchasing power, and where fewer resources are available to support services and infrastructure.

Demand on the current formal system has diminished where fewer children seek to enter or stay in school – for example, where fewer children are born, where children are sick, and where children leave school due to changed social and economic circumstances, particularly those children who are orphaned by HIV/AIDS.

As parents fall ill and die of AIDS, family burdens shift to children. Students particularly girls have to leave schools to take on adult responsibilities, such as earning money, procuring food, and caring for the ill. Orphaned girls are extremely vulnerable. They are forced to quit schools, many become victims of sexual violence or become prostitutes to earn money to support younger siblings. Schools should take proper care of HIV infected students and give them free education if required. This might be a financial burden on schools.

Equality of opportunity has moved further beyond reach as girls' opportunities are disproportionately affected by HIV/AIDS. Equal opportunity is limited by girls' vulnerability to infection, particularly in high prevalence settings, and where the effects of poverty and other stressors on society are exacerbated by the low status of girls and women.

Education is one of our key defenses against the spread and impact of AIDS. In countries with severe epidemics, young people with higher levels of education are more likely to use condoms and less likely to engage in casual sex than their peers with less education.

However, just as HIV targets the body's defense system, the HIV/AIDS pandemic is disabling the education sector's core functions and protective value. Achieving education for all will require making HIV/AIDS the highest priority in the most affected countries. Education systems have a responsibility for ensuring the right of every child to a good quality education and HIV/AIDS prevention must be considered an integral part of quality education.

Only by managing the impact of HIV/AIDS on children, young people and the education system itself can education realize its potential to decrease vulnerability to HIV/AIDS and reduce the risk of further infections.

Children from age 5 to 14 years are least likely to be infected with AIDS.

Education at this age leaves a strong impact and children can remain HIV free in their future. They may go for safer sex and in fact control the transmission of HIV.

The 15 to 24 years age group is the most dynamic and sexually active group and the most affected one. Proper awareness programmes in this age group will lead to excellent results. Better-educated girls tend to delay having sex and are more likely to require their partners to use a condom and educated men generally tend to be careful during intercourse.

## **SEX EDUCATION**

The onset of puberty brings the capacity and desire for sexual experience but not the knowledge to do so wisely. In the widespread western influence the traditional cultures no longer hold importance. Without proper knowledge, the youngsters tend to develop wrong notions of sex and sometimes are curious to know more about sex. In the process of doing so they might commit mistakes, which may sometimes cause mental disturbances also. If present and future generations are to be prevented from the unwanted sexual behavior, new skills and knowledge must be taught.

Sex education helps youngsters to understand the implications of sexual activities and hence follow proper measures during intercourse. Girls who are sexually educated generally have delayed sex, late pregnancies and are less prone to the virus than those who are sexually illiterate. Sex education is usually imparted in schools so that it can reach a large number of youngsters and also because children do not feel comfortable in discussing such issues with their parents.

Younger children should know what behavior is acceptable for both children and adults. Elder children need a description of the physical and other changes that will take place as they enter adolescence. Before sexual activity begins all young people should be aware of the consequences of intercourse, in addition to knowing how to refuse sex and how to ensure that they undertake safer sex.

The development of school district policies on AIDS education can be an important step in developing an AIDS education program. The government should make changes in the pattern of education and include sex education from an early age only. The government should plan and implement appropriate and effective strategies to teach young people about how to avoid HIV infection. These guidelines should not be construed as rules, but rather as a source of guidance. Although they should be specifically developed to help school personnel, personnel from other organizations should consider these guidelines in planning and carrying out effective education about AIDS for youth who do not attend school and who may be at high risk of becoming infected. As they deliberate about the need for AIDS education, educators, parents, and other concerned members of the community should consider the prevalence of behavior that increases the risk of HIV infection among young people in their communities. School systems should obtain broad community participation to ensure that school health education policies and programs to prevent the spread of AIDS are locally determined and are consistent with community values

## **ECONOMICAL IMPACTS**

Economic status determines life expectancy at birth, access to food, education, career opportunities, healthcare, housing and even basic amenities such as drinking water and sanitation. The economic disparities, evident everywhere, are most glaring in the cities, where between 40 and 60 per cent of the population are forced to live in overcrowded and unhygienic slum settlements with poor access to infrastructural facilities such as water and sanitation.

### **Availability of treatment**

In India, it is a strong belief that quality health services are provided generally in the private health clinics. Private practice and the associated negligence of duty by the

government Doctors has been a reason, so to say partially behind this, thus affecting the quality of the service. Naturally, economics come in play pretty quickly in such a situation. However, with the advent of treatments and development of medicines within the country, the cost of treatment has significantly come down, as of day, getting AIDS treatment is cheaper than that of Diabetes. Still, given the widespread poverty of the country, quick and continued treatment is not available to all. The government is taking certain initiatives to make AIDS treatment available to greater number of people, but it would naturally be on the post AIDS scenario. What needs to be understood is that it is the poor economic situation, which leads to unhygienic health services, thus opening them against infection. This is an issue of great concern, because it is these people who are at the most vulnerable stages of the society, and they have the greatest risk of getting trapped in the disease

### **Effect on Productivity**

The disease, if not controlled in time is destined to have a great impact on the productivity of the country. Ready to take on epidemic proportions, it is the younger generation, which would be most affected by it. Not to mention, it is the most active group, and forms the bulk of our workforce at all levels. Naturally, if such a large proportion of our workforce were to become inactive or disappear, economic activities could come to a standstill. This would again have an impact on all walks of life, and may lead to an overall worsening of the situation.

### **Effect on National Economy**

AIDS is fast turning into a major issue on the charts of the Planning think tanks of India, and a vast sum of money is already being spent by the government on awareness campaigns, and towards the NGOs working towards AIDS alleviation. If the rate of growth of the disease continues on the same rate, the day is not too far when the central pool of resources would be over burdened by expenditure on the various programs on AIDS. The Government of five states including Maharashtra, Andhra Pradesh and Tamil Nadu have already decided to give free Anti Retroviral drugs to AIDS patients from 1<sup>st</sup> April 2004, which indicates that the policy makers are already on the way to look on the disease in a big way.

Naturally, the money that goes for this would not come for free, but has to be on the cost of infrastructure development, which would have a negative impact on the economy. According to current studies, the Indian government cannot afford to provide anti-retroviral treatment to those already suffering or even subsidize it, given the large size of the population, but 5 states have already started the process, and due to the political competitiveness, the other states would also chip in some time in future. Associated lack of funds would lead to a vicious circle of financial crisis, and thus make the situation even poorer. This means that we need to have the emphasis on prevention rather than cure, and stop this impending menace before it goes out of the hands of our economy.

### **Employment**

As commonly seen, employers and co-workers generally develop a step behavior towards workers, on them being diagnosed HIV positive, which thus has an adverse effect on their employment opportunities. It becomes very difficult to get new jobs, once one is "advised" to take rest by the employer, and the economic situation of the household deteriorates in no time. Naturally, if the patient happens to be the breadwinner of the family, it brings the total break down of the household. The implications would be lesser health, education and

hygiene opportunities for all the dependants, once again opening them to the related dangers of getting infected, socially deprived, and in long run positive too.

### **Nature of job**

This is a certain component of the analysis. It generally takes 8-10 years before a person acquiring HIV Positive eventually dying of AIDS. Over this period, his immune level and the ability to do manual labour decreases. Tough competition due to the cheap labour available also pushes him against the wall. Gradually, one has to look for 'easier' jobs associated with a decrease in the count of working hours. This makes the available job opportunities difficult for him i.e. the spectrum of his jobs decreases. Again, this may lead to greater economic constraints on the Family.

### **Marketing Strategies**

Certainly, the medicine industry has realized the potentially large market for AIDS treatments and is looking towards cashing the opportunity. A study into their marketing would certainly reveal that they have largely been associated with various organizations involved in the campaign, and not to individual chemists. This gives them the dual advantage of winning compliances, as well as having large scale, fast sales done, which would not have been possible in the latter case. There has been little or no advertisement campaigns from these drug houses to inform the commoner about the available treatments, and this has all been left to the Government and non-government agencies. This might also be possible due to the government regulations, but interesting enough to deserve a deeper study.

### **Artificial Hike of Prices**

It is a general assertion that the forces of demand and supply determine prices. But such has not been the case with this potential epidemic. With a large number of patients, the demand for the medicine is already there, and with the advent of the technology, the drugs are also available, but certainly a shield is maintained to gain greater profits and keep it away from the hands of the commoner, unless provided the medicine under some campaign. Again, supply of drugs through the NGOs is profitable both for the patients and the industrialists, but it costs dearer to the national exchequer, which would once again hamper various programs including AIDS awareness programmes.

It is also a common feeling among the masses that the treatments and the drugs available in the country are costly since most of them have to be imported. But quite to the contrary, India is a major producer and exporter of generic anti-retroviral. Except for a few latest Anti Retroviral drugs almost all the drugs are now produced in India. Large Indian companies like Cipla and Ranbaxy are poised to provide medication to several countries in the Africa and Caribbean region under a deal backed by former U.S. president Bill Clinton. This again reflects a paradox, whereby medicines are exported for Dollars, while there are several needy people left uncared back at home.

### **Patents**

There is a strange paradox associated with the patents. On one hand, they prevent the speedy sharing of technology, thus making treatments, which have already been discovered, unavailable to a large chunk of the population due to non-production at the domestic levels. It also helps in the increase of the cost of these drugs, once again depriving many, thus leading to a delayed or suspended control. On the other hand, waiving or not allowing patents on life saving drugs like these, may lead to a loss of interest of the companies in the research initiatives to find new treatments and drugs,

which would again have a bad impact on the already worsened situation, unless they are otherwise backed by Government or other agencies.

However waiving of patents also comes associated with the problems of piracy. With composition readily available, many companies could mushroom up, and might compromise on quality to compete for price. This could further complicate the issue. But, removing patents carefully, taking all other factors in consideration is quite necessary to get cheaper treatment available to the masses. Studies reveal that treatment with the original patented medicines cost at least three times when compared with the costs of generic drugs.

A related issue is the research and developments in the field of finding new cures for the disease. Again, a lot of money is required to carry out these, which automatically pushes up the prices

### **International Associations**

We need to have outward-orientated trade policies and export support institutions to encourage knowledge transfer. This should also reduce duplication of effort and facilitate the transfer of technology among different settings. We could thus gain the advantage of remaining up-to-date with regards to the world scenario, as well as contribute to the cause by joining the international research community.

## **POLITICAL IMPACTS**

### **Constitutional Laws and Bills**

AIDS as a possible epidemic has already started ringing in the political as well as Government corridors. The Planning Commission in its next five-year plan is actively considering policies and programmes on HIV in main ministries. India is considering monitoring foreign tourists to see if they are infected with the HIV virus that can lead to AIDS. The government of Goa is considering a suggestion that everyone planning to get married has to undergo a mandatory HIV test. It is also planning to spend a huge amount of money to become the first AIDS-free state of the nation. The health ministry is also going to launch a mass awareness programme in these states where HIV/AIDS infections are rising rapidly.

### **Concerns of Political Parties**

In spite of the gravity of the scenario, probably HIV/AIDS is yet to emerge as a political issue in our country, as none of the political parties mention their policies regarding the disease, but if the rate of the spread continues to be the same, the day is not far when it would attract major attention, and probably elections would be fought on the issue of AIDS.

### **Need of subsidy as a support mechanism**

With the country politics still in the Subsidy-age, an important decision would have to be taken regarding it in this sector. It would be as to whether to divert the funds towards providing subsidies to the medicines, so as to bring the prices down and make the treatments available to a greater mass, or keep the same money aside, and use it instead to be utilized for the preventive programmes such as creating awareness and arranging for counseling, to meet the cause at its root itself. Nonetheless, the same amount could also be utilized for advanced research in these areas, to explore for more effective drugs. Governments might possibly have to take bold decisions and perhaps not just appease the voters with subsidies, but would have to strike a perfect balance between these three.



## **Policy Making**

A policy and regulatory environment receptive to technology is essential for obvious reasons, as is investment in physical and technological infrastructure. New technologies should be adapted to local problems and conditions and this calls for the pooling of scientific, technological and educational resources between neighboring countries to generate a critical mass. Finally, to take advantage of technology, partnerships between government, the private sector and civil society will have to be implemented if the digital divide is to be bridged. At the same time, due notice of the disparities, both urban and rural, and the region wise ones, as already specified, should be taken.

The first Aids case in India was isolated in 1986 and the official response was one of treating AIDS as a problem of vigilance by law and order agencies - suspicion of foreign visitors, incarceration by some state governments of individuals found to be HIV positive to prevent them from infecting the rest of society and, in some other states, deportation of commercial sex workers by the government of their state of domicile to their state of origin, in an attempt to transfer the problem. By the early 1990s, denial had given way to an attempt to contain AIDS control within the medical establishment. It was later that the concern for the mode of transmission through blood and blood products and organ transplants got weight which is a real concern in a country where resort to blood transfusions is high and where quality control of blood banking is poor.

## **ROLE OF THE GOVERNMENT**

Given the pace of the spread of the disease, the role of the central governing authority assumes great significance and it has to be realized urgently, before we land up in a situation beyond our control. The no. of AIDS cases reported for men has been much greater than those in women, while sexual contacts being the prime cause, with a proportion of 87% of the total cases. The awareness level has generally been higher among the city dwellers and the men. The Government needs to develop an improved framework for communications for HIV/AIDS prevention, care, and support and to make a consensus on changing current theories and models of behavior change as they do not provide adequate contextual approach to HIV/AIDS prevention in the India.

The government of India has taken various steps to ensure treatment for people across the country:

- The government has launched a toll-free help line by the number 1097 for information on the various prevention techniques and treatments available.
- The government has helped provide ART across the country and increased the number of places to receive this treatment.
- The government has launched many awareness programs to tell people about the available treatments and to help them come out of the shyness and frustration that would prevent them to take the treatments.

The government has also been releasing funds and subsidies for various organizations (including NGOs) to help the economically weaker sections get the treatment.

In spite of many improvements in this area and many awareness programs, there are people who hesitate in taking western treatments and involve themselves in various

alternative therapies which are not as good but do help them both physically and psychologically, so following are certain strategies which we think the governments should take up to combat the fast spreading epidemic:

- Reach out compassionately to AIDS sufferers and their families. National AIDS organisation should become equipped to counsel persons with AIDS and their families. The workers must be educated and sensitized to then determine specific ways in which compassion can be demonstrated individually as well as corporately. Above all, we expect United Methodists to be kindly, understanding and loving in their relationships.
- Reiterate clearly and strong policy on drug abuse and human sexuality.
- Determine the educational efforts needed,
- Oppose any legislation that is of a punitive nature towards AIDS sufferers.
- Encourage and support medical and scientific research to have improved medical treatment and facilities for AIDS patients and accelerate the discovery of a cure.
- Encourage various agencies to develop a clear and fair policy concerning members, employees, clients and/or students who may contract AIDS.

## **IMPACT OF TECHNOLOGY**

Technology has progressed over the years for positive as well as negative reasons. It has also contributed to HIV/AIDS in both positive and negative ways. This section briefly describes the impact of technology on HIV/AIDS.

### **ROLE OF TECHNOLOGY IN CONTROLLING THE DISEASE**

The present technology helps us control the spread of the disease:

#### **Medicines and Treatments**

Today's technology provides us with many treatments and drugs that help control the disease. Anti-Retroviral Therapy is the most renowned treatment used today for HIV/AIDS and this treatment helps suppress the virus thereby helping a patient to live a healthier and happier life.

Treatments like Immune-Boosting Therapy and Treatment and Prevention of specific opportunistic infections also help a patient.

#### **Controlling MTCT**

Today, technology is well advanced to lower down the chances of Mother to Child Transmission.

In the absence of any intervention, an estimated 15-30% of mothers with HIV infection transmit the infection to their baby during pregnancy and delivery, and 10-20% through breast milk.

However, with today's technology, if the pregnant mother is on treatments these chances can be reduced to 6-7% in case the treatment is started in the middle months of pregnancy and to about less than 1% if the treatment is started in the early months.

Thus the spread of disease through MTCT can be greatly reduced owing to technology.

### **Prevention during Sexual Intercourse**

Technology also helps in preventing the disease, through condoms. Condoms are highly effective in preventing Sexually Transmitted Diseases (STD) and their invention can be traced long back in history. We have both male condoms and female condoms in the market but female condoms are less popular as they are more expensive and hard to use.

Sometimes condoms fail to prevent HIV/STD infection or pregnancy but this is due to incorrect or inconsistent use, not the failure of the condom itself. Therefore, proper directions of use and the expiry date are mentioned on the packet.

### **Disposable Syringes and Sterilized Surgery Equipments**

The development of disposable syringes and needles and sterilization of surgery equipments has greatly reduced the chances of the infection this way.

Earlier, the same needles and syringes were used for many patients in hospitals and clinics, which increased the chances of infection. But now mostly disposable needles are used in blood donations, operations, etc. and so the risk of infection through such equipments has been greatly reduced. However, the use of same needles by drug addicts, tattoo makers, etc. still adds to the spread of the disease in India.

Thus, technology help in controlling the disease, but that's not all, technology also helps in spreading the disease.

## **ROLE OF TECHNOLOGY IN SPREADING THE DISEASE**

The use of various technologies of today also result in spreading of the disease:

### **Long Route Travel**

Technology gave us planes, helicopters, ships, submarines, trucks, etc. It also gave people reasons to go on long distance journeys away from home.

These days people go on long distance journeys for various reasons and there they hire sex workers and form new sexual relationships leading to unprotected sexual intercourse.

This increases the their risks of acquiring Sexually Transmitted Diseases like AIDS.

Long distance travel (esp. frequent ones) make the people come across many sex partners which might be infected and thus the disease spreads from city to city, state to state, country to country.

This is observed very much in India especially in case of truck drivers. They hire sex workers during their travel and expose themselves to high risks of infection.

### **Drugs**

Technology gave us drugs, and it gave us drug-addicts who don't care about the adverse affects of these drugs or the diseases that they can spread.

Drug-addicts across the country, take intravenous drugs, which are directly injected into the body using needles and syringes. The use of the same needles and syringes by infected and uninfected people acts as major reason in the spread of the disease.

### **Razors and Blades**

Technology gave man a way to shave by using razors and blades so that he can look better and feel better but improper or careless use of these can give a person HIV/AIDS.

The blood of a HIV/AIDS positive person can infect razors and blades used at barbershops and saloons, as cuts are very normal during a shave. Such infected blades and razors when used for an uninfected person can infect him if he also gets a cut. The spread of the disease this way is very small but it is not zero.

Thus, technology helps in controlling the disease as well as spreading the disease but technology is never the same, it has the characteristic of changing with time.

## **RESEARCH AND DEVELOPMENT**

Technology always thrives for more and research and development continues.

### **Quest for Vaccines**

The entire world is searching for a vaccine for HIV/AIDS but as yet no vaccine has been created for this fatal disease.

World Health Organization (WHO) also has been working in this direction. They have launched the WHO-UNAIDS HIV Vaccine Initiative (HVI) whose mission is to promote the development, facilitate evaluation, and address future availability of preventive HIV vaccines, with a focus on the need of developing countries.

The biggest hurdle to the development of an AIDS vaccine is the ability of HIV to mutate rapidly and escape detection by the body's immune system.

India is one of the countries desperately waiting for such vaccines to save its future.

### **Quest for Cures**

Scientists today say that vaccine for HIV/AIDS can be developed but they still think that the idea of a cure is ambiguous. They are blunt and straightforward in saying that a cure is nowhere near in the future.

A cure for HIV/AIDS still seems a fantasy to most of the scientists today. But then, hope never dies and there are many scientists trying to develop a cure.

False Claims for Cures: In India, and around the world, there have been many people who have claimed to have invented the cure for the disease but till date all have been proven wrong.

Actually the disease takes a span of 5 to 10 years to develop any major symptoms after getting the infection and all these false claimers claim that since the person is not showing any symptoms he/she has been cured when actually he is not supposed to show any major symptoms during this period. These are purely false claims as it is the time the disease takes to develop.

The quest for cures continues and according to many scientists it is going to continue for a long time, at least longer than vaccines.

Thus, the quest for vaccines and cures continues. Research and Development includes various studies, experiments and tests. Drugs developed are tested on real subjects under clinical trials.

Research and development plays a very important role in the treatment of the disease. The present drugs and treatments available for the disease are a result of R&D carried out some years ago.

We have many drugs and treatments for this disease, but still we thrive for more to achieve the following:

- Overcome Side Effects and ensure Safety
- Develop new drugs for better results
- Develop permanent cures (not just controllers)

Research still goes on.

R&D goes on for the development and testing of new classes of antiretroviral compounds or combinations that will be able to continuously suppress the virus with few side effects. Such studies can provide accurate and extensive information about the safety of the new agents and combinations. They can identify potential, uncommon, but important, toxicities of newly approved agents. Studies are also underway to assess rare toxicities of older approved agents, especially as a result of long-term use.

### **New drugs in the pipeline**

Many new drugs are under development around the globe to attend to the disease: The Pharmaceutical Research and Manufacturers Association lists nearly two-dozen new anti-HIV drugs now in development. They include new protease inhibitors and more potent, less toxic RT inhibitors, as well as drugs that interfere with entirely different steps in the virus' lifecycle. These new categories of drugs include:

- Entry inhibitors – drugs that interfere with HIV's ability to enter cells.
- Integrase inhibitors—drugs that interfere with HIV's ability to insert its genes into a cell's normal DNA.
- Assembly and budding inhibitors—drugs that interfere with the final stage of the HIV life cycle, when new virus particles are released into the bloodstream.
- Cellular metabolism modulators—drugs that interfere with the cellular processes needed for HIV replication.

In addition, scientists are learning how immune modulators help boost the immune system's response to the virus and may make the existing anti-HIV drugs more effective. Therapeutic vaccines are also being evaluated for this purpose and could help reduce the number of anti-HIV drugs needed or the duration of treatment.

### **Clinical Trials**

Clinical trials test drugs that are promising, but have not yet been proven effective. These are very important for reasons of Research and Development as they deal directly with real subjects.

Each new drug must go through two stages of clinical trials:

- **toxicity** (to determine whether the drug is harmful)
- **efficacy** (to measure whether the drug is effective)

Most clinical trials have strict eligibility rules. Eligibility criteria often include: viral load, T-cell (CD4) count, symptoms and opportunistic infections someone has, or has previously experienced, drugs taken in the past, and current drug regimen.

Many clinical trials are "double-blind," meaning neither patients nor researchers know which subjects receive drugs.

Some trials are also "placebo-controlled," meaning some percentage of subjects receives placebos ("sugar pills") instead of drugs, which could help them.

Scientists argue such trials are necessary in order to distinguish between the actual effects of a drug, and the psychological effects, which occur when someone is taking a drug that they believe is helping them (called the "placebo" effect). Many AIDS activists have questioned the ethics of conducting such trials on gravely ill people.

Whether to participate in such clinical trials or not is a very difficult decision for a patient to make. Some pros and cons to participating in clinical trials:

#### Pros

- Patients have a chance of receiving drugs that might help them, and which would be otherwise unavailable.
- Patients receive free medical care and blood tests related to the trial.
- Patients have the satisfaction of knowing they may be helping researchers identify drugs that will help others.

#### Cons

- In some trials, patients risk receiving a placebo.
- Participation in one trial may exclude someone from participating in another, later trial.
- Trials sometimes involve many time-consuming or even painful tests, and frequent medical visits.
- Patients risk possible harmful side effects from the drug(s) being tested.

It is important for people who choose to participate in a clinical trial to feel fully informed about, and comfortable with the rules of the trial, and with doctors who are carrying it out. People should also know they have the right to leave any clinical trial, at any time and for any reason.

Recently, clinical trials for microbicide gels and creams are being carried out in South Africa.

Scientists across the world are trying their best to come up with better preventive measures, vaccines and cures but there are restrictions, on information, technology and resources.

## **ROLE OF THE DIVIDED WORLD**

Today, the world is divided into countries. These countries are not ready to share information, technology or resources. These boundaries sketched on the globe prevent the proper allocation of resources.

If the world was free from boundaries and borders, the resources could be properly allocated and concentrated about the areas of high number of patients. But today, this seems impossible. The competition between countries prevents them from sharing their resources and technology.

Thus, the countries with high number of AIDS patients suffer due to lack of proper resources and at the end of it all it is the patients who are affected especially the patients in the underdeveloped and developing countries.

However, today many countries are ready to work for the disease together and share of information and technology has improved in this field.

But it can never match the case of a boundary free world.

India is a developing country and it also suffers due to such restrictions, it depends on progress of technology to help reduce the number of aids patients in the country.

## **ROLE OF INFORMATION & COMMUNICATION TECHNOLOGIES**

### **Internet**

In India, Information and Communication Technologies especially Internet presents an opportunity to counter some of the problems facing the health care delivery. In recent years, proliferation of Internet has been tremendous and the number of Internet users continues to rise. With the high rate of spread of the disease, the Indian health system poses new challenges that need to be tackled with the aid of information technology. The transition of India into an information economy presents opportunities to tap the information technologies, especially, Internet, for health care delivery. Internet as a medium of communication could help in coordinating the efforts to provide decentralized health services throughout the country under one umbrella.

The extent of broadband penetration in recent years provides an opportunity to reach the masses and impart them health education. Promoting preventative care and self-care using the Internet could alleviate the financial burden on the government due to rising health care delivery costs while increasing the efficacy of health care delivery.

There is a lack of cohesion among central and state governments' initiatives. A government-wide electronic information infrastructure could prove to be of great help to simplify service delivery, reduce duplication, and improve the level and speed of service to the public.

The public health services effort can be boosted with the effective use of Internet as a medium to deliver health information manage diseases and communicate health policies. The emphasis should be on the preventive health care, which requires access to right information at right time from right sources.

### **E-Health**

The term can be defined as an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. Mainly consumers looking for information and knowledge on health services are the driving force behind it. In other words, e-Health promotes public participation in health care and leads to informed patients. Internet is the medium to deliver such information to practice and preach self-care and preventative care. It equips citizens with tools to enhance their knowledge on diseases, monitor their health and at the same time interact with the healthcare providers. Informed patients can demand better health care and services.

### **Telemedicine**

It is linked to the medical professionals providing services remotely, while Private providers need to tap the Internet to keep their patients informed. Internet is the best medium to market the services offered especially to international patients. E-mail correspondence and online medical records could go a long way in establishing better patient physician/provider relationship.

The real potential of Internet for the development of public health can only be realized when it is viewed in the context of effective planning and coordination among various stakeholders and using technology to reach the health consumers. Information on vaccines, nutrition, diet, sanitation, and drugs can increase patient compliance, reduce drug abuse and improve overall health.

The challenge is to coordinate the various groups (NGOs, rural health workers, state government, central government, and private practitioners) to formulate an integrated strategy in delivering health care. The roles of each entity need to be clearly defined, their experiences shared and knowledge exchanged. There is a need to recognize the cultural and behavioral impediments to Internet usage and overcome them with training and education. Community health centers and primary healthcare centers need to function as the facilities for health information gathering and dissemination.

### **Teleconferencing**

As a mode of distant communication, Teleconferencing can help our doctors to get involved in seminars, and share and gain knowledge actively. Patients may themselves contact the doctors or counselors distantly, and help provide them cheaper medication. This can also help in information exchange between different countries and international experts on different aspects of HIV/AIDS. Thus idea of having a national teleconferencing system so that cities with only one sharp activist can connect to the rest of people is a viable one. This would both cut down price and time involved in getting help.



## Telecom Sector

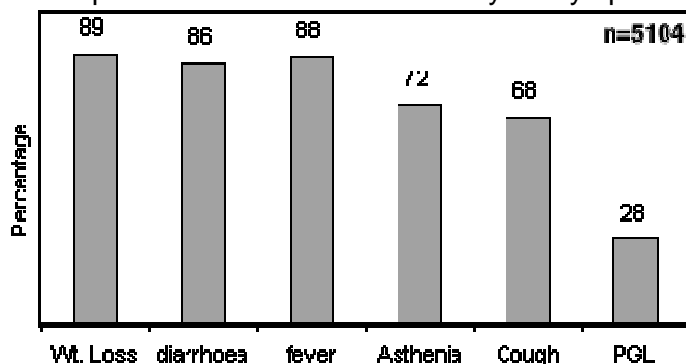
With the good amount of penetration of telephone connections in the country, this sector has the potential to reach out to the masses. Perhaps, innovative ways of creating awareness through these could be formulated. In fact, it is already being used, whereby people may call on Toll free numbers to have their queries answered. Not to mention, telephonic conversations with Doctors or other agencies naturally come to the aid of the diseased people.

## TREATMENT METHODOLOGIES

The present technology can help a patient by controlling HIV/AIDS but it cannot cure him/her. Many ways of treatment are available today to help HIV/AIDS patients. To treat an HIV/AIDS patient a proper diagnosis is essential and the accuracy of HIV/AIDS tests also plays an important role.

### DIAGNOSIS

There are many chances that initial infection produces no symptoms. Some people with HIV infection remain without symptoms for years between the time of exposure and development of AIDS. Many symptoms like those shown below:



### Presenting Signs & Symptoms of AIDS Cases in India

As HIV may cause no symptoms in the early stages of infection, the infection can be diagnosed only by testing the person's blood. Two tests are available to diagnose HIV infection - one that looks for the presence of antibodies produced by the body in response to HIV and the other that looks for the virus itself.

Antibodies are proteins produced by the body whenever a disease threatens it. When the body is infected with HIV, it produces antibodies specific to HIV. The first test, called **ELISA (Enzyme Linked Immunosorbent Assay)**, looks for such antibodies in blood.

If antibodies are present, the test gives a positive result. A positive test has to be confirmed by another test called **Western Blot or Immunofluorescent Assay (IFA)**. All positive tests by ELISA need not be accurate and hence Western Blot and repeated tests are necessary to confirm a person's HIV status. A person infected with HIV is termed HIV-positive or seropositive.

ELISA and Western Blot test combined are considered to be about 99% accurate. As ELISA requires specialized equipment, blood samples need to be sent to a laboratory and the result will be available only after several days or weeks. To cut short this waiting

period, **RAPID TESTS**, that give results in 5 to 30 minutes, are increasingly being used the world over. The accuracy of rapid tests is stated to be as good as that of ELISA. Though rapid tests are more expensive, researchers have found them to be more cost effective in terms of the number of people covered and the time the tests take.

The HIV- antibodies generally do not reach detectable levels in the blood till about three months after infection. This period, from the time of infection till the blood is tested positive for antibodies, is called the **Window Period**. Some times, the antibodies might take even six months to show up. Even if the tests are negative, during the Window Period, the amount of virus is very high in an infected person. Hence, if a person is newly infected, the risk of transmission is higher.

If a person is highly likely to be infected with HIV and yet both the tests are negative, a doctor may suggest a repetition of the tests after three months or six months when the antibodies are more likely to have developed.

The second test is called **PCR (Polymerase Chain Reaction)**, which looks for HIV itself in the blood. This test, which recognizes the presence of the virus' genetic material in the blood, can detect the virus within a few days of infection

There are also tests like **Radio Immuno Precipitation Assay (RIPA)**, a confirmatory blood test that may be used when antibody levels are difficult to detect or when Western Blot test results are uncertain. Other available tests are Rapid Latex Agglutination Assay, a simplified, inexpensive blood test that may prove useful in medically disadvantaged areas where there is a high prevalence of HIV infection, and p24 Antigen Capture Assay.

There are also certain home tests available to detect HIV. Most of them have been proven inaccurate but there are certain home tests considered accurate and used around the world. However, home tests are not popular in India.

Thus, there are many ways to diagnose HIV but the most popular ways of diagnosis are:

- HIV infection: Diagnosed on the basis of blood tests using three different ELISA/Rapid simple tests using different antigen preparation.
- AIDS cases: Diagnosed on the basis of two different ELISA/Rapid tests on different antigens and presence of AIDS related opportunistic infections.
- Western Blot test: Used for confirmation of diagnosis of indeterminate ELISA tests.

According to the result of the test, one has to take the appropriate steps:

**A negative test result:**

If one has not engaged in any risky behaviors for the last 6 months, one is not currently infected with HIV. If one has had unprotected sex or shared needles or have other risk factors in the last 6 months, one should be tested again. One can still be HIV positive, and pass the HIV on to other people, even though the test is negative.

A negative test does not mean that one is immune to HIV. Some people who have a negative test may be tempted to continue risk behaviors, believing "It can't happen to me." If one continues unsafe behaviors, one is still at risk.

### **A positive test result:**

- One is infected with the HIV virus. This does not necessarily mean that one has AIDS.
- A person with HIV is infected for life. He or she can pass the virus to others by having unprotected sex, or by sharing drug use needles or equipment. To protect self and others, one needs to avoid doing these things. A woman who has HIV can pass it on to her unborn or breast feeding baby. Ones carrying HIV virus should not donate blood, plasma, semen, body organs, or other tissue.
- One should choose a doctor to monitor the progression of HIV in your body, and advise as to when it is appropriate to begin treatment.
- If one's HIV test is positive, his/her sexual partners and anyone with whom one has shared drug injection equipment should be advised to seek HIV counseling and antibody testing.

In some countries, the tests for HIV/AIDS are essential for the issue of a marriage certificate, but there is no such law prevalent in India.

### **Benefits of Tests**

- Immune system monitoring and early treatment can greatly improve one's long-term health and give him/her wider range of options for treatment than he/she would have at a later stage.
- Knowing that one is positive may help change his/her behaviour that would put him/her or others at risk.
- Women and their partners considering pregnancy can take advantage of treatments that potentially prevent transmission of HIV to the baby.
- Gives one mental satisfaction in case of a negative test and relieves the worry of might have been infected.

Thus, we have many benefits of taking these tests. If a person is infected, he/she has to start taking treatments to control the disease.

### **TREATMENT**

There are three primary approaches to treating HIV disease:

- Antiretroviral Therapy (most effective)
- Immune Boosting Therapy
- Treatment and Prevention of Specific Opportunistic Infections

Usually, the last two are combined with ART for better results.

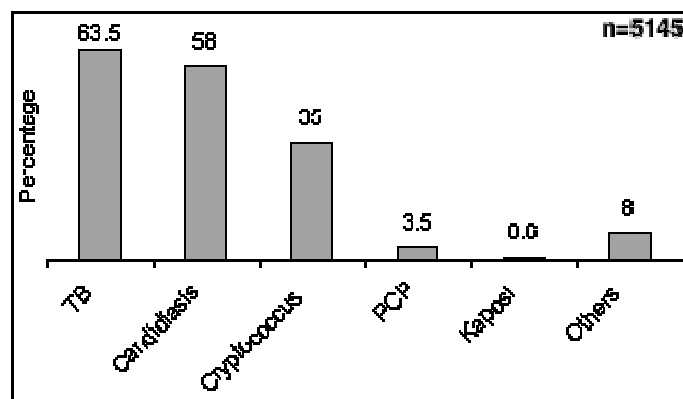
#### **Immune Boosting Therapy**

Immune boosters are also called "immune modulators." Instead of suppressing the HIV virus, these drugs help make people's immune systems stronger.

Immune boosters attempt to bolster the body's ability to fight HIV, and/or to fortify the immune system against HIV's attack. Some experimental vaccines are attempting to strengthen the body's immune response to a point where it could actually overcome HIV. Studies presented at the 12th World AIDS Conference in 1998 suggest that these so-called "therapeutic" vaccines, combined with aggressive anti-viral therapy, may improve the body's response to HIV. Other treatments boost CD4 count (T-cells), though this approach is not believed to be useful unless it is combined with an antiretroviral treatment.

### Treatment And Prevention Of Specific Opportunistic Infections

Scientists believe that many opportunistic infections that make these patients sick can be controlled, prevented or eliminated. This has substantially increased the longevity and quality of life for people living with AIDS.



**Opportunistic Infections in AIDS Cases in India**

Preventive treatment (prophylaxis) for the following preventable AIDS-related conditions are highly recommended:

- Pneumocystis carinii pneumonia (PCP)
- Mycobacterium tuberculosis (TB)
- Toxoplasmosis or "Toxo"

Above are certain diseases for which AIDS patients have to take special care.

These were two treatments used widely for the treatment of AIDS but none can match the effect of Antiretroviral Therapy, which is considered the most effective and so these are combined with ART for better results.

### ANTIRETROVIRAL THERAPY (ART)

The goal of antiretroviral therapy is to disable HIV replication. For instance, AZT, ddi and ddC all interfere with production of reverse transcriptase, a protein the virus must use in order to reproduce. Protease inhibitors, such as Crixivan, interfere with HIV's use of the protease enzyme, another essential component to its reproduction.

## **Principles of ART**

Antiretroviral therapy is based on the following principles:

- HIV replication is relentless and leads to progressive immune damage
- Viral load and CD4 counts are important markers of disease progression
- Maximal viral suppression is the goal of therapy
- Simultaneous initiation of three drugs is important
- Women receive ART regardless of pregnancy status

## **Antiretroviral Drugs**

Twenty drugs have been approved for treating individuals with HIV infection. They are called antiretroviral drugs because they attack HIV, which is a retrovirus (Retroviruses are a class of enveloped viruses that have their genetic material in the form of RNA and use reverse transcriptase to translate their RNA into DNA.)

Once inside the cell, HIV uses specific enzymes to survive. The first approved classes of antiretroviral drugs that were approved work by interfering with the virus' ability to use these enzymes.

These antiretroviral drugs fall into the following two categories:

- **Reverse transcriptase (RT) inhibitors**

RT inhibitors interfere with an enzyme called reverse transcriptase or RT that HIV needs to make copies of itself. There are two main types of RT inhibitors, and each works differently.

- Nucleoside/nucleotide drugs provide faulty DNA building blocks, halting the DNA chain that the virus uses to make copies of itself. E.g. Abacavir, DdC, Ddl, d4T, 3TC, ZDV, Tenofovir
- Non-nucleoside RT inhibitors bind RT so the virus cannot carry out its copying function. E.g. Delavirdine, Neirapine, Efavirenz

## **Protease inhibitors (PI)**

Protease Inhibitors interfere with the protease enzyme that HIV uses to produce infectious viral particles. E.g. Ritonavir, Saquinavir, Indinavir, Amprenavir, Nelfinavir, Lopinavir, Atazanavir, Etricitabine, Fosamprenavir calcium

The latest class of antiretroviral drugs is called fusion inhibitors.

- **Fusion inhibitors** interfere with the virus' ability to fuse with and enter the host cell. They work by changing the shape of the gp41 envelope protein surrounding HIV. E.g. pentafuside

The currently available drugs can help control the disease but **cannot cure** the HIV infection. This is because the current drugs can suppress HIV but are unable to eliminate it from the body.

Since HIV can become resistant to any one drug, researchers use a combination of antiretroviral drugs to suppress the virus.

There are many different RTIs and PIs made by different drug companies that work just a little bit differently from each other. Most people with HIV get a combination of these different antiretroviral drugs. This is called '**combination therapy**' or '**a drug cocktail**'.

A drug cocktail of antiretroviral drugs is often called **Highly Active Antiretroviral Therapy, or HAART**. It is a mix of at least three different antiretroviral drugs. It can help reduce the amount of HIV in the body, which gives the immune system a chance to repair itself.

Although the use of HAART has greatly reduced the number of deaths due to AIDS, this powerful combination of drugs cannot suppress the virus indefinitely. In addition, while people with HIV are living longer, new medical problems are surfacing. Even those individuals who take antiretroviral drugs can pass on HIV to others through unprotected sex.

These Antiretroviral Drugs can help a patient live a healthier life but they do have drawbacks.

### **Drawbacks of antiretroviral drug use**

People with HIV have to take medicines with complicated regimens, often taking several drugs per day, some of which may require the person to fast. Patients may have difficulty adhering to these complicated regimens, find the food restrictions difficult to deal with, and may experience unpleasant side effects such as nausea and vomiting.

Aside from the complicated dosing regimens, antiretroviral drugs themselves may cause side effects and significant medical problems. Metabolic changes occur in people with HIV infection. Some of these changes may be related to the antiretroviral drugs, and may include abnormal fat distribution, abnormal lipid and glucose metabolism, and bone loss.

Some anti-HIV drugs are toxic to mitochondria, the energy producers in cells. Tissues that require high levels of energy, like muscles and nerves, are most susceptible to the effects

of damaged mitochondria. Muscle wasting, heart failure, nerve damage, degeneration of the liver, and inflammation of the pancreas may be associated with mitochondrial damage.

ART has many side effects and this often makes the patients hesitate in taking the treatment or delay the treatment, which worsens their condition. Early treatment is always better than delayed treatment due to various reasons.

## **CONSTRAINTS**

Number of HIV/AIDS patients in India is very high, but the number of patients taking the treatments is very low, and this happens due to various reasons and constraints.

There are many people in India who require ART but they don't take the treatment by choice.

In a kind of a census conducted in South East Asia Region (SEAR) countries in 2003, it was found that there are approximately 4,580,000 people (out of total 6 million in all SEAR countries) in India with HIV out of which 600,000 people need the treatment badly but only 13,000 people are taking the treatment.

Thus, we see that very low number of HIV/AIDS positive people take the appropriate treatment and there can be a million reasons for it. Below are a few main reasons for such a low number:

### **Ignorance and Non-acceptance of Western Medicine**

Many patients are ignorant to medicines and treatments, the problem is that they don't believe, they don't trust the treatments, and a treatment cannot make a patient feel better unless the patient believes in it as much so that at least he or she can take it, and take it seriously.

Some people might prefer to go for Indian therapies like Ayurveda, etc.

### **Superstitions and Beliefs**

In India, not every patient is ready to believe the huge words Antiretroviral Therapy; some may even think it sounds devilish. It is strange but in small places it is true due to lack of proper awareness and guidance. India does have many myths and misconceptions floating around and these prevent the patients from taking the appropriate treatment. People believe and involve themselves in pooja(s) and sadhoo(s), which are of no good. In such cases, the patient might not take any treatment or might take alternative treatments.

### **Side Effects**

Drugs and treatments developed to help an HIV/AIDS patient are not fully secure. They have many side effects and can lead to many medical health problems. This makes the patients hesitate in taking these treatments.

Therefore, there are various reasons, which prevent all the patients from taking these treatments. The government of India also realizes this and has taken various steps to help people overcome these constraints. As a whole there have been many improvements in this area.

## **ALTERNATIVE THERAPIES**

In India, many alternative treatments are prevalent some of which are briefly described here.

### **Ayurveda**

Many people in India say and believe that Ayurveda can help in preventing AIDS by strengthening the body's defence system through herbs and a supplementary code of conduct. People also believe that medicines like Guduchi Rasayana in Ayurveda, which help build a stronger immune system, can cure HIV/AIDS.

This has not been proved and the allopathic doctors highly object such claims.

However, such medicines in Ayurveda help the patient achieve mental relaxation and do help them physically to some extent. These medicines are widely used in the country.

### **Herbal Medicines**

In India, not just herbalists but naturopaths, homeopathic, Ayurvedic, Native medical practitioners all use herbs as one component in an overall system of medicine. Herbs are also widely used in the country of China. Herbs are used extensively in hopes of improving immune response and reducing symptoms. Aloe Vera, St. Johnswort, echinacea, licorice, and ginseng are a few of the herbs used to treat HIV/AIDS.

### **Homeopathy**

Homeopathy is based on the principle that "like cures like," that is, substances that in large doses would cause adverse symptoms will, in small doses, treat those same symptoms. Homeopathy is highly individualized to a patient's symptoms and is widely spread in the country.

### **Acupuncture**

Acupuncture raises levels of endorphins, white blood cell levels and anti-body levels thereby increasing the body's level of immunity. Many AIDS carriers have reported a general increase in health and well being due to acupuncture treatment and scientific studies are continually done on this basis.

Acupuncture has also had much success in treating chronic fatigue and mental stress, which is experienced by many AIDS patients.

### **Body Work and Massage**



Massage can help people with HIV/AIDS relieve chronic muscle tension and ease the mental and emotional stress that accompany the illness. Therapeutic massage is not only beneficial in relieving a variety of physical symptoms including chronic pain, but it may also be effective for relaxation and stress reduction. Body manipulation/massage techniques that are being used to treat HIV/AIDS include Reiki, Shiatsu, acupressure, deep muscle therapy, polarity therapy, Rolfing, therapeutic massage, and many others.

Chiropractic medicine is a system of therapeutics that attempts to restore normal function by manipulation and treatment of the body structures, especially those of the vertebral column. Through manipulation, chiropractors may be able to relieve joint stiffness and pain, which are common complaints of HIV/AIDS patients.

Yoga helps the individual balance the body's chakras or energy centers. Its practitioners believe that yoga can aid in detoxification, strengthen particular organs, improve stamina, and alleviate chronic fatigue.

### **Mind-body Therapies**

Sometimes called psychoneuroimmunology (PNI), these approaches are based on the concept that the mind or brain can influence the body's ability to fight disease.

Meditation may be used to reduce tension, fatigue, or anxiety and increase resistance to stress. This greatly helps HIV/AIDS patients.

Visualization is the process by which a person is directed to see him or her in some other physical, emotional, or spiritual state. Patients are guided to imagine themselves in a state of vibrant health and the disease organisms as weak and destructible. Through these mental images, patients try to direct their immune systems to fight the virus. Other mind-body techniques for people with HIV/AIDS in India include hypnosis, humor therapy, biofeedback training, and listening to inspirational or relaxing audiotapes.

### **NUTRITIONAL NEEDS OF AIDS PATIENTS**

Good nutrition is essential for staying healthy and fit, keeping the immune system strong, fighting infections and keeping you nourished. During AIDS, the immune system of the body is weakened and the body is not able to fight infections. Since a healthy diet helps in maintaining a strong nutritional status, it is very important for these patients to maintain good nutritional habits. Because of the AIDS virus and the side effects of the medicines, the patient becomes deficient in nutrition. In fact, malnutrition is prevalent among all patients and increases muscular wasting which can cause death.

The diet plan for HIV/AIDS patients should be strongly aimed at:

- Reducing the loss of body muscle: Proper nutrition in combination with medicines can help to replete the loss in muscle mass.
- Preventing nutrient deficiencies: There should be an adequate supply of all the nutrients, either through the diet or via medicinal supplements. Supplements should be taken after consultation with a medical specialist.

- Preventing food poisoning: Incidences of food poisoning can be avoided with certain precautions such as washing raw foods properly, cooking meats and eggs properly, reading the 'best before' dates, boiling water etc.

In general, the patients should be given nutritious foods such as meat, fish, poultry, milk shakes etc. Exercise should not be avoided but should not be overdone also. Exercise helps to build up the muscle mass. The frequency of eating should be increased and meals should be small but frequent.

Dietary supplements can also be used in an effort to boost the immune system. Foods or substances derived from foods (garlic, Chinese bitter melon, turmeric), as well as nonfood dietary supplements such as shark cartilage or blue-green algae (spirulina) can be used. Vitamins, minerals, and amino acids can also help boost the immune system.

There is no nutritional means of curing or preventing the AIDS infection but adequate nutrition does help in retarding the disease condition. This is very important especially in case of infants and children, as they are very sensitive.

## **HIV/AIDS IN INFANTS**

The treatment of AIDS cannot possibly be the same for all patients; it differs from patient to patient depending on individual needs. Among the various age groups, the worst case is that of children and many children in India suffer from this disease.

Most of the infants having HIV/AIDS are infected before birth. About 30 percent of the infected mothers pass the virus to their children in the womb. Prior to current screening of blood donors, children could also be infected through transfusions.

Infants can be tested for the presence of the HIV virus in the blood or tissue by culture when there is a suspicion of the mother having the HIV infection, although only 30 percent of such children will actually acquire the virus from an infected mother.

Treatment of children involves an increasing array of antiretroviral agents that inhibit the replication of the virus. Utmost attention also needs to be given to every aspect of care for these children including:

- Good nutrition
- Appropriate immunization
- Early recognition and aggressive treatment of infections
- Prophylactic antibiotics in selected children
- Recognition and treatment of the psychosocial needs of the child and family

The best method to prevent a child from getting AIDS is that the parents should be free of the disease before the child is conceived but even if it is not the case proper care should be taken.

Studies show that an HIV/AIDS infected mother in the absence of any intervention has nearly 30% chances of passing the disease to her baby via **Mother to Child Transmission (MTCT)**. However, if the mother is put on treatment during pregnancy, the chances can be reduced to about 6-7% and in case of proper treatment given at the proper time to about 0.8%. This is a great development as now the chances of MTCT can be reduced to nearly nil owing to the treatments available today.

Many hospitals and clinics in India provide this sort of treatment for pregnant mothers and so the chances of spread of the disease via MTCT have been greatly reduced in the country.

## **ROLE OF MEDIA**

Media can play a pivotal role in fighting against HIV/AIDS. It has been over 20 years now that we know about AIDS epidemic, its causes, its effect and impact on society. But if seen on a global scale, public understanding about AIDS is mixed. That is some are aware of it fully while some are unaware and prone to this disease. Still on such a large scale, basic awareness regarding AIDS and its controlling measures is lacking in many parts of the world. This is where media can play a great role and making people informed about the AIDS from its roots.

Media has a far-reaching effect; its global infrastructure and communication abilities can be profitably exploited to inform common mass. No other medium is as effective and media's ability is virtually unparalleled.

Among the many ways media can make a difference in the AIDS epidemic:

1. Designate the fight against HIV/AIDS with a high degree of priority
2. Allocate substantial time and space to the issue, including programming, editorial and advertising;
3. Provide current news coverage of the epidemic, both globally and locally;
4. It can support reporters' etc. for a complete coverage of the epidemic.
5. Development and broadcasting of HIV/AIDS-related shows, films, and documentaries;
6. Encourage the integration of HIV/AIDS programs globally
7. Provide comprehensive integrated efforts to educate people about HIV.

So far media has attained a certain degree of success, but the efforts need to be strengthened up for a better result. So far, media has launched various campaigns against AIDS and the result is encouraging. Various advertisements, billboards, handouts, posters etc have been placed and it had made an impact on people. In Mumbai, an AIDS campaign was launched which dealt about a fictitious character ' Balbir Pasha' who got AIDS and its effect on him and his family. Billboards, posters, advertisements were put over everywhere in Mumbai and the effects were presented in a manner, which received complete public attention.

Media needs to take more initiative and the advertisement campaigns must touch the heart of a common man if we wish to overcome the epidemic.

## **CAMPAIGNING**

### **World AIDS Day**

World AIDS Day, which is recognized internationally on December 1st every year, started in 1988 to focus global attention on the HIV/AIDS epidemic across countries, organizations and governments. It is not just about raising money, but also about raising awareness, education and fighting prejudice. World AIDS Day is also important in reminding people that HIV has not gone away, and that there are many things still to be done. "*Women and AIDS*" is the theme of the 2004 World AIDS day. Over the years, the emphasis has shifted from a more generalist approach to an individual one.

### **World AIDS Campaign 2004**

This is a new campaign started this year to add a new chapter in the attempt to combat AIDS. The theme for the World AIDS Campaign 2004 is "*Women, Girls, HIV and AIDS*". The year-long campaign, culminating in World AIDS Day on 1 December, seeks to accelerate the global response to HIV and AIDS through a focus on women and girls – preventing new infections, promoting equal access to treatment and mitigating the impact of AIDS.

### **Red Ribbon Campaign**

The Red Ribbon is the international symbol of HIV and AIDS awareness. It is generally seen as a symbol of solidarity and a commitment to the fight against AIDS. It was conceived in 1991 by Visual AIDS, a New York-based charity group of art professionals that aims to recognize and honor friends and colleagues who have died or are dying of AIDS. Inspired by the yellow ribbons honoring American soldiers of the Persian Gulf War, they say that the color red was chosen for its connection to blood and the idea of passion.

### **Indian Oil Highway Clinics**

Studies have suggested that the truck drivers' high-risk behaviour has exposed them to contracting the HIV infection. Following this, the national highways could be seen as the carrier of infection. Realising this, the Bill and Melinda Gates foundation has decided to use Indian Oil Corporation's formidable network of 8,500 outlets around the country to stock and distribute condoms. The strategic tie-up between IOC and the foundation has acquired significance with the identification of truck drivers and their helpers as one of the most vulnerable groups. Petrol pumps will soon double up as clinics to treat sexually transmitted infections along with promoting condom use among truck drivers and their assistants.

## **Prevention of HIV/AIDS**

Prevention is the key to reduce the future burden of HIV/AIDS on individuals and societies. HIV/AIDS is stubbornly resisting quick and narrow responses stemming its spread and mitigating its pervasive impact. It is essential that we correct the fundamental inadequacies that propagate its transmission.

Awareness is the key to prevent the infection and group to be targeted is the 15-24 years age group. Voluntary and confidential HIV testing and counseling should be promoted

among the youth. Another interesting way could be engaging young people who are living with HIV/AIDS. This might help to get proper attention from others.

Women being more vulnerable have been targeted by many of the awareness programmes. But it hardly works out that way. They enable women to protect themselves through condoms or abstinence from sex. In the present society, it is always men who decide whether women can protect themselves during sex or not. So it is better if the awareness programmes are more targeted towards men to change their behavior.

Condoms are the best method to prevent HIV infection but not everyone uses them. There are Microbicides and Gels, which are recent developments to prevent the transmission of HIV/AIDS. The gels, or microbicides, act like an invisible condom and could offer added protection against the virus.

Microbicides when applied before sex will be most effective when used along with other prevention methods against AIDS. Microbicides would allow women, who account for half of new HIV infections worldwide, to protect themselves if their partners will not use condoms.

Proper care should be taken during blood transfusion so that no HIV positive blood is transmitted into another body and sterilized syringes should be used.

## Talk With Dr. Atul K. Patel

On 26<sup>th</sup> March 2004

**Swetha:** Sir, how have you been inspired to specialise in AIDS

**Dr. Patel:** I did my pre-medicine in 1992 March. I cleared my exams and after clearing exams, while taking round in our Civil Hospital, I found and suspected one patient, that probably she is having HIV infection, so I asked my junior to get her HIV test done, that was my first patient. It was just after clearing and in the same week, we had two patients referred from other institute to my unit. So, Now we have three HIV patients in the year 1992, and we had collected eleven patients subsequently and submitted the data in our state level conference.

That was the time we had started reading lots of HIV infections in 1992, because now we are getting many patients and it was projected that India would be largest population of HIV patients. So I thought that, ... because most of doctors in 1992, they used to avoid HIV infected patients in their practice. They did not like to handle HIV infected patients.

Even today also many institutes do not offer hospitalization of HIV positive patients. So, that were the first few things, from which I started, ... started gaining interest in managing HIV patients.

**Ashish:** So, you have been associated with AIDS for the last 13 years.

**Dr. Patel:** 1992 is...ya 12 years, 12-13 years.

**Ashish:** Sir, how many patients are undergoing treatment from you right now?

**Dr. Patel:** Right now I have more than 1500 persons taking anti-HIV drugs

**Ashish:** How do you exactly tell a person that he is positive?

**Dr. Patel:** Usually, the patients came to my clinic; they are already tested and declared positive. So, I do not have any experience of declaring that you are HIV positive because most of the patients they have been diagnosed outside, they have a report in their hands, and then because of their seropositive status, doctors refer that person to my clinic

But ideally, before suppose if you are I mean asking me a science ideally suppose I suspect HIV in someone, I have to tell that patient, it is... we call it as pre-test counseling. So, I have to discuss the problem with the patient, that look I found this this thing in your examinations, your complains are like this... this... this, and because of these findings, I am suspecting that probably you have HIV infection, so would you mind if I ask you to get tested, so this type of consent, this type of pre-test counseling is required, so if somebody agrees, doctor go ahead and test my sample for HIV then and then you can submit or then and then you can send that person for HIV test and suppose HIV result comes truly, before telling anything to that patient, I need to do a post-test counseling that means I have to ask again to that patient, what is your expectation, what do you expect from the results that we have drawn then probably if the patient is a literate one and I mean he is having a highly sexual behaviour or a history of blood transfusion so probably he will say that doctor probably I think it may be a positive. So, this how we have to increase the acceptance of the results by the patient. It is known as the post test counseling. Ideally, we have to do pre and post test counseling then and then you can declare, then and then you can disclose the test results to the patient, but in my clinic I do not have to go for a pre or post because patient come with a positive report they knew their HIV positive status and now they are coming for a treatment.

**Divya:** Sir, how do all the people react towards them, the family members... other patients?

**Dr. Patel:** Very good, I mean you see all these patients are HIV positive patients. If you are coming at 11:30 or 12, then probably the patient would start from the downstairs. They are in that much queue. So the family and social acceptance is very good. Its not like that that they have a family or social rejection.

**Divya:** sir, what about isolation

**Dr. Patel:** Nobody is doing isolation nowadays, even people also. Isolation is not required, they are not infectious. HIV patients are not infectious.

**Amod:** Sir, what sort of treatments is available in India

**Dr. Patel:** We have almost all anti retroviral drugs, except for the last four or five new drugs, we have all anti-HIV drugs available in India, at very cheaper rates

**Swetha:** Do you have any idea about the NGOs which help in...

**Dr. Patel:** We have, I mean ...quite a few NGOs in Ahmedabad and Gujarat but...because I have never taken interest in how NGOs are working in Gujarat or what are their areas or how they function, so I don't know, but we have ... I mean Gujarat AIDS prevention, we have Ahmedabad AIDS society, so we have quite a few NGOs.

**Swetha:** We know that treating AIDS patient is very expensive

**Dr. Patel:** Its not expensive. Previously it was very expensive, if you are telling me that how I was prescribing to my patients in 1996-97 to 2000 at that time the drugs was costing in thousands like 20 to 40 thousand rupees a month but nowadays drug will cost 1250 rupees A month. it is cheaper than taking treatment of diabetes and hypertension, if diabetes patient is taking... usually treatment cost per month is more than 2000 rupees.

**Swetha:** Sir, exactly what are the age groups, from which they come?

**Dr. Patel:** Most of them are very young, between 20 to 40 years, those who are sexually active, they I mean acquire HIV infection.

**Divya:** Any younger children?

**Dr. Patel:** Ya, we have... we have babies also.

**Swetha:** That is because of mother to child transmission...

**Dr. Patel:** mother to child transmission

**Swetha:** Other than that ... I mean college students

**Dr. Patel:** ya quite a few college students

**Divya:** Sir, You have attended many conferences on AIDS, what are the main topics that are discussed

**Dr. Patel:** Since last three years, I am attending conference, which is pertaining to the basic science and research. I am not attending any world congress ie I mean ... gathering of the doctors from the entire world those who are handling AIDS patients Since three years, I am not attending any world congress, but regularly I am presenting my datas to these conferences on retrovirals and infections that is a peer headed conference for selected scientists and there I mean the topics for

cro they are pertaining to basic research in HIV pathogenics, basic research in the management and identifying newer weapons, newer science for targeting HIV.

**Ashish:** How do you see AIDS 10 years from now

**Dr. Patel:** How I see...

**Ashish:** AIDS 10 years from now, the overall scenario.

**Dr. Patel:** Scenario...I can't predict

**Ashish:** I mean if you could predict on the basis of the rate at which it is spreading, and the rate at which the technology is trying to...

**Dr. Patel:** ...Combat

**Ashish:** Ya, so how do you see ... actually some of them say that after 10 years from now or 20 years from now, quite a large chunk of our national development funds would have to be diverted towards this.

**Dr. Patel:** Exactly, this year I mean from this year onwards, I mean our health minister says that probably they are going to provide anti retroviral therapy free in India in selected 5 states like Maharashtra, Tamil Nadu, Andhra Pradesh, Nagaland and Manipur, so in these 5 states, the HIV infected patients are probably receiving free anti retroviral drugs from 1<sup>st</sup> of April, so in near future, so that would definitely cost to the government

**Swetha:** Sir, is there any scope of getting up to some kind of technology which can prevent AIDS or which can cure AIDS?

**Dr. Patel:** Ya, we have quite a ... I mean new research in the management of HIV infected patients but I mean still we are not hoping or we are not aiming a cure with this new weapons also.

**Aunindra:** Can two HIV patients marry each other and live together.

**Dr. Patel:** So, you mean to say that can HIV positive men marry HIV positive women... ya... if both are having the same immune status, immune status is the degree of immune destruction in HIV infected patients, so if both are healthy and both are having a stable immune status, I don't see any risk of them getting married. They can definitely get married.

**Swetha:** Can they have children?

**Dr. Patel:** They can have good children, HIV negative children

**Swetha:** HIV negative children!

**Dr. Patel:** Ya

**Ashish:** But what about mother to child transmission...

**Dr. Patel:** Ya, mother to child transmission. If some female is pregnant who is HIV positive and we are not giving any external help means we are not taking enough care to that HIV positive mother and she delivered her own at remote places, this is one situation, right then the chances of hiv transmission to the baby is just 25-40%. In India it is 30%, if you are not doing anything to hiv positive mother. so that means that even providing any great, 70% chances of getting hiv negative baby is there. But, if I am giving a treatment, suppose the mother is regularly attending our clinic and if I started therapy from 4<sup>th</sup> month of pregnancy onwards, chances of acquiring hiv infection to



the bay is 6 to 8% and it can be further reduced to 0.8% so recent data says that it is 0.8%, it is not 6-8% or it is less than 1%, so 99 babies would be negative baby and even at this center also, we have delivered almost 29 pregnant mothers and none of the babies is positive, but this number is very small to say that 100 % negativity right now, just 29 deliveries that we have conducted in last few months and all the babies are negative

**Ashish:** Sir, is there any medicine available in Ayurveda for the treatment of AIDS?

**Dr. Patel:** I don't know about Ayurvedics

**Ashish:** I mean if you have heard about something, because of them claim some medicine. You have been associated with the disease for so long, so probably you would have come across some such thing.

**Dr. Patel:** I usually ignore these kind of news because either I mean that person who is claiming very high must be a mad kind of person because to claim a cure in this disease requires lots of research because I mean they may not be aware of what are the sentuary sides of hiv, from where HIV can reappear, and that's why they may be claiming very high that they have cured and if you look at the natural history of HIV suppose somebody gets hiv infection today and that patient is not seeking any medical advice then how long that patient will remain healthy asynchronic life... I mean what is your expectation, suppose today somebody gets hiv infection

**Ashish:** Sir, As far as...

**Dr. Patel:** How long he will remain asynchromatic, free from the diseases

**Ashish:** Sir, as he has... I mean as long as his immune is not affected, and is free from other diseases

**Dr. Patel:** Tell me in years

**Swetha:** 10 years

**Dr. Patel:** Tell me in years, how long he can remain healthy, asynchromatic

**Ashish:** I mean ... I don't have exact information on this...but...

**Dr. Patel:** But we have exact information in the national history of HIV

**Dr. Patel:** So, you probably, I mean you are not knowing how long patients can remain healthy. It is 7-10 years, she is right. Right, so what it means, is suppose after 2 to 3 years of acquiring hiv infection, if this fellow goes to a quack like ayurvedacharya and he is giving some medications, any ayurvedic medication right, but that chap is going to remain asynchromatic for another 5-6 years because this is the natural history of hiv that he will remain symptom-free for 7-10 years time, but during this asymchromatic phase if he visits any ayurvedic or any quack who claims that I have cured this person, because he is not getting any infection, he is keeping his health, he is gaining weight, or everything is fine, right so this type of false claims are because of these long asymchromatic phase.

**Aunindra:** How do you know the origin of AIDS. I mean we have heard all sorts of news or all sorts of articles that it is due to some monkeys and...

**Dr. Patel:** Same sort of news and articles that I am also reading. Origin is very difficult to identify because scientist have isolated virus way back in samples of 1958 also so they stored many samples like smallpox for research purpose and the have tested this storage sample of 1958 and they also found HIV detectivity from that samples so probably, this virus is very old virus and

because of spontaneous mutations, it becomes more aggressive and produces diseases into the human being, but exact we never know, from where it is originated, from where it came and there is some other virus, which infects monkeys and amphibians called the siemen immuno deficiency virus, this SIV or siemen immuno deficiency virus is also very similar to HIV if you analyse the hetrogenic profiles of siemen immuno deficiency virus, it is exactly same as HIV virus, so probably, there are some theory or hypothesis that probably it is SIV which converted into the HIV and produces human diseases.

**Ashish:** What are the common myths and misconceptions in terms of the disease?

**Dr. Patel:** Now we have very... I mean less myths and misconceptions because previously I mean they do not touch the patient, they don't allow to drink and eat food from the same utensils, that they thought that probably if I drink water from the same glass, I may acquire so I m probably this type of myths now they are using the same utensils but still the one myth which still having the long faith is mosquito bite because they always argue that mosquito is a blood sucking organism when it is transferred from one person to other person you may get HIV infection but we have a large evidence from African countries where HIV and malaria is hyper endymia malaria is very rampant and HIV is also rampant there, and even today, after more than 20 years of epidemic in African countries, we do not have any reported cases of hiv related to any insect bite, not only mosquito, any insect bite.

**Swetha:** How are the counseling sessions done?

**Dr. Patel:** I don't have time to counsel the patients.

**Aunindra:** Is it one of the fact that the virus does not survive in mosquito.

**Dr. Patel:** Its true because if you look at how the mosquito bites and how digests the blood once this virus enters into mosquito's stomach, most of the virus gets cleared because the half life of free virus even in the human blood is 30 min so it is very fragile virus and is easily killed by the natural process so half-life is just 30 minutes so once the free virus is outside the human body it is difficult for that virus to survive and that is the reason that the virus is unable to transmit through this insect bite, and secondly the proboscis of mosquito provides unfavourable environment to sustain, to survive by this viruses so cannot produce any infection in humans

**Swetha:** Sir, How do women in particular react?

**Dr. Patel:** How do...?

**Swetha:** women in particular react

**Dr. Patel:** I mean most of the female, they are the innocent victims, because they have acquired HIV infection from their sexual partners or husbands or from the blood transmission still we have a good number of patients having HIV from the blood transfusion, unsafe blood

**Aunindra:** In case of MTCT, what sort of treatment should be undergone for the newborn?

**Dr. Patel:** so the baby born to the HIV positive mother. This baby requires a six-week course of Zidovudine syrup. After six weeks baby can discontinue anti-viral therapy

**Ashish:** Sir, You have had a long contact with AIDS patients. Is there any particular story, which you would like to share with us?

**Dr. Patel:** Stories?

**Ashish:** I mean... any special case or any incident related to any patient.

**Dr. Patel:** ...because I am not interested in any kind of stories, I can collect my scientific data and analyse...

**Ashish:** Stories is a different thing sir, what I meant is, any particular case

**Dr. Patel:** You mean to say longest survival in Ahmedabad...

**Ashish:** Whatever you feel I mean...as special...

**Swetha:** ...different...

**Dr. Patel:** ... is different from others. I can tell you something a few of the patients. I have one of the patients who is taking anti-viral therapy since February 96 and he is still in a very good health, he has tolerated treatments nicely, so probably the longest survivor at my clinic is 8 years and still patient is surviving on treatment. So, this is one about particular, because 8 years survival from 96 onwards, because in 96, we had a very little anti retroviral drugs available fortunately the patient's son is staying at New Jersey. So, he was sending all the medications costing almost 40,000 rupees a month to his father so he is surviving this is number one. We have quite a few patients receiving only double nucleoside therapy. For treatment of HIV, we need to give three drugs, this is a standard of therapy but I have quite a few patients that ... patients are receiving only two nucleosides and they are still maintaining their good health for more than four years time so this is something unusual because most of the double nucleoside, which is considered as a sub optimum therapy and the patient usually fails within 48 weeks of time, so within one year time, patient is failing on this therapy, but these three patients, they are doing extremely well with sub-optimum therapy, so this is something which very confusing, which requires further investigation, why these patients are doing great with only two drug therapy.

**Ashish:** ... In that case would you like to give any message to technological students, like us?

**Dr. Patel:** What kind of message... because I am dealing with these illness and you are working in developing some new things and.... Probably I think medical scientists they can do great research because recently one interesting thing, i.e. RNA interference is something very exciting for scientists, those who are working. RNA interference... you must be knowing about normal transcriptions from DNA to RNA, right. The DNA uses messenger RNA, and the messenger RNA will take all the information to... in form of transcripts into the proteins and the related material, the message which is taken from the DNA. This RNA interference is that it is like mRNA, messenger RNA, but it gives a wrong information, if it transcribes wrong messages to that particular proteins and produces a wrong protein, and thereby decreases the information coming from the infected cells so the produce is subsequently reduced. If we can target HIV chronic viral infections in this type of RNA interference, interference with the normal messenger RNAs, false RNA which produces all wrong messages and they produce Lycis, so that is a new thing, or new technology that is coming up, not only for HIV, for other chronic Hepatitis infections also. Any toxins can be... fatal effects of toxin can be eliminated by this RNA

**Aunindra:** Are there any side effects of these medicines?

**Dr. Patel:** It is not like that HIV infected patients are likely to develop side effects like Hepatitis viruses or medical jaundice.

**Ashish:** Sir, it was quite a nice experience talking to you, thanks a lot.

**Dr. Patel:** Thank You

## **CONCLUSION**

India has the second largest number of AIDS patients in the world today and the number is still increasing. India depends on a combined social and technological effort to help fight the disease and avert an impending calamity.

If the technology and society do not keep up with the pace, India can lose a major part of its manpower to this disease. This could hamper the growth of India in a drastic way. As the disease progresses in India today, it could lead to a dark tomorrow. So, proper research to arrive at a technology to progress in this field and save its future is required.

If technology develops enough to ensure a cure for HIV/AIDS patients or may be a vaccine for the people then this disease can be controlled. Small Pox was controlled through technology and now this disease needs to be controlled. If proper vaccines are developed, this disease can be wiped off the face of the world. If proper cures are developed (as ART can control not cure), the patients can be relieved of the mental tension and the manpower of the country be retained.

India needs a vaccine or a cure for a healthy tomorrow, as HIV/AIDS is a disease that poses a great threat to the future of the country, as well as a thorough understanding of the pain and suffering. So we need to rise up to our responsibilities and understand that what today is a story of others could someday dawn upon ourselves too.