CHAPTER- 1

INTRODUCTION
A. KNOWLEDGE ON AIDS

a. Historical, Anthropological and Scientific Background

AIDS, the acronym for the Acquired Immuno Deficiency Syndrome evokes a response of familiarity everywhere today. The relentless spread of this new disease in the past few years has unfolded its grave health and socio-economic consequences in a dramatic way. What is very clear is that the Human Immuno Deficiency Virus (HIV) which causes AIDS knows no bounds. No one is immune. All countries and communities are vulnerable.

There cannot be watertight compartment on the Historical, Anthropological and Scientific aspects on a sensitive issue like AIDS however, an attempt has been made to specify the time factor in Historical aspects, the human development in Anthropological aspect and public health and medical in Scientific aspect of the emergence of AIDS. These three aspects are overlapping with each other but for understanding, these may be discussed separately.

HISTORICAL BACKGROUND FOR EMERGENCE OF AIDS

In the summer of 1981, the United States Centre for Disease Control and Prevention reported about 5 young men in Los Angeles who suffered from Pneumonia caused by rare type of organism (Pneumocystis Carinii). This organism creates an infection when people’s immune system has been severely damaged. These five men had no illness to account for their lowered immunity, but all had a similar sexual contacts and homosexuality. Since that report in 1981, other usually rare disease patterns were noted among people with similar sexual practices in communities at San
Francisco, New York city and elsewhere, that had impaired immunity as a common denominator. For instance, a previously rare type of cancer primarily involving the skin, called Kaposi Sarcoma (KS) appeared frequently in this population. Other symptoms were also present in the people with these illnesses including diarrhoea, weight loss, swelling of the lymph glands throughout the body, and in some, impairment of certain aspects of mental function. There was as well, the unusual susceptibility to a wide range of infections, including yeasts and viruses (with names such as Candida, Herpes, Cytomegalovirus and Epstein-Barr virus). In otherwise healthy people, infections with these organisms would be mild and temporary, but in these men with impaired immunity, the infections would become severe and life threatening. Because of these varied illnesses kept appearing with unusual frequency among this population and because each illness had impaired immunity as its basis, the entire pattern was given the name “Acquired Immuno Deficiency Syndrome”, abbreviated as AIDS by the Centre for Disease Control in the United States and an announcement was made that a new disease AIDS appeared in the World identified on 5th June 1981 in human population (Miller, 2001).

ANTHROPOLOGICAL BACKGROUND FOR ORIGIN OF AIDS

Though the disease AIDS in human beings was discovered, its cause was unknown officially till 1986. During these five years attempts were made by researchers to correlate the original human species “Chimpanzees” who could be the origin of AIDS. The Human Immuno deficiency Virus (HIV) which causes AIDS, though was unknown till 1986, the research on Chimpanzees continued and in 1999, scientists have been hopeful. They are pursuing the hunt for the origin of AIDS, the
researchers have found an HIV like virus in chimpanzee in the wild for the first time and in a different part of Africa then they had suspected. This chimp in Tanzania could not be the source for human AIDS, because the viral strain, the researchers found is too genetically different.

But now they have proved virus testing can be successful in the jungle without disturbing the endangered species, the Alabama Scientists are beginning the next key step tracking different chimps in an even more remote part of Africa, where the virus is thought to have jumped from animals to man. Scientists have long known non human primates carry their own version of the AIDS virus. But so far, it has been found only in the captive chimps. No one knows how prevalent or geographically or genetically diverse the virus is in chimps in the wild.

“Study in the wild is a very difficult thing. You cannot just walk in there and ask them for a blood sample” said Dr. Beatrice Hahn of the University of Alabama at Birmingham, explaining why this first study did not start with the prime suspects. The report is important because it proves Hahn’s team developed a very good way to, without invading of disturbing ecologically, study the evolution of the virus in this species”, said Anthony Fanci, the National Institute of Health’s leading AIDS expert. Many scientists believe HIV, the virus that causes AIDS, probably originates from SIVCP2, a strain of Simian Immunodeficiency Virus, found in a subspecies of Chimpanzee from West-Central Africa. Hoping to bolster that theory, Hahn’s research team developed a highly sensitive test to check urine and faecal samples for antibodies against SIV and learned to cull SIV genetic material from faecal samples. They enlisted help from primatologists, including Jane Goodall, who have
extensively monitored chimp colonies in Tanzania, Uganda and the Ivory Coast. The primatologists can identify these chimps by sight, meaning Hahn would know exactly which animal had SIV if any samples proved positive.

Of the 58 animals tested, only one had SIVCP2, a healthy 23 year old male in the Goodall colony in Tanzania. That is further east than tests on captive chimps had led scientists to believe the virus extended. But the animal’s strain was so genetically different that it rules out East African Chimps as HIV’s source, Hahn concluded. Captive animals that harbour the most HIV-like virus are a subspecies from countries further west, Gabon and Cameroon. There primatologists have not done colony studies like Goodall’s – it is hard to catch even a glimpse of the animal.

So now, biologists are surveying wild chimp populations by counting faecal sample that they will share with Hahn for SIV testing. Finding the virus in those animals would bolster the AIDS Origin Theory.

An American team of scientists claim that the virus skipped from one species to another via human hunters who kill the Chimpanzees for food. The researchers revealed that the process still continuing with the commercial killing of large number of chimps, gorillas and monkeys for meat.

Hahn told at the 6th Conference of Retrovirus and Opportunistic Infections held in the United States in 1999, that the sub species that carried the HIV, Pantroglodytes troglodytes seems to have developed immunity. But studying the Chimpanzees it might be possible to produce both a cure and a vaccine for the disease in humans. Commenting on these animals, Dr. Hahn and her colleagues, including scientists
from the University of Nottingham in England, hope their research will lead to measures to discourage poaching and to preserve this and other endangered primate species.

This sub-group Chimpanzees has a wide range across West-Central Africa. In some countries, like the Central African Republic where it was once common, it has been pushed almost to extinction by hunting. Gabon is its stronghold with an 64,000 surviving. The Congo has 10,000. But in both countries, hunting is steadily depleting numbers. There are no reliable counts in Angola, Cameroon and Nigeria, but several thousand Chimps are eaten each year.

These Chimpanzees carry HIV-1, the strain of the virus responsible for infection in humans. Subsistence hunting has always been part of African culture, but increasing logging activities in the past decade have provided unprecedented access to remote forest regions and have led to the commercialized killing of thousands of these animals. Dr. Hahn said, "It took us 20 years to find where HIV-1 came from only to realize that the very animal species that harbours it, is at the brink of extinction. We can not afford to lose these invaluable animals either from the animal conservation point of view or a medical investigation stand point. It is quite possible source of HIV-1, also holds clues to its successful control" (Origin..., TOI, 03.02.1999).

Dr. Feng Gao, an eminent researcher said that the sub-species, Pan troglodytes troglodytes was a natural reservoir for the HIV-1 Virus. It was also discovered that the natural home of the chimps was the same area that the first out break of AIDS in human was detected- areas of Cameroon, Gabon and Nigeria.
Another researcher Dr. George Shaw of the Howard Hughes Medical Institute said “Chimpanzees are identical to humans, yet they appear to be resistant to the damaging affects of the AIDS virus”.

**SCIENTIFIC BACKGROUND FOR CAUSE OF AIDS**

The Scientists in the laboratory were greatly concerned to identify the virus which causes AIDS. The man who should be given credit as one of the people for discovery of HIV is Dr. Robert Charles Gallo. The discovery came when work on leukaemia was on in his laboratory. What might have inspired Dr. Gallo was the first description of Retrovirus in 1970 by Temin and Battimore. Only 2 years later in 1972 Gallo became the Head of the Institute’s Tumor Cell Biology Laboratory. This gave him full freedom for research and the first success of his team was identification of interleukin-2, a factor that simulates growth in the lymphocytes known as T-cells. This was followed in 1979 by the crucial discovery of the first human retrovirus, HTLV-1 (Human T-Cell lymphotropic/leukaemia virus). Further in 1982, Gallo discovered HTLV-2. Both HTLV-1 and HTLV-2 cause rare form of leukaemia.

In the early 1980s, concern was growing about the emergence and spread of AIDS, a disease characterized by suppression of the patient’s immune system. Gallo was aware that HTL viruses acted by attacking the immune system of leukaemia patients. He made the bold conjuncture that AIDS was caused by yet another retrovirus recently discovered in his laboratory, namely HTLV-3.

Simultaneously in France, Dr. Luc Montagnier and his associates were trying to extract a retrovirus from an AIDS patient at the Pasteur Institute in Paris and named
the virus LAV (lymphadenopathy associated virus). This patient was suffering from an unknown illness associated with lymph node swelling throughout his body and sent Gallo, a sample in 1983. The credit must also go to the Scientist of Indian Origin Sudhir Gupta who at the same time isolated AIDS virus in the University of California at Irvine and named HIR (Human Intracisternal Retrovirus).

In April 1984, before Gallo had published his results, the US Department of Health announced that he had found the cause of AIDS, HTLV-3 and took out patients on Gallo’s blood test for AIDS antibodies. Gallo published his results in May 1984. He pointed out that he had identified the virus in 48 out of 167 cases from a risk group and that no evidence of its presence was found in the blood of 115 healthy heterosexuals.

The award in May 1985 of an exclusive patient for Gallo’s test provoked a strong response from the Pasteur Institute. They argued that Gallo’s blood test was based upon a virus substantially identical to the LAV strain first isolated by Montagnier. The Institute sued the American Government and Heads of the State became involved in the dispute. The issue was finally resolved in 1986 at a meeting in Frankfurt between Gallo and Montagnier. An agreed chronology about the discovery was established and it was also decided that 80% of the royalties from the test should go to a new AIDS research foundation. The names of both Gallo and Montagnier would appear on the patent.

The issue of the name of the AIDS virus was resolved in 1986 when the International Committee on the Taxonomy of viruses diplomatically ignored both LAV and
HTLV-3 and proposed the name HIV (Human Immunodeficiency Virus), (Ravi, 1999).

b. Knowledge about HIV and spread of AIDS.

AIDS virus HIV is unique even among the viruses. Not only does it invade cells and reproduce, using the cell’s own components, as do all viruses, but it has the ability to insert itself into the actual genetic material of the cells - the so called chromosomes. Viruses that have the capacity to add their genes into the chromosomes of human cells have been named "retroviruses", originally extracted from chimps.

Our immune system is constantly working to protect us from infections caused by viruses and bacteria. As many as 25% of our body’s cells comprise the immune system. Large populations of our cells in our bone marrow, lymph glands, thymus, spleen, intestine, the W.B.C. in blood are the immune system cells and through the blood, can reach every part of the body.

Usually, the immune system overcomes an invader within 1-2 weeks, and we recover from illness uneventfully. But HIV is problematic. It invades and destroys certain key cells called T4 lymphocyte or immune "helper" cells, so our normal protection against the virus is diminished. Consequently most AIDS patients die from infections that would pose no threat at all to some one with a healthy immune function.

Great attention and concern has been devoted to avoiding infection and identifying how the AIDS virus is spread.
"The virus is present in the bodily secretions of an infected person, including semen, saliva and tears as well as blood but the amount of virus present and the degree of infectivity appear to vary. The virus is in the blood in significant numbers for the first few weeks after infection. Following the immune reaction to the virus and formation of antibodies, the virus itself may disappear from the blood for varying periods of time. Slowly the virus reappears in the blood to increasing degrees as one becomes symptomatic with ARC (AIDS related complex) or the illness of AIDS itself" (Rama, 1989).

The acquisition of AIDS virus from exchange of saliva or tears has not been documented and the U.S. Public Health Service has said it cannot be transmitted through the exchange of saliva during the kissing and casual contacts, such as from airborne respiratory secretions, or skin to skin contact such as within households. Some have nonetheless established a guideline for children not to let anyone kiss them or close to the mouth, a behavioural guideline that is not unreasonable for a variety of reasons, separate from whether AIDS can spread or cannot be so transmitted.

Infectious has been documented to be spread from blood and sexual fluids. If an HIV positive patient uses a needle for intravenous drug injection and then shares with another person without sterilizing it, the virus remains in the blood left on the needle and goes into the blood stream of the next user. This is a serious and increasingly common way for the AIDS virus to spread and it can spread quickly.
The other source of blood borne infection is with the staff in Hospitals. Some Hospital workers have, however acquired an infection from the blood of AIDS patients through inadvertent needle punctures of their skin. Hospitals and Dentists have consequently established guidelines for using gloves when handling blood or blood products, or for performing dental work where bleeding from the gums may appear.

Since 1986, the blood product supply has been free of HIV in United States and Europe because of mandatory HIV testing of blood. Mandatory HIV testing of blood was introduced only in 1996 by Government of India after a decade of delay.

The other route of transmission is through sexual contact with an infected AIDS virus positive patient. Man to man transmission has been highlighted by the origin of AIDS epidemic in the United States among male homosexuals but woman to woman transmission of infection has not clearly been documented.

A woman can acquire AIDS virus from the contact of infected semen with the cervix, and the risk of infection seems to be on the order of a 10 to 30% chance for a single contact during sex with a man is also well documented. Globally, the estimated number of people living with HIV/AIDS (PLHA) is 39.5 million (December, 2006), of which 17.7 million are women, children under 15 years contributed 2.3 million cases. During 2006, 4.3 million people were newly infected. There were 2.9 million AIDS death in 2006. Presently the main global trend is that new HIV infections are heavily concentrated among young adults (15-24 years) and infection in women is 48% affected areas, accounting for 63% of global HIV burden and 72% of total HIV death globally. In Botswana, Namibia, Malawi, Rwanda, South Africa, Swaziland, Lesothe
etc. adult prevalence rate ranges from 20% to 30% and proportion of women with HIV ranges between 50% to 60% (UNAIDS/WHO, 2006).

c. Clinical Case Definition (Signs and Symptoms) of AIDS

The initial definition of AIDS was developed by the Centre for Disease Control (CDC) of the US Public Health Service in 1982. The definition was subsequently accepted by WHO in 1985. The definition was revised in 1987 placing more emphasis on the results of HIV laboratory tests. There are two case definitions of AIDS. One is full case definition for use where appropriate diagnostic facilities are available. The other is a clinical case definition for use where diagnostic facilities are limited. The clinical case definition of AIDS is two types, one for Adults and the other for Children.

Clinical Case Definition of AIDS in Adults Defined by-

- Two major signs
- Atleast one minor sign
- Absence of known causes of immuno suppression

Major Signs

- Weight loss, at least 10% body weight
- Chronic diarrhoea, for more than one month
- Prolonged fever for more than one month (intermittent or constant)

Minor Signs

- Persistent cough, for more than one month
❖ Generalized pruritic dermatitis
❖ An episode of herpes zoster
❖ Oro-pharyngeal candidiasis
❖ Chronic progressive and disseminated herpes simplex infection
❖ Generalized lymphadenopathy

Clinical Case Definition of AIDS in Children
❖ Two major signs
❖ Two minor signs
❖ Absence of known causes of immunosuppression (such as severe malnutrition)

Major Signs
❖ Weight loss or abnormally slow growth
❖ Chronic diarrhoea, for more than one month

Minor Signs
❖ Generalised lymphadenopathy
❖ Oro-pharyngeal candidiasis
❖ Repeated common infections (Otitis media, Pharyngitis)
❖ Persistent Cough
❖ Generalised dermatitis
❖ Confirmed maternal HIV infection

d. Modes of Transmission and High Risk Groups

(i) BLOOD TRANSFUSION

Even in the second decade of AIDS prevention programme in India, unnecessary blood transfusions account for a large number of transmissions. Doctors believe that only children requiring multiple transfusions, such as thalassemics or haemophiliacs, were at a high risk of HIV infection. Even severely anaemic children, whose haemoglobin level has dipped to six, do not need blood transfusion unless they have breathing difficulty. Doctors transfuse blood to the mother during delivery and to anaemic children even when it is not required urgently. The problem areas are some Private Nursing Homes which infuse fresh blood without getting it tested and in a total unauthorized manner.

Blood transfusions have been a major source of infection among Nigerian children. However, the scenario is very different in developed countries where blood transfusions account for less than 10% of HIV infections in children.

Blood transfusions are not always full proofs even after mandatory tests are done. "The antibodies for HIV are often activated as late as nine months after actually entering the blood stream", (Mukherjee, 2000).

(ii) INTRAVENOUS DRUG USE

The intravenous drug users have become rampant in the West and through their contaminated needles, one infects the other and HIV transmission is rapidly increasing. Indian copy from Westerners. In India, in comparison to
other States, drug addiction is alarming in Punjab. It is distressing to note that people had begun to give up intoxicants like alcohol and opium, only to start consuming deadlier drugs and medicines like Phencydryl, Corex and Proryvo. Deadly drugs like brown sugar and smack were easily available of other intoxicants were on the rise with school students. One begins with oral drug usage and switches on to intravenous drug. The HIV contaminated needle becomes the mode of transmission and infection spread rapidly among the teenagers and peer groups. The adults too are not the exception. This example is being followed in more or less number all over the country particularly in cosmopolitan cities.

(iii) SEXUAL CONTACT

Homosexuals are mostly the source of HIV transmission in the West while in Africa, one in four of the adult population has been infected with HIV through heterosexual sex.

The rise of acquiring AIDS infection increases significantly with the number of different partners up to about 5. For instance, sexual contact with two different partners approximately doubles the risk over one partner alone, three triples it and the risk is quadrupled with 5 partners, and 6-fold with ten. Only monogamous sexual life with someone who has had no opportunity for exposure to the AIDS virus carry no risk of infection.

In India STD are already a serious problem, what is significant, 40% of such diseases occur in middle class segment of our population. More significantly
persons suffering from STD are more prone to HIV infections. Since HIV-AIDS affliction is mostly in the productive age group 18-40, this could have grim consequences for our economy. When everybody thought that it is a Western disease that will be contacted only by sex workers in Red light areas, gaymen and injecting drug users. The consequences of that myopic view are now upon us.

Besides these three most important modes of transmission, the other modes like tattooing, piercing noses and ears and using unsterilised blades in saloons can not be given under weight for HIV transmission. Taking any injections in hospital set up without sterilised disposable syringe and needles are the examples of inviting HIV infection without known sources.

**High Risk Groups**

Among the High Risk Groups 23,85,000 Commercial Sex Workers (CSWs) in 83,438 Red light areas in the country have been identified. This group usually acquire Sexually Transmitted Diseases and so are more vulnerable for AIDS. The next vulnerable group is the runaway kids on the streets in cities who are forced to commercial sex activity and drug abuse.

Doctors have started detecting an increasing trend among industrial workers, jail inmates, mine workers, migrant workers and truckers, the groups that have a higher risk exposure to AIDS virus.

Infected mothers are the high risk groups to infect their babies before birth, during birth and also after birth while caring as AIDS is a vertical disease.
e. Prevention and Control Measures Interventions

Since HIV transmission is taking place through sexual fluids and through blood by all other modes, the strategy being adopted to tackle the spread of AIDS are based on these two fronts.

The first front is on Sex Education, henceforth to be referred in better terminology as RHE (Reproductive Health Education) is a most sensitive issue for talking to youngsters. It is definitely a challenge but it can save lives (Piot, 2002).

Researchers are now confident that the HIV can be controlled quite effectively, even though it may not be possible to eradicate with the current level of understanding.

AIDS education in Schools and Colleges will lead to healthy attitudes to sexuality, responsible peer groups interactions and a reduced risk of AIDS among the teenagers. RHE in Schools/ Colleges must be intensified all over the World to save the lives of youths of present generation and for the future generations to come.

The second part of physical care of learning safe sex practices is by use of condoms.

In our country male condoms are available in the market but in western countries besides male condoms, female condoms of two types (BIKINI OR PANTY AND FEMIDOME) are available in their markets.
The other issue to be addressed is male circumcision needed to prevent HIV spread, “Male circumcision should be seriously considered as an additional means of preventing HIV in all countries with a high prevalence of infection” — Prof. Roger Short of the University of Melbourne wrote in a report, Short further said, “circumcision at puberty as practiced by many Muslim communities intervention for reducing HIV transmission since it would be done before young men are likely to become sexually active”. How circumcision prevents HIV infection is still a mystery, but Short and his colleagues from Australia believe the inner surface of the foreskin could be the route. The foreskin- removed during circumcision- contains cell that have HIV receptors which the researchers suspect are the primary entry point for the virus into the penis. This means non-circumcised men are at a much greater risk of becoming infected with HIV than circumcised men. Alternatively, say the Researchers, the development of “Chemical condoms” products which can block HIV receptors in the penis and the vagina, might provide a more acceptable form of HIV infection in the future.

The other crucial issue for prevention is mandatory HIV testing for either donating blood or for transfusion required for serious illness or accidents. Such facilities are now available in specialized hospitals. This facility must be available at all District and Sub-divisional hospitals all over the country even where the prevalence is now low and we do not know when the entire country will have high prevalence rate unless preventive and control measures are adopted as national emergency.
Proper education to males staying outside their families and are being infected with HIV shall reduce mother to child transmission to save the next generation from vertical transmission of HIV. Avoiding or using sterilized needles for tattooing, ears, noses piercing and sterilized one blade to be used for each client in saloons will reduce transmission of HIV. The example of TIRUPATI Temple in South India for using one sterilized new blade for each head to be saved is the most scientific way of preventing AIDS. The other issue to avoid blood contact is to develop a habit for using sterilized disposable new syringe and needle for each price of any injection and more so far intravenous use and completely destroy it.
B. INVENTIONS AND INNOVATIONS ON AIDS

a. Research

As part of the immune response to the virus, the antibodies against the AIDS virus can be detected by special tests called ELISA, WESTERN BLOT TEST etc. Till date ELISA test is the most commonly available and accurate test but no test result is absolutely certain so far positive results, this test should be repeated and also confirmed on another test called the Western blot test.

Tests for AIDS:

(i) ELISA OR EIA (Enzyme Linked Immuno Sorbent Assay)

The antigen (say HIV Protein) is first immobilized in a matrix (latex, nylon, sepharose, cellulose or polystyrene). Then its antibody (say raised in a goat) is added to form an immobilized antigen – antibody complex. A second antibody, raised against goat proteins (i.e. species specific) is tagged with an enzyme generally horse raddish peroxidase, all aline phosphatase or another enzyme. Next, enzyme, goat antibody is added to form a surface. HIV antibody + goat antibody with enzyme. Now the appropriate enzyme substrate is added and the product formed is assayed in an ELISA reader.

A HIV- EIA kit has been developed during 1996 in Netherland which can detect P-24 antibody. The plates in the Kit are coated with P-24 antigen which attracts the antibodies. When the reagent detects the antibodies, its colour changes immediately. The total time it takes is one hour and fifteen minutes. HIV-EIA is an indirect ELISA for the detection of antibodies to HIV-1 and
HIV-2 as well as HIV-0 type viruses, Serum of 50 ml amount is required and test can be done on the spot and one test costs Rs.37.00P only.

The findings has to be repeated and confirmed by Western blot test.

(ii) WESTERN BLOT TEST

A one or two dimensional electrophoretic separation of proteins is carried out and the protein is then transferred or blotted, to nitrocellulose paper. The nitrocellulose sheet can now be exposed to radio-labeled antibodies against a particular protein and ultimately by autoradiography the presence of that protein is revealed.

The other tests which are not in vogue are too expensive. They are Virus Culture test, PCR (Polymerase Chain Reaction) test and "IN SITU HYBRIDIZATION test".

Dr. D.V.Ravi Kumar from Bangalore developed India’s first indigenously made HIV detection KIT.

FIRST INDIAN WESTERN BLOT TEST

Till early 1999, India has been importing Western Blot Test kits which are very expensive. The first Indian Western Blot Test Kit to confirm the presence of both strains of HIV-1 and HIV-2, has been developed by a team headed by Dr. Robin Mukhopadhyay from Cancer Research Institute, Mumbai said Dr. Manju Sharma, Secretary of Department of Biotechnology to be launched in February, 1999. The Kit has shown 100% specificity (Sharma, 1999).
NEVA TEST

Professor V.K. Chaudhury of Delhi University after 5 years research developed NEVA (Naked Eye Visible Agglutination) test to be performed in 2 minutes by using a drop of blood instead of using plasma and serum (Chaudhury, 2002).

GENE-GUN WITH GOLDEN BULLETS

The Gene-Gun fires “golden bullets” to blast cancer cells. Dr. Gary T. Nabel, a researcher of the University of Michigan Medical Centre, USA has extended the application of Gene-Gun with golden bullets to prevent multiplication of HIV. The work is in progress. (Mukherjee, 2001)

PIT (Passive Immune Therapy)

Dr. Abraham Karpas of Cambridge University and his team are studying mopping up HIV with blood plasma to provide a cheap way of delaying AIDS in people with HIV to make them live longer.

SLPI PROTEIN FROM HUMAN SALIVA

Researchers of National Institute of Dental Research, USA have identified a protein called SLPI (Secretory Leucocyte Protease Inhibitor) from the human saliva. Scientists think that by isolating and purifying, this SLPI can be injected to AIDS patients to combat HIV infection. The work is in progress.

Tears, saliva and urine of pregnant women contain proteins that are potent killers of HIV. The Scientists isolated a protein called Lysozyme, and found that it was able to kill HIV quickly in test tube experiment. “Lysozyme could become an important
therapeutic drug against HIV because it is a natural compound that the body routinely makes”, said Sylvia Lee-Hung, Professor of Biochemistry at New York University. It ought to be more tolerated and have fewer side effects than other HIV drugs. The team also found that the urine of pregnant women contain another type of protein, called ribonucleases, that destroys the genetic material in HIV. The research for the anti-HIV protein was prompted said Lee (Women, The New Indian Express: 18.03.1999).

Indians infected with HIV, develop AIDS faster than Americans and also die sooner. Dr. S.K.Hira, Director of AIDS Research and Control Centre in Mumbai while addressing at the Conference on “Molecular epidemiology and evolutionary genetics of infectious diseases” held at Hyderabad in November 2000 said, he studied 1077 HIV infected persons in Mumbai and found that while HIV infection took 13 years to kill an American in San Franscisco, Mumbaites, on an average, died in 7.2 years. Infact they survived for hardly 13.5 month after being diagnosed as full-blown AIDS. Dr. Hira said adult patients with confirmed HIV infection reporting to TT Hospitals are recruited for the study. The patients were not put on anti-retroviral drug therapy but just kept under observation to see when they develop AIDS and when they die (Hira, 2000).

ALL FOUR STRAINS OF HIV FOUND IN INDIA

Among the strains circulating in India, about 68% were found to be of the South African variety of sub-types C (according to Dr. Pradeep Seth, Professor of Microbiology Department of AIIMS, New Delhi who presented his findings at a round table organized by the Ranbaxy Science Foundation) Zambian as well as
Brazilian variety of HIV strain were also present in a few subjects. The study conducted on 125 subjects, mostly heterosexuals, found the presence of the A, B and E types in the samples from the north and north-east region. For instance, a couple from Delhi carrying subtype B strain, wife was inadvertently infected through artificial insemination in South Africa. In another case of sub-type E, it was found that the person belonged to U.P. but contacted the infection in Manipur through unprotected sex. An infection from type A was reported in a couple from Haryana through repeated blood transfusions to the person (Berkeley, 2007).

Dr. Eknath Naik and Dr. John Sinnot of the University of South Florida, exploring the possibility of organizing a research programme on HIV at Vadodara and Motafofalia said, “The HIV found here (in India) is more virulent and there are many cases where a single sexual exposure has led to HIV infection. In other countries like US, such ‘single encounter’ cases are hardly found. In India this might be due to several reasons, such as the genetic susceptibility of the patients, or the type of virus found which might be more virulent than other type”.

Dr. Bharadwaj Desai, a Haemotologist based at Vadodara, treating a large number of HIV positive patients, says the Indian scenario was different from other countries. “We have not conducted any research on the genetic susceptibility of the Indian population. But we have found in practice that the Indian HIV type 1 and sub type-C spread much faster and the viral load increases more rapidly. The World over it has been found that one in 20 people is immune to HIV infection”. According to him, the reason for this phenomenon is hard to gauge. It might be due to the route of HIV
infection. In a majority of cases, infection has spread through blood transfusions. The virus gets a direct entry route through transfusions.

In US, the entry of HIV is through heterosexual transmission. It is possible that the viral load and the virulence of such virus might be lower, deterring the infection from spreading too fast. This might be the cause and the genetic predisposition might not affect the spread of the virus.

b. Drugs For Treatment Of AIDS

Scientists have shown great concern for the last two decades to find out a cure but neither a cure nor a vaccine is nowhere in sight. However, Researcher's findings are now aiming at help HIV Positive patients live longer and healthier life.

The three drugs in vogue are Ritonasir (Abbott Lab.), Indinavir OR Crixiven (Merck) and Saquinavir OR Invirase (Hoffmann- La Roche). It is not clear just how long these drugs prolong life. But for the first time, doctors may have at their disposal an arsenal of weapons that can battle the virus at virtually initial stage of its life cycle-not just in the terminal stage. Anti-Viral drugs, AZT (Azidothy-midine), the most widely prescribed may at best retard the progression of the disease and therefore has been only marginally effective. The virus is notorious in changing itself. Within 18 months, it usually manages to mutate into a form that is no longer susceptible to AZT or any of its chemical cousins. With the advent of the new protease inhibitors, researchers are in dilemma. Given what they know about when and how the virus reproduces, it makes more sense to try to attack HIV sooner or later. But if it is not attacked hard enough, the virus will mutate into a resistant strain. That is why drugs
are given in combination- so that a virus resistant to one drug might still be wiped out by one of the others. But there are easily indicators of viruses getting resistance to protease inhibitors. Even if protease inhibitors live upto their potential, the new drugs are very expensive costing $600 a month probably for the rest of patients' life.

Dr. David Ho of the Aaron Diamon AIDS Research Centre in New York says that ABT- 378 in combination with AZT and 3TC works excellent. The study is in progress.

Doctors at the University of Massachusetts Medical School began treatment with a three-drug combination of AZT, Didanosize and Nevirapine. They proved that aggressive drug treatment very easily in life can suppress AIDS-time infection for years, and possibly eradicate it altogether (Pandey,2000).

AIDS DRUG CUTBACK TRIAL FAILS

In two studies published, researchers tried to find out what would happen if they cut back on patient's medication once the drugs had reduced the virus to almost undetectable levels.

Doctors in France and US took different approaches but got results so disappointing that both studies were ended early.

Dr. Diane Havlir of the University of California at San Diego, lead author of the US study treated 316 people at 27 centres. These patients took all three drugs (CRXIVAN, AZT and 3TC) for six months, then they were divided into 3 groups-one group got all three drugs, the second got only CRXIVAN and the third group
got AZT and 3 TC. All three groups continued taking same number of pills, but some of them were placebos (dummy pills).

In French study, led by Dr. Gilles Pialoux of the Pasteur Institute hospital, 279 patients at 34 centres took all three drugs for 3 months. After that, one third continued with all the three drugs, and two other groups too AZT and either CRIXIVAN or 3 TC.

Only 4% of the US patients and 9% of the French patients taking all three drugs had more virus in their blood when study ended then they did after the first 3 or 6 months. But 23% of each of the two other US groups showed signs of viral rebound. In France that happened to 31% of the patients on AZT and 3TC and 22% of those on AZT and CRIXIVAN.

All of the patients were treated as soon as they learned they were infected, before symptoms appeared. That is standard with the AIDS cocktail.

Dr. Anthony Fauci, Head of National Institute of Allergy and Infections Diseases, said it is too early to assume that people must stay on the drug cocktail for the rest of their lives (AIDS Drug...,The New Indian Express, 31.10.1998).

MORE DRUG RESISTANT HIV FOUND

In a study (1999) of 80 men by the Aron Diamond AIDS Research Centre at Rockefeller University in New York found that about one in six carried a strain of HIV that was resistant to atleast one of a combination of drugs commonly used against the deadly virus. Daviel Boden, the lead author said, “HIV has a much
resistance there is and what is causing it, we recommend that infected patients who are able to should follow MDT”.

Since the drug resistance-strains of HIV are becoming more prevalent, the researchers reported a development that may warrant pretreatment screening as well as a renewed emphasis on the need to practice safe sex (More..., The New Indian Express, 23.09.1999).

David Cooper of the University of New South Wales in Australia told a News Conference that HAART (Highly Active Antiretroviral Therapy) is the name for the mixture of two different classes of drugs, nucleoside reverse transcriptase inhibitors (RTIS) and protease inhibitors, both cause metabolic disturbances but HAART is now keeping many HIV patients in the developed world alive and healthy, reported by Renters at San Francisco on February 1st, 2000 (AIDS Drug..., Hitavada, 02.02.2000).

Dr. N.K.Ganguly, Director, ICMR says, “India should develop drug regiments against HIV that are specific to its own need to prevent existing HIV cases from developing full blown AIDS.”

SCIENTISTS ENVISION ANTI-AIDS CREAM

PAMA (Cream), an experimental reverse transcriptase inhibitor developed by California-based Gilead Sciences Inc., was found to block HIV transmission without signs of toxic reaction, said University of Pittersburg Microbiology Professor Phalgungi Gupta, Researchers belief the drug prevented the AIDS virus from
replicating. Scientists of North Western University were studying the results of the test to determine exactly how long the drug worked.

While there is no real cure for HIV is yet, the drugs are useful in controlling infections. These drugs offer considerable relief by fighting opportunistic infections and help increase to reduce considerably the chances of mother to child transmission of the virus.

Though priced low, these drugs still remain beyond the reach of most Indians.

**AIDS DRUG SHOW NO SIDE EFFECTS TO INFANT’S HEART**

Researchers led by Dr. Steven Lipshultz of the University of Rochester Medical Centre and his colleagues followed 185 babies who were exposed to AZT while in the womb, 27 of whom became infected with HIV compared to the babies of women who were not infected with HIV. "Infants born to HIV-infected women and exposed to Zidovudine were no more likely to have abnormal (heart)- than were infants who did not have Zidovudine treatment", the Researchers said.

The next finding is important because "over the next 10 years as many as 60,000 children in U.S. may be exposed to Zidovudine (Retrovir by Glaxo brand name) and other antiretroviral drugs in utero", as their mother are treated for HIV, Dr. Lynne Mofenson of National Institute of Child Health and Human Development wrote in an accompanying editorial (AIDS Drug...,TOI, 16.09.2000).
HOMEOPATHY'S EFFICACY IN AIDS

The Central Council for Research in Homeopathy (CCRH) is undertaking a multicentric study in Chennai, Mumbai and Delhi to establish the efficacy of homeopathic drugs in combating HIV/AIDS in India based on a protocol on WHO guidelines involving homeopathies, microbiologists, immunologists and counsellors, according to Dr. V.P. Singh, Assistant Director CCRH. The researchers found that a regimen using homeopathic amyle nitricum and a zadirachta indica (neem) yielded excellent results when combined with half an ounce of honey and 50 gms sprouted green lentils containing rich vitamins, enzymes and minerals.

The pilot study of 39 AIDS cases conducted during 1989-97 had proved that a judicial mix of homeopathic therapy, psychological counselling, isotonic and breathing exercises, meditation and natural dietary supplements may help in the management of AIDS patients. The cost is Rs.2,000/- per patient per year.

The 18th National Homeopathic Congress stressed the need for double blind tests to prove the efficacy of homeopathic drugs (Study..., TOI, 22.11.2000).

FRENCH SCIENTISTS TESTING INDIAN HERBAL AIDS DRUGS

PRANEEM, a polyherbal drug to fight the AIDS virus by Indian Scientists is being tested on monkeys in a high security facility in Paris. The French Laboratory tests shows that Praneem kills AIDS virus in the free state as well as when contained in cells. The human experiment will begin. Praneem could be the first successful drug launched in the international market by Indo-French Corporative effort (French..., TOI, 23.02.2001).
‘CIPLA’ AND ‘RANBAXY’ INDIAN PHARMAS ARE ON REDUCTION IN
PRICE WAR FOR AIDS DRUGS

‘CIPLA’, a 795 Crore Mumbai based pharma presenting developing countries with
an anti AIDS cocktail at a fraction of the market price, its MD Yusuf K Hameed has
attracted global spotlight and sobriquets like messiah. He says, “We will go across
the developing countries like Sub-Saharan, Africa, South America, Cambodia and
Russia with our anti-AIDS drug offering reasonable price, affordable by common
man". CIPLA’s product NEVIRAPINE is now available at Rs.650/- (a strip of 10 for
200 mg dosage) compared to Rs.985/- earlier. CIPLA’s LAMIVIR (15 mg dosage) is
available at Rs.200/- (a pack of 10) compared to Ranbaxy’s VIBROLAM at Rs.230/-
CIPLA’s DUOVIR is priced at Rs.445/- (a pack of 10) compared to Ranbaxy’s
VIROCOM at Rs.500/- (Ghosh, 2001).

C. Vaccine

ORAL VACCINE TRIAL IN UGANDA

An oral AIDS vaccine is under development at the Institute headed by Dr. Robert
Gallo, Co-discoverer of HIV, and is expected to undergo human tests in UGANDA
reports Reuter at Baltimore in May 2000. The vaccine is one of several expected to be
tested in Uganda, according to Gallo and the International AIDS Vaccine Initiative
(IAVI). Clinical trials of vaccine, which uses the common Salmonella bacteria, could
begin in as little as 18 months, Berkley said. Once in full production, the bacteria
used to make the vaccine could be grown in mass quantities (AIDS Vaccine...,TOI,
23.05.2000).
NASAL VACCINE TRIAL IN US

The Researchers headed by Hermann Staats of Duke University Medical Centre have observed a curious phenomenon in many women commercial sex workers in Sub-Saharan, Africa. Their vagina contains specific antibodies S-IGA (Secretory Immunoglobulin A) against HIV that possibly stops the virus from entering the bloodstream. These antibodies S-IGA are produced and secreted into mucosal secretions to protect the body against bacteria and viruses that attack mucosal tissues in the body.

The new vaccine would be delivered nasally as Researchers know that if a mucosal surface at one part of the body like the nose generates an immune response, it may also appear in other mucosal surfaces like the mouth, upper respiratory tract, gastro-intestinal tract and reproductive organs.

If proved successful, the vaccine being developed by US National Institute of Health (NIH) would be of immense help to nations where the prime route of HIV transmission is sexual. The Researchers hope to develop the vaccine with a double punch approach- one punch would stimulate immunity in the form of S-IGA in the mucus to act as the first line of defence while the second would come in the form of another type of immune response called IGG antibodies (New...,TOI,21.05.2000)
VACCINE TRIAL IN ITALY

Dr. Barbara Ensoli, a top researchers at the National Institute of Health, during a conference on infectious diseases in Venice made an announcement that testing of a recently developed vaccine against AIDS in Italy is in progress, Ensoli said year-long tests would be conducted in Milan and Rome on 100 volunteers, 60 of them HIV positive and the rest negative. The Italian tests concern a vaccine similar to the ones currently being developed in US (Italy...,TOI, 09.12.2000).

VACCINE TRIAL IN INDIA WITH GLOBAL EFFORT

The Union Ministry of Health and Family Welfare and ICMR (Indian Council of Medical Research) have signed a MoU (Memorandum of Understanding) with US based NGO, IAVI (International AIDS Vaccine Initiative) in March 2001 at New Delhi. IAVI supported by Bill and Melinda Gates Foundation and others will provide three million US dollars to Government of India for development of a vaccine for AIDS said Dr. Seth Berkley, President of IAVI. He said a lot of work has been done in US on a vaccine catering only to sub-type B of AIDS virus which is prevalent there. But in India sub-type C is found more so it is even more important that a vaccine be developed to counter this strain (India...,TOI, 23.03.2001).
AIDS VACCINE FROM PLANTS

Dr. Alexander Karasev of Thomas Jefferson University in Philadelphia, Pennsylvania presented his team's findings at ORLANDO at the annual meeting of the American Society for Microbiology held in May 2001 and said a 'spinach' packed with HIV suppressing proteins may be the first step in the use of vaccines to those who need them. A bowl of 'spinach' would either help prevent or treat HIV infection said Karasev.

Researchers elsewhere have investigated the idea of using plants as 'factories' to produce and deliver vaccines but Karasev's team is among the first to focus on HIV. This approach could be of particular benefit in under developed countries where logistics make vaccine production and delivery impractical. The Pennsylvania researchers focused on "tat" - a protein that help HIV reproduce within cells and, at the same time, works to suppress the activity of the human immune system. For this reason 'tat' is an ideal target for the development of both a preventive vaccine and as a treatment for those already infected with HIV.

'Vaccines that grow naturally in plants would be much cheaper to harvest than those produced in the Laboratory', Karasev said (Mundell-2001).

d. AIDS Related Diseases

Almost all HIV-infected persons will ultimately develop HIV-related diseases and AIDS. Some progress more quickly. The rate of progress depend on virus and host characteristics (Serotype and HIV Strains). As HIV infection progresses and
immunity declines, patients become more susceptible to infections. These include STD, TB, Leprosy etc.

(i) AIDS AND TUBERCULOSIS

HIV is the most powerful factor known to increase the risk of tuberculosis. An individual infected with HIV has 10 times increased risk of developing TB. Similarly TB patients have greater risk of developing HIV infection and AIDS.

HIV and TB are both deadly, each speed up the progress of the other. TB is the leading cause of death among people who are HIV positive. WHO estimates that HIV infection will annually cause at least 1.4 million active cases of TB that otherwise would not have occurred. 70% of co-infected people live in Sub-Saharan Africa, 20% in Asia and 8% in Latin America and the Caribbean (Harries and Darmot, 1996).

(ii) KALA-AZAR AND HIV

With doctors and researchers yet to come to grips with TB-HIV co-infectious, another deadly synthesis of the AIDS Virus has begun to emerge: HIV is combining with Kala-azar a potentially fatal disease affecting in certain parts of India and the World. First detected in Southern Europe, the deadly combination is now appearing in Kala-azar endemic areas of the country. A large number of such cases have been seen in Bihar, one of the worst effected areas. This is causing serious concern. The National Research Professor
Dr. V Ramalingaswami, ICMR says, “we need to watch it carefully and intensity efforts against both HIV and Kala-azar.

Kala-azar patients are more likely to develop AIDS and reversely AIDS patients would contact Kala-azar easily, making their management difficult (Jain, 2000).

(iii) AIDS AND STD

The relationship between STD (Sexually Transmitted Diseases) and HIV infection is three-fold. Firstly, STD and HIV infection are associated with the same risk exposure that is unprotected sex with multiple partners. Thus the measures that prevent STD (Condom) also prevent sexual transmission of HIV infection.

Secondly, the presence of STD has been found to facilitate the acquisition and transmission of HIV infection.

Lastly, there is mounting evidence that some STD pathogens are more virulent in the presence of HIV related deficiency.

(iv) AIDS AND LEPROSY

The HIV infection increases the risk for certain opportunistic mycobacteria, such as mycobacterium intracellulare. An increasing prevalence of HIV infection in areas with high leprosy endemicity has led to the possibility of increased prevalence of multibacillary leprosy due to HIV- induced immuno suppression. Report on this association have been conflicting, with majority
of them showing no direct correlation of leprosy with HIV, on the other hand, some authors suggested a significant association between HIV-1 infection and multibacillary leprosy in Tanzania.

In a seminar on Leprosy and AIDS Organised by the Bombay Leprosy Project, Mumbai on 28th August 2001, the questions discussed reservoir of 'germs' for leprosy, Does the presence of HIV infection in a leprosy patient give rise to increased occurrence of complications such as nerve involvement etc. In the absence of sufficient studies on "Leprosy and AIDS", the participants recommended that HIV/AIDS patients in Public Hospitals in Mumbai should be subjected to a screening to establish the presence of leprosy in them (Crampin and Damisoni, 2001).

C. REVIEW OF LITERATURE

1. A study was undertaken during 1989-1991 on "Distribution and Trends of HIV infection in Blood donors of four metropolitan cities". 140 Blood Banks of Delhi, Mumbai, Kolkata, Chennai found that the infection rates among voluntary blood donors is steadily increasing. Considering the increasing rates of HIV infection among blood donors the authors concluded that adequate measures to be adopted to ensure testing of every unit of blood before transfusion (Makro et al, 1992).

2. A field study was carried out on "Awareness of AIDS among School Children in Haryana" of 3 High Schools in an urban area and 3 from rural area in 1993 consisting 356, 9th and 10th class students revealed that 85% of them had heard about AIDS. Regarding transmission- 56% said AIDS can be acquired by
having sex with infected persons, 38% went in favour of using unsterilised syringes & needles. However, 76 students believed infection through mosquito- bites. Hence AIDS education for school children for their safety should be adopted (Agrawal and Kumar, 1996).

3. “A study on the impact of Awareness Programme imparted to in-service nursing staff on their knowledge regarding AIDS” was conducted in which 105 nurses of West Bengal Health Service attended 2 days’ Orientation on AIDS. Pre and post-training in level of awareness and knowledge increased from 7.6% (Pre-training) to 51.4% (Post-training). The trainer feels that such training is crucial in care of AIDS patients and the nurses may be able to prevent transmission of HIV in hospital setting (Dutta, 1993).

4. A case study was made by Latha (1995) on “AIDS phobia- A Case Report” in the Department of Psychiatry, Kasturba Medical College, Manipal. An ex-service man (48 years) presented himself with multiple vague aches and pains, a preoccupation that he had contracted AIDS and depressive features with history of gonorrhoea 12 years ago. By reading AIDS articles in print media, he developed acute anxiety. The negative result of HIV test and a few counselling sessions made him normal.

5. Ray (1995) studied on “An assessment of AIDS awareness Programme for ICDS functionaries”, through one day AIDS Awareness training to Anganwadi Workers in 24 Parganas, Burdwan and Calcutta districts. The pre-training knowledge level scores 55.3%, 39.3% and 60.4% were increased to
91.9%, 84.9% and 98.8% in these three districts respectively. The improved knowledge on AIDS by the participants shall help in prevention of AIDS in their respective areas.

6. Report of a study, "Awareness on AIDS among Health Care Professionals" was published in Indian Journal of Public Health, Calcutta with a sample of 400 respondents from various departments of Medical Colleges of Calcutta. It was found that knowledge of medical students was relatively poor because undergraduate medical curriculum lack in exposure to causes and clinical training in HIV/AIDS. Relatively few students (20%) and doctors (40%) were aware of the availability of the HIV tests. Misconceptions regarding modes of transmission of infection were prevalent among 50% to 60% of para medical personnel specially with respect to utensils, sharing toilets and mosquitoes bite (Dobe, 1995).

7. Kubde et al-1995 studied on “AIDS awareness among Nursing Students”. 240 Nursing students from Government Medical College, Nagpur participated in the study and their baseline knowledge and attitude on AIDS was assessed. 31.9% quoted AIDS is not at all serious, it is just like getting common cold. 80.9% knew AIDS is life threatening. 42.2% considered all are susceptible to AIDS. However 93% were afraid of getting AIDS. 43% expressed negative attitude to serve AIDS patients while others showed positive attitude to save them.
8. A study on “Lessons from Home based care for persons affecting with HIV and AIDS” was carried out for a cross-sectional assessment on 104 IDUs revealed that about 10% of them and 17% of the total sample (n = 340) require referral for hospital because of other important medical reasons like meningitis, tuberculosis. This was a part of the study of natural history of HIV infection. Manipur is a matter of concern for AIDS with IDUs most commonly found all over the State. More over 83-90% of the patients individually could be treated or taken care of in homes as found in this study. This calls for appropriate home based care model and strengthen referral network (Yaima, 1995).

9. A study entitled, “HIV-2 and HIV-1-2 Sero-positivity in Bihar” was conducted in Rajendra Memorial Research Institute of Medical Sciences, Agamakuan, Patna (Saran and Gupta, 1995). 1802 serum samples from high risk group of persons were tested for seropositivity and 16 were found positive. Out of these 16, 5 (31.25%) were positive for HIV-2; 3 (18.75%) were positive for both HIV-1-2 and 8 (50%) were positive for only HIV-1. The authors suggested that Kits employed for initial serotesting must include both HIV-1 and HIV-2.

10. A field study on “Beyond Medical Models of STD Intervention- Lessons from Sunagachi” was conducted by Jana and Singh in one of the largest and oldest redlight area of Calcutta (1992-95) by NACO with sponsorship from WHO. 5000 Commercial Sex Workers resided at Sunagachi regarded as a significant reservoir of STDs including AIDS. Government Organisations, Non-Government Organisations and Community Based Organisations (CBOs)
were involved in extensive IEC activities to create awareness for STD & AIDS among the CSWs. The study revealed success by measurement of behaviour change in sexual practices and condom usage. The awareness of STD increased from 69.1% (1992) to 97.4% (1995) and that of AIDS from 30.7% (1992) to 96.2% (1995). The practice of CSWs using condoms revealed that remarkable change was recorded from 02.7% (1992) to 81.7% (1995) as a preventive measure to safeguard against STD/AIDS (Jana and Singh, 1995).

11. Poddar et al, in 1996 studied on “Perception about AIDS among residents of a Calcutta slum" to assess the impact of mass education programme against AIDS. 206 slum dwellers (18 to 60 years) were interviewed to know their perception because they might have been exposed with a nearby red light area. It was revealed that 71.4% were aware of AIDS and the use of condom as a preventive measure for extra marital sex was practically unknown. The researchers conclude that education should receive priority over surveillance and not the vice-versa as at present.

12. A Case appeared in Indian Journal of Leprosy with the title “Impact of HIV infection on Leprosy” reported by Thapa et al,1994 of a 28 years old unmarried promiscuous male, a leprosy patient found to be ELISA test for HIV positive had no history of chronic diarrhoea, weight loss or fever but was associated with Latent Syphilis and Condyloma acuminata. The authors commented that the progressive neurological deficit in this case might have been due to the added influence of HIV or that of progressive leprosy per se.
The present index case may be a pointer towards the likely implications of dual infection on the course of leprosy and the outcome of its management.

13. A study on "A cross-sectional seroprevalence survey for HIV-1 and High Risk sexual behaviour of seropositives in a prison in India" was made by Sundar et al, in 1995 for a group of 1607 undertrials and 107 permanent convicts during January to December 1993 in the Central Prison, Bangalore, Karnataka. Out of 3000 inmates, could be enrolled in study. Twenty (1.98%) under trials were HIV +ve and none found positive among permanent convicts. 13 were available for post test counselling but they were released from the prison because of court decision to release them immediately so no follow up could be done. Surprisingly 90% of prisoners were unaware of HIV/ AIDS. There is a need for immediate organization of counselling on AIDS in the prison in view of a steady flow of undertrials regularly.

14. A field study on "Relationship of National Highway with injecting drug abuse and HIV in rural Manipur" was observed by Sarkar et al, 1997 that villages close to National Highway and cuts across Nagaland had the highest Intravenous Drug Users (IDUs) prevalence of 1.3% and remote villages had prevalence ranging from 0.9% to 0.2%. It was surprisingly observed that HIV was uniformly distributed among the IDUs of all villages and ranged 50% to 51%.

15. A study conducted by Sayal et al in 1997 on "Concurrent leprosy and HIV infection : A report of three cases". This is the first report of HIV infection in
leprosy patients from Indian Armed Forces. No significant association between HIV infection and leprosy has been traced out.

16. Sivan (1998) studied on “Another face of innovative intervention in AIDS education to eunches in Tamil Nadu” organized a beauty contest participated by 100 eunches out of 700 took part in “Moovagam Festival” with tremendous enthusiasm. This community of eunches is considered an epicenter for HIV/AIDS pandemic. This unique experiment provided an ideal setting for generating awareness about HIV/AIDS and motivating the eunches for adopting condom.

17. A study was made, entitled “Providing STD Services- Perception and Practices of General Medical Practitioners. A team of 100 General Medical Practitioners (GMPs) of South Chennai was taken for a study in STD case management with the aim of checking transmission of HIV infection while treating STD, the patients refused for HIV test. 62.3% doctors reported advised on the use of condoms. The practitioners counselled for genital hygiene. All the doctors wanted refresher course from STD/HIV/AIDS specialists. One doctor desired recognition of private practitioners’ clinics for HIV testing for CSWs. The main study of course collected data related to their knowledge on STD/HIV/AIDS to help fill up the widening gaps in knowledge among the key service providers to ensure HIV/AIDS prevention a success. (Krishna Murthy et al, 1998).
18. An article on “Vitamins in HIV Disease Progression and vertical transmission”, (Fawzi and Hunter, 1998) emphasise that there is considerable evidence of nutritional supplements particularly, Vitamin A have a protective effect on disease progression and vertical transmission by decreasing the viral load in the body, lower genital secretions and breast milk. Researchers have noted that Vitamin A as well as other vitamins, may be among the few potential treatments that are inexpensive enough to be made available to HIV-infected persons in developing countries.

19. A study was made by Kamat et al, 1999 between 1993-1996 entitled “Increasing prevalence of HIV-2 and Dual HIV-1-2”, infections were more prevalent compared to only HIV-2 infections. The authors are of the opinion that so far awareness about HIV/ AIDS has not been adequately successful in preventing the spread in Mumbai City and India at large and unless this is done immediately the city and country will witness increased morbidity and mortality.

20. Bai et al, 1998 analysed that sex is solicited in different patterns in Tamil Nadu. They are brothel based, lodgebased, street based and children engaged in sex trade but Highway Sex is different. The Highway sex workers hail from the nearby villages in the trucking route. They draw the truckers attention by various means. The communication strategies should be framed to address on STD/HIV prevention among them which must consist of protection from reproductive tract infections, condom negotiation skills, peer promotion by using flip charts and audio visual aids, suggested by the authors.
21. "The effect of HIV status on the clinical picture of leprosy: a prospective study in Ethiopia" was undertaken by Gebre et al, 2002 with 660 leprosy patients registered between 1986 and 1993 out of which HIV testing could be performed for 581 leprosy patients and found positive for 22 patients (3.8%). There was an excess number of deaths in the HIV positive group: 27% compared with 5.7% in the HIV negative group, although causes of death was not recorded. Reactions and neuritis were not significantly influenced by HIV status. There was no evidence to suggest an increased risk of developing multibacillary or paucibacillary leprosy and the association of HIV positivity with the development of impairment.

22. A scientific paper was prepared for Leprosy Review, London, U.K. on "HIV testing and counselling" and were of the opinion that HIV testing is a cornerstone to preventive strategies as the knowledge of HIV status can have a profound effect on behaviour. Many tests only identify HIV-1 infection. The authors (Crampin and Damisoni, 2001) suggested that appropriate test should be done as HIV-2 is prevalent in some communities. Pre-test and post-test counselling are essential. The procedure for such counselling session's checklist (points to conduct counselling) have been enlisted for counsellors. These two scientists expressed their views that all the issues involved in counselling and testing for HIV apply to patients with leprosy, with the added concern that the occurrence of leprosy and HIV in a single individual may increase the problem of social stigmatization.
23. A study on “HIV Seropositivity in Pulmonary Tuberculosis Patients in Indore, Madhya Pradesh” was conducted (Khare, 2001) testing 100 TB cases, 4 were found seropositives (4%), out of them 2 had a history of sexual promiscuity, one had parental medication and one had received blood transfusion. Among the 96 HIV seronegatives, 9 gave history of sexual promiscuity while 10 had received blood transfusion/ parental medication. The two important concerns in the present day context are the emerging MDT resistant TB and the spreading HIV epidemic which are likely to worsen the TB situation in the country.

24. “HIV Seropositivity in the Hospitalised children with High Clinical Likelihood of AIDS” study was undertaken between August 1997 to February 1999 with 122 hospitalised children screened in T.N. Medical College, Aligarh Muslim University, Aligarh between the age group of 3 months to 12 years. WHO clinical criteria was adopted for diagnosis of AIDS in children in developing countries. Out of 122 screened, only one child was seropositive with a prevalence rate of less than 1%. This is in sharp contrast to the 15% prevalence reported in clinically suspected hospitalized children from Mumbai. The history revealed that this particular child received parenteral infusions and injections in private hospitals (Lahiri et al, 2002).

25. A study on vaccines on “Immune recovery with mycobacterium $\phi$” was conducted. The objective of the study was to evaluate the efficacy of mycobacterium $\phi$ (Immuvac ; an immunomodular) on C.D4 + cell count in HIV positive patients in India. 50 patients were randomly selected in 3 groups.
A group was given mycobacterium $\omega$; B group was given mycobacterium $\omega$ plus highly active antiretroviral therapy (HAART). Results revealed that the mean CD4+ cell counts increased by 80.22%; 68%; 108.97% in group A, B and C respectively as compared to baseline value's recorded 5 months earlier. It is concluded that mycobacterium $\omega$ is an effective immune response enhancer and immune recovery is associated with symptomatic relief (Kharkar, 2002).

26. A study made of 1000 consecutive and clinically suspected cases of Tuberculosis in O.P.D. of Calcutta Medical College entitled “Epidemiology of HIV Infection among Tuberculosis patients in Kolkata”. Prevalence amongst the sample of Tuberculosis cases of 20-39 years age group was found to be 0.7%. In menopausal age group there was sharp decline of TB (13.2%) compared to same age group (>50 years) of males (86%). While TB shows urban (55.9%) and semi-urban (32.4%) differences, of HIV with TB seems to be rural (0.85%) and semi-urban (0.92%) compared to urban (0.53%). Regarding other parameters, it was observed that HIV and TB affected mostly unmarried groups (56%), migrant jewellary workers (30%) and CSWS (11.1%), (Dey, 2003).

27. An article “Does concomitant HIV infection has any epidemiological, clinical, immunopathological and therapeutic relevance in leprosy?” published (Kar and Sharma, 2007) specify that co-infection with HIV-1 and M.Leprae is a rare event in endemic areas for leprosy and HIV, such as India. Neither an increased HIV prevalence among leprosy cases nor any rapid
progression to AIDS was observed among dual HIV-leprosy infections. The current situation concurring continued new leprosy case detection and gradual increase in HIV infection in India and a few other developing countries, such as Brazil, emphasizes the importance of monitoring the occurrence of co-infections. There is so far no change in the clinical spectrum of leprosy, PB/MB ratio, leprosy reactions and neuritis among co-infected patients. All types of leprosy occur in HIV patients [except in one study Borgdoff et al, 1993 where more MB leprosy cases with HIV infection were seen]. All dual infection cases respond to regular treatment, except in three studies which noted more relapses. Therefore, a longer duration of surveillance is advisable after fixed duration therapy, for the detection of early relapse.

28. Editorial article (Das Gupta, 2007) of Quarterly Journal of Indian Public Health Association. “Halt and Reverse the HIV epidemic; Millennium development goal and NACP III” highlighted the United Nations Millennium declaration puts forward a vision about the future world which will be safe, secure and conducive to fulfilment of human aspirations. All member countries are committed to attain the millennium development goal halting and reversing the HIV epidemic by 2015. Dasgupta further highlighted the NACP III programme implementation to be decentralised to district as a Unit and the CTC will be redesigned as ICTC (Integrated Counselling and Testing Centre).
29. An article "Process of estimating the number of people living with HIV in India" (Pandey et al., 2007) appraise the methodology of estimation, the primary demographic data were obtained from Registrar General of India and sample registration system. HIV prevalence data was drawn from HIV Sentinel Surveillance conducted at 704 sites in 2005 and over 1100 during 2006 representing, patients with STD attending STD clinics, Female Sex Workers (FSWs), Men having sex with men (MSM), Intravenous Drug Users (IDUs), patients with tuberculosis and eunches.

30. A special article, “Can data on HIV sero-activity among blood donors provide an insight into HIV prevalence in the general population”, made meaningful inferences from analysis, standardization in terms of blood collection, testing for HIV infection, reporting and analysis is called for. This is a very cost-effecting method of estimating HIV prevalence, and is amenable to detailed analysis of spatial and temporal trends of HIV infection in general population (Shukla and Bhuyan, 2007).

31. An article “Annual Sentinel Surveillance for HIV infection- Issues and challenges” (Bhattacharya, 2007) in this study focused based on 5 objectives (1) regarding magnitude of the problem in the country (2) HIV distribution in different geographical areas and in various risk groups has been shown in two maps of India, (3) advocacy and planning, for all stake holders (4) assess the time trends and has been elicited by line graphs on consistent sites from 1998 to 2005 (5) estimation of HIV load in the country based on surveillance data collected since 1998 to 2005.
32. An article, "Quality assurance of Annual HIV sentinel surveillance 2000: experience of Regional Institute, Central Zone" describe the process of quality control and quality of surveillance in the States of UP, Uttarakhand, Bihar, Jharkhand and Delhi and found standard procedures were operating. The concordance rate of test results between testing laboratory and the designated reference laboratory was high. The quality of sentinel surveillance was good. The lacuna found was suggested to correct in future surveillance round. (Kant et al, 2007).

33. An article, "HIV sero-prevalence and knowledge, behaviour and practices regarding HIV/AIDS in specific population groups in Ludhiana, Punjab studied population groups have very low HIV seroprevalence. Misconceptions and lack of knowledge need to be corrected through education and awareness to avoid high-risk behaviour and prevent HIV infection (Benjamin et al, 2007).

34. The researchers in their article on "Utilisation of Integrated Counselling and Testing Centre (ICTC) : A comparative study between a Tertiary Care Teaching Hospital and a Government district hospital in Karnataka" mentioning average number of persons visiting ICTC per month at the tertiary care teaching hospital (509) were higher than that of Government district hospital (222). Thus optimal use of information, education and communication (IEC) techniques need to be strengthened to improve the
D. THE SIGNIFICANCE OF THE STUDY

Since the disease AIDS comes within the orbit of human beings it has created ample scope for the scientists to follow up its spread taking place rapidly and the significance of the study is to observe and record all aspects of human world including its geographical area being easily covered or rather where and how the country or countries involved first has to be traced out from the print media sources. Has this disease created any such physical disabilities and if yes or no, than why and how? Why significantly being a recent origin considering other communicable and chronic diseases. AIDS has infiltrated to sociological and psychological dimensions which in turn reflected into the economic consequences. The study shall trace out the reasons. AIDS is not restricted to any particular country or race. Since the causative organism discovered is HIV and for those afflicted must have lower immunity, the scientists trace out the immunity status in this research work and this study shall find out significantly whether anybody can be declared never to have developed AIDS or any guarantee can be given to any one not to be infected at all? If it will have been an acute fatal disease then people of all countries must by themselves develop awareness to save them from death. As it is a slow progressing disease for years to develop appearances of clinical signs and symptoms, this study will record these signs and symptoms among all the age groups considering any difference to observe for adults and children separately. So far no fruitful suitable medicines have been discovered and therefore the significance of the study shall relate to whether the life span of a human being may be prolong from affliction of the virus by regular
medication of existing medicines for cure. It will be more appropriate and significant to know from the scientific research on preventive vaccine showing any positive results or not. As the health condition of people is detoriating people must be made sensitized towards the grave consequences of the disease and make them aware and remain alert to learn about the disease, change their attitude and make effort to make healthy practices to make the socialisation process of the affected persons effective for them to lead peaceful life. The significance on this shall be traced out from Print media and various reports and records to be followed up and scrutinize by the researcher at length. The gender issue to be studied and any significant prints on women and children shall be noted down. Concerns on negative instances if transformed into positive instances shall be the inspiring points of the study. The other vital significant issue shall be as to why the human rights are likely to be violated and how the Human Rights Commission shall be involved in solving. The same observation shall be made how political will of the Government authority at the top administrative level get sensitised to develop National Infrastructure and work-out considering District as a unit in all the endemic and hyper endemic states and even adopt measures to control the spread in lower endemic states as a secondary prevention procedure. The researcher feels confident by the huge amount of documentation data on print media collected over a period of two and a half decades and this analysis must show to derive several hidden dimensions of critical problem will lead to be justified to open up new avenues for the future researchers.
E. AIMS AND OBJECTIVES OF THE STUDY

1. The aim of the study is to gauge the immune status of human being since it is an immuno-deficiency syndrome.

2. To study whether specific drug or drugs may be invented for cure or for prevention to control the disease. The Print Media, Publications in these respect shall be very usefully collected to study various pharmaceutical companies around the globe for development of medicines and vaccines.

3. To study the health condition of the people being deteriorating due to lack of awareness, knowledge, attitude and behaviour and to understand whether people are changing their life style or not.

4. This study will aim to note down how people are following specific health related instructions or not.

5. The study is to know peoples' active participation in awareness programme which is revealed by the print media or publications, of steps being undertaken by the Government authorities and Non-Governmental Organisations involved in National AIDS Control Programme.
6. To record down the involvement of International Agencies as AIDS being a
global menace,

7. Since the disease relates to human being, attempt shall be made to study the
human nature and their development in relationship with anthropological
background and whether the disease had emerged with any related
historical phenomenon appeared in the wild life of animals and human
beings infected.

8. The aims of the study is to know from medical point of view the discovery of
the virus by the scientists who deal with immunology and Pathology of the
disease and their findings have any new avenue to design a new disease.

9. The objective further stresses the need for discovery of drug or drugs to cure
the disease and the study shall trace out new discovery of drugs from the
print media without lapse of missing a publication even for a day.
10. To study various issues related to AIDS and concerns shown by the community and society, Government and NGOs through the eyes of print media. And to find out whether people learn any lessons or looking at the problem as observers as they are involved directly or indirectly.

.........XXXXX.......