

The terms HIV/AIDS were unknown just about three and half decades ago, yet it has emerged as one of the leading cause of death among young adults. In July 1981, the New York Times reported few cases of a rare form of cancer among gay men in Los Angeles which the Centre for Disease Control termed as “GRID” (Gay-Related Immune

Deficiency) which was later termed as “Acquired Immune Deficiency” Syndrome (AIDS) in 1982. Almost 6 years after the disease was identified, the first treatment that emerged was a huge step in fight against HIV/AIDS. The drug AZT (Zidovudine) was approved by the FDA, which was used in high doses to treat people infected with HIV.

Table 1: Global HIV Scenario: 2015³

	People living with HIV (all age groups) in millions	New Infections (all age groups)	People living with ART (all age groups)	AIDS related deaths
Global	34.0- 39.8	1.8- 2.1	17 025 900	940 000- 1.3 million
Asia and Pacific	4.4- 5.9	240 000- 380 000	2 071 900	150 000- 220 000
Eastern and Southern Africa	17.7- 20.5	830 000- 1.1 million	10 252 400	390 000- 560 000
Eastern Europe and Central Asia	1.4-1.7	170 000- 200 000	321 800	39 000- 55 000
Latin America and the Caribbean	1.7-2.3	86 000- 120 000	1 091 900	41 000- 59 000
Middle East and North Africa	160 000- 330 000	12 000- 37 000	38 200	8700- 16 000
Western and Central Africa	5.3- 7.8	310 000- 530 000	1 830 700	250 000- 430 000
Western and central Europe and North America	2.2- 2.7	89 000- 97 000	1 418 900	20 000- 24 000

Reference: UNAIDS 2016 Global AIDS Update

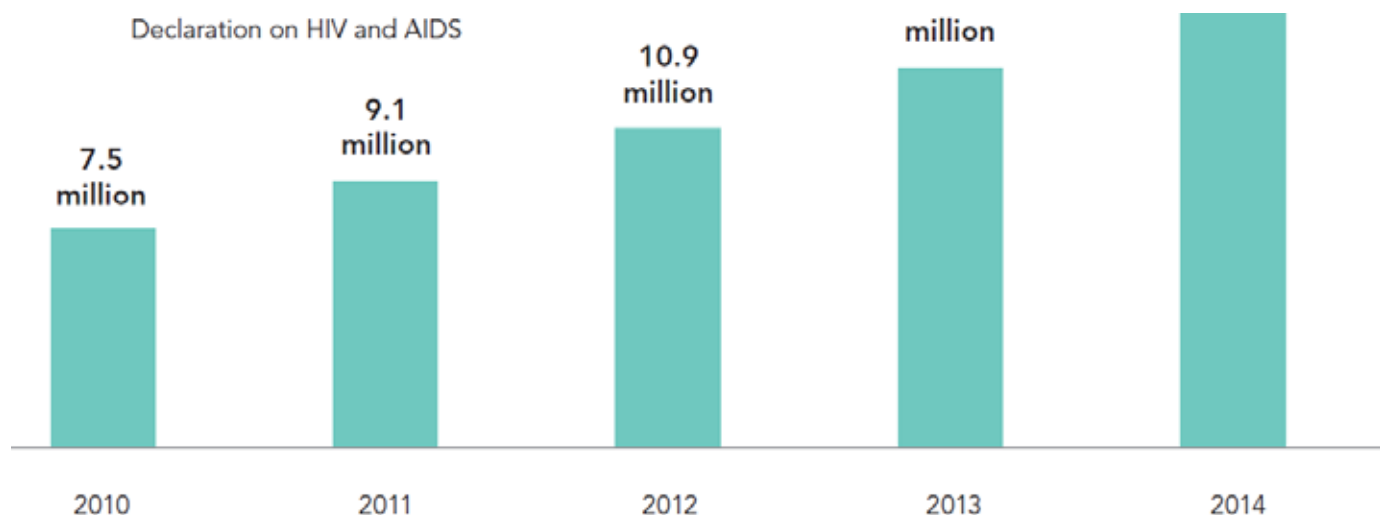


Fig. 1: Number of people living with HIV on antiretroviral therapy, global, 2010–2015³.

Reference: UNAIDS 2016 Global AIDS Update

124 Billions of dollars have been spent over the last three decades, a cure/vaccine is still not in sight. More than 70 million people have been infected with globally of whom 35 million people have already died because of HIV/AIDS and there is not a single country across the globe that has not reported cases of HIV infection.

GLOBAL SCENARIO

There are nearly 36 million people living with HIV Globally. Almost 2 million new infections occur every year and 1.2 million people die of HIV every year (Table 1).

Nearly 17 million people are receiving antiretroviral therapy (ART) worldwide (Figure 1). Nearly 68% of infections are in age group of 25 years and above (Figure 2). Globally the number of AIDS related annual deaths have decreased by 43% since 2003 while in eastern and southern Africa, the regions that are most affected by HIV, there has been a 36% reduction in AIDS related deaths since 2010.

INDIA

In 1986, the first few cases of HIV were detected in sex workers in Chennai in the state of Tamil Nadu. India currently has an estimated 2.1 million people living with HIV (PLHIV), third highest globally after South Africa and Nigeria. The HIV epidemic in India is highly heterogeneous – it is concentrated in specific regions of the country and in high risk groups (HRGs) such as people who inject drugs (PWID), female sex workers (FSW), men

who have sex with men (MSM) and transgender. HIV prevalence among adults (15-49 years) in the country has been declining steadily from 0.38% in 2001 to 0.26% in 2015. Prevalence among FSW, MSM, and PWID were 2.2%, 4.3%, and 9.9%, respectively. Overall, the estimated new HIV infections annually have reduced by 66% over 2000- 2015 and annual AIDS-related deaths have also decreased by 54% since 2007. In 2015, there were an estimated 86,000 new HIV infections and 68,000 AIDS-related deaths in India.

EPIDEMIC PROFILE

The National adult (15–49 years) HIV prevalence as per the 2015 HIV surveillance estimates is 0.26% (0.22%–0.32%) with 0.30% among males and at 0.22% among females (Figure 3). As per the state specific estimates, Manipur has the highest estimated adult HIV prevalence of 1.15%, followed by Mizoram (0.80%), Nagaland (0.78%), Andhra Pradesh & Telangana (0.66%), Karnataka (0.45%), Gujarat (0.42%) and Goa (0.40%). Andhra Pradesh and Telangana together have the highest estimated number of PLHIV (3.95 lakhs) followed by Maharashtra (3.01 lakhs), Karnataka (1.99 lakhs), Gujarat (1.66 lakhs), Bihar (1.51 lakhs) and Uttar Pradesh (1.50 lakhs). Infact these States together account for 64% of total estimated HIV infected people in India.

There has been a steady decline in the prevalence of HIV (both among men and women) at the National level from

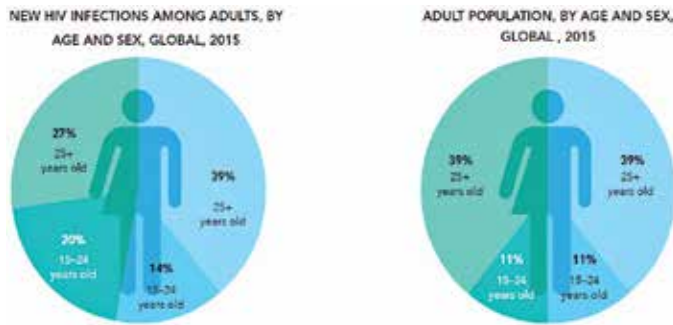


Fig. 2: Global Distribution of new adult HIV infections and population by age and sex, 2015³. Reference: UNAIDS 2016 Global AIDS Update

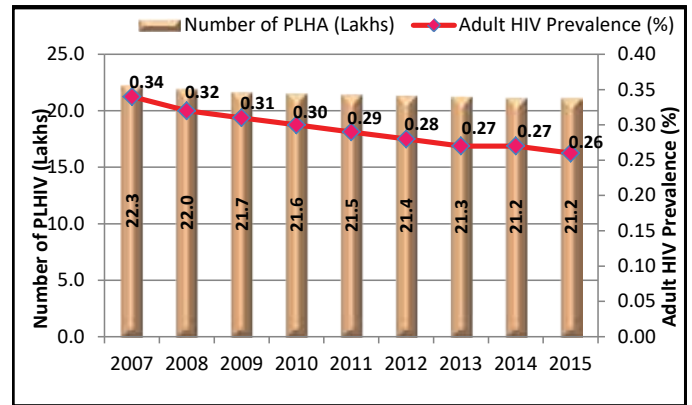


Fig. 4: HIV Prevalence and PLHIV Burden¹. Reference: Technical Report India HIV Estimates 2015, NACO & NIMS

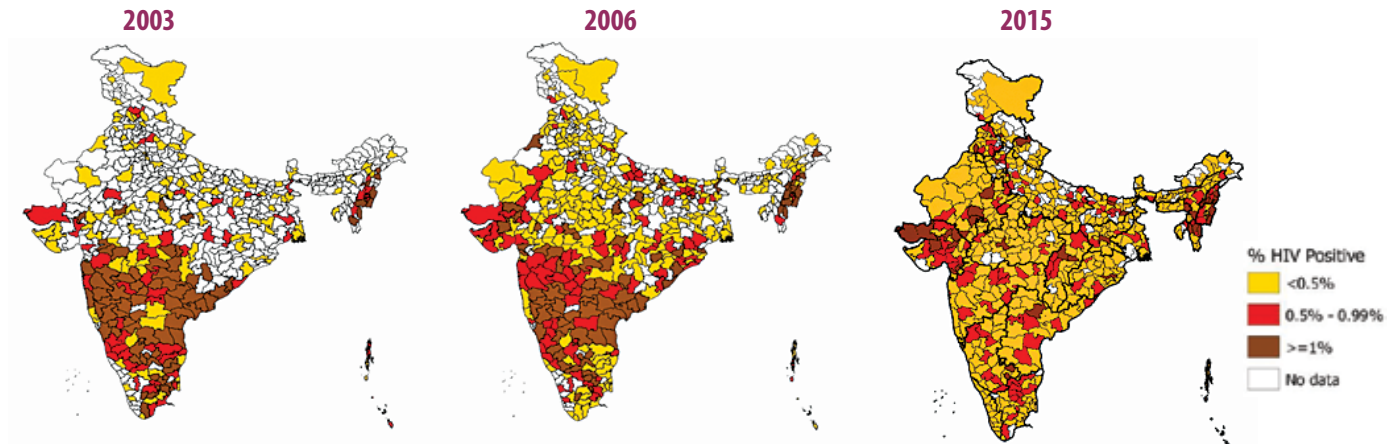


Fig. 3: State Wise HIV Prevalence (%) at ANC sites, HSS 2014-15². Reference: HSS 2014:15

an estimated peak of 0.38% in 2001-03 through 0.34% in 2007 and 0.28% in 2012 to 0.26% in 2015 (Figure 4). The declining prevalence has been observed across all high prevalence States (Andhra Pradesh & Telangana, Karnataka, Maharashtra, Manipur, Nagaland and Tamil Nadu) and other States such as Goa, Odisha and West Bengal. There are also some states that continue to show a plateau like Bihar, Chhattisgarh, Gujarat, Mizoram, Rajasthan and Uttar Pradesh but the concern is with states like Assam, Chandigarh, Delhi, Jharkhand, Punjab, Tripura and Uttarakhand where there has been an increase in the prevalence.

Almost 68,000 new infections occur every year with 54% decline over a decade (Figure 5), with states of AP, Telangana, Maharashtra, Karnataka and Tamil Nadu contributing 50% of cases (Figure 6) and ART scale up

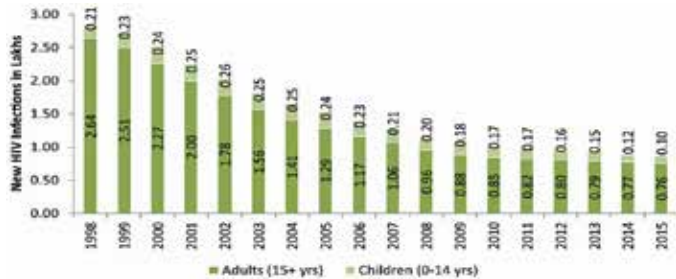


Fig. 5: Annual New Infection in India (1999- 2015)¹. Reference: India HIV Estimates: Technical Report 2015

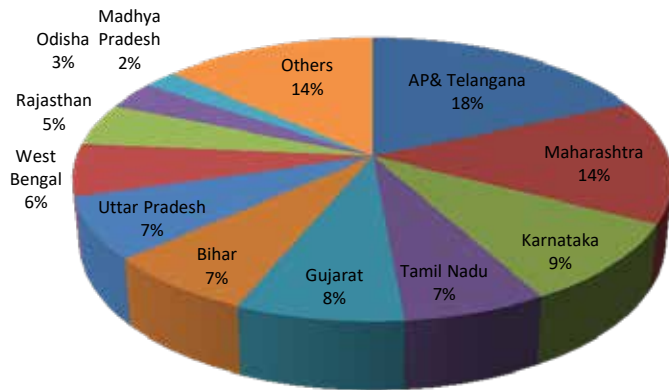


Fig. 6: State wise New Infections in 2015¹. Reference: India HIV Estimates: Technical Report 2015

has led to more than 30% decline in AIDS related deaths (Figure 7). Uttar Pradesh and West Bengal, account for 88% of all PPTCT needs in the country.

MODES OF TRANSMISSION OF HIV

Unprotected heterosexual intercourse is the primary mode of transmission of HIV in India. Disease is affecting mainly the people in sexually active age group. The majority of the patients are in the age group of 15-49 years. As per the latest data from NACO, the predominant mode of transmission of infection in 2014-15 was through heterosexual contact (94%) followed by parent to child transmission (Figure 8).

Besides heterosexual transmission and parent to child transmission, Injecting drug use is also an important risk factor for HIV infection in the North-East (especially in the states of Manipur, Mizoram and Nagaland), and features increasingly in the epidemics of major cities elsewhere, including in Chennai, Mumbai and New Delhi.

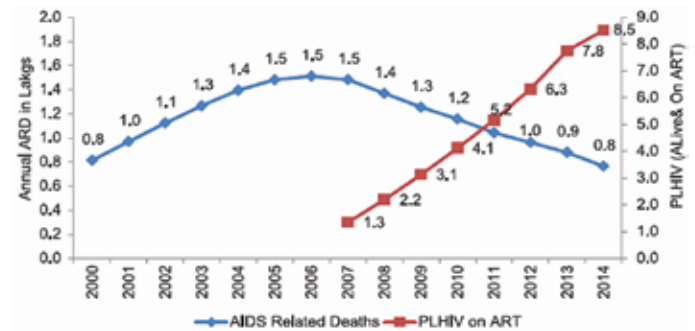


Fig. 7: ART Scale and HIV related Deaths in India¹. Reference: India HIV Estimates: Technical Report 2015

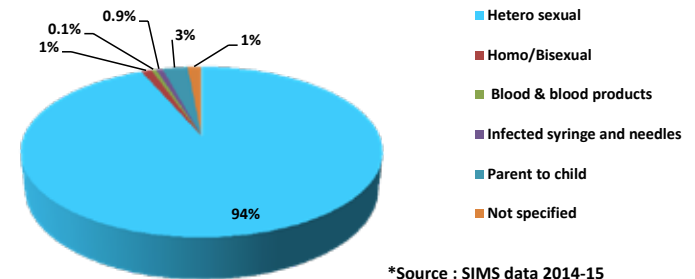


Fig. 8: Modes of Transmission of HIV in India 2014-15. Reference: SIMS data 2014-15

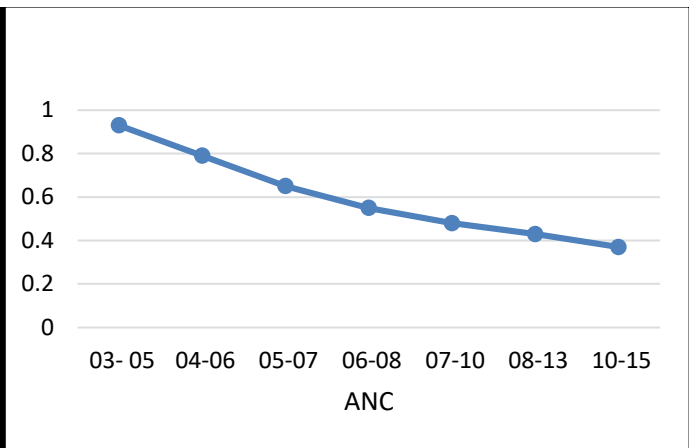
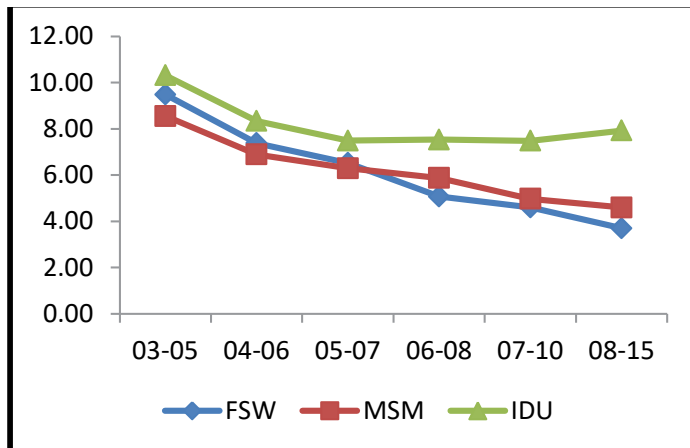


Fig. 9: HIV Prevalence Trends.¹ Reference: India HIV Estimates: Technical Report 2015

Table 2: Efficiency of HIV Transmission (Reference: NACO annual report 2014)

Exposure route	HIV
Blood transfusion	90-95%
Perinatal (without any intervention)	15-40%
Sexual intercourse	0.1 to 10%
Vaginal	0.05 - 0.1%
Anal	0.065-0.5%
Oral	0.005-0.01%
Injecting drugs use	0.67%
Needle stick exposure	0.3%
Mucous membrane splash to eye, oro-nasal	0.09%

Note: Comparative risk after needle-stick injury for HBV is 9-30% and for HCV is 1-1.8%

EPIDEMIOLOGICAL FACTORS

High Risk Groups

The lifestyle of certain population groups increases their vulnerability to acquire HIV infection and hence they are identified as high risk groups. e.g. long distance truck drivers, migrant labourers, CSWs, MSMs, IDUs etc. The 2014- 15, Integrated Biological and Behavioral Surveillance (IBBS) has shown that the highest HIV positivity among the FSW samples was in Maharashtra (7.4%), followed by Andhra Pradesh (6.3%), Manipur, Mizoram, Nagaland (5.9%) and Karnataka (5.8%) while the national average was 2.2%. MSM which is another group of people at high risk of acquiring HIV, 2014- 15, IBBS has shown that the highest HIV positivity among MSM samples was highest in Andhra Pradesh (10.1%) followed by Gujarat and Goa (6.8%), West Bengal, Odisha and Jharkhand (6.7%), Maharashtra (4.9%) and finally Karnataka (4.1%). The national average positivity was 4.3%. Among IDUs the national average was 9.9% with states like Manipur; Mizoram; Delhi and Rajasthan combined; Bihar, UP and Uttarakhand combined and Chattisgarh and MP combined having more than the national average.

Presence of STD

There is strong evidence that men and women with genital ulcer disease or urethral discharge are at increased risk of acquiring and transmitting HIV. The recent IBBS data shows that of the total IDUs sampled in the survey 15.9% had reported as having atleast one STI symptom in the last 12 months while among MSM it was 21% and in FSWs it was as high as 49%.

The Type of Sex Act

All unprotected acts of sexual penetration (anal, vaginal, and oral) carry a risk of HIV transmission because they bring sexual secretions directly into contact with exposed mucous membrane. Injury to the mucous membrane of the rectum, the vagina or the mouth may help the virus to enter into the bloodstream. 'Receptive' partners are thus at a greater risk than 'insertive' partners in acts of intercourse.

Amount of Virus

The amount of virus present in the blood or sexual secretions (semen, vaginal or cervical secretions) of the infected partner is an important determinant of infection. Individuals with HIV infection become more infectious as they progress to HIV related diseases and AIDS. There is also an early period of high infectiousness around the time of sero-conversion.

Susceptibility of HIV

The HIV is a very fragile virus and is inactivated by a number of physical and chemical agents and extreme of pH. It is susceptible to heat. A temperature of 56°C for 30 minutes or boiling for a few seconds kills the virus. Most of the chemical germicides used in hospital/ laboratories and health care settings kill HIV at much lower concentrations. Thus 0.2% sodium hypochlorite, 70% ethanol, 2% glutaraldehyde, acetone, ether, beta-propiolactone (1:400 dilution) and sodium hydroxide (40 mmol/litre) inactivate the virus.

Transmission of Virus

The virus can be transmitted by following ways: unprotected sex with an infected person; use of unsterilized needles; transfusion of infected blood and blood products and from an infected mother to her child before, during or after birth (Table 2).

The mode of transmission of HIV is determined by the amount of infectious virus in a body fluid and the extent of contact. High concentrations of free infectious virus and virus-infected cells have been reported in blood, genital fluids and cerebrospinal fluid. Breast milk and saliva yield varying numbers, whereas, other body fluids have a low viral content. High levels of virus are always associated with symptoms and advanced disease.

Urine, sweat, saliva, faeces and tears have not been reported to transmit the virus unless contaminated with blood. Breast milk at the time of primary infection in a feeding mother has a high content of virus and may transmit the infection to the baby.

Progression of HIV Infection

Three dominant patterns of HIV disease progression have been described. These are based on the kinetics of immunologic and virologic events described above

- Almost 80-90% of HIV infected are 'typical progressors' with a median survival time of 11 years, approximately.
- About 5-10% of HIV infected individuals are 'rapid progressors' with a median survival time of 3 years approximately.

CONCLUSION

Over the last two decades major achievements have been made in the field of HIV prevention and treatment. Today HIV infected mothers are giving birth to healthy children, people are aware of HIV which has resulted in behavioral modifications resulting in a decline in the number of people exposing others or themselves getting

exposed to HIV and most importantly with access to ART, people are living longer and healthier. But with so much advancement clinical science, we still do not have a vaccine or a cure. Even today people continue to transmit the infection and those once infected have to live with it throughout their life.

Under the Sustainable Development Goals (SDGs) the indicator on HIV specifically mentions “Ends of AIDS” by 2030. Achieving this target requires major changes in the way we identify HIV infected individuals and link them to treatment services. The timeline is not very far and lot needs to be achieved. In order to ensure that our efforts are on the right track, the UNAIDS has set targets for 2020. By then if the countries can ensure that 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy and 90% of all people receiving antiretroviral therapy will have viral suppression then we could achieve the SDG targets in 2030. India, as mentioned earlier in the chapter has made significant

progress but HIV epidemic being a dynamic epidemic, new pockets and areas of concern keep emerging. It is necessary that the program keeps pace with the evolving nature of the epidemic and plans its interventions as per the behavior, needs and lifestyle of the present day young population who are the major drivers of the epidemic. We cannot afford to relax now. It has to be ensured that people infected and affected by HIV live a normal life, minimum number of new infections occur and the efforts put in over the last two decades do not go waste.

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