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AIDS-A Clear and Present Danger

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Description

HIV/AIDS is a global pandemic [1]-a disease outbreak which is present over a large area and is actively spreading [2-16]. from its discovery in early 1980s the exploration and research work taken on this dreaded disease shows its widespread presence over large geographic barrier, crossing the geographical boundaries, with days, its detrimental effect, not only on morbidity and mortality, but also on socio-economic aspect of countries and region have surfaced.

It is a fatal disease as it targets and destroys the immune system of the body. Caused by a virus called human immunodeficiency virus or HIV. This virus can remain in body for years together without showing any visible symptoms. AIDS is the last stage of infection of the virus. It takes at least 10 years of period between getting infected with HIV and reaching the stage of developing AIDS. The first ever case of a person with AIDS was detected in America in 1959 which later emerged as a dreadfully widespread disease in the 1980s in countries like France, Belgium, Uganda, Zambia, Tanzania, Zimbabwe etc. In India, we witnessed it first time in 1986.

Till 2012, approximately 35.3 million people have HIV worldwide with the number of new infections that year being about 2.3 million [2]. Though the data shows encouraging signal through decline from 3.1 million new infections in 2001 [2]. Of these approximately 16.8 million are women and 3.4 million are less than 15 years old [3]. It resulted in about 1.6 million deaths in 2012, down from a peak of 2.2 million in 2005 [3]. This data though have shown a positive trend in decline of incidence, but it's far away to get excited about it and relax.

First clinically observed in 1981 in the United States [4]. Initially prevalent among cluster of injecting drug users and homosexual men with no known cause of impaired immunity who showed symptoms of Pneumocystis carinii pneumonia (PCP), a rare opportunistic infection that was known to occur in people with very compromised immuno systems [5]. Soon thereafter, an unexpected number of gay men developed a previously rare skin cancer called Kaposi's sarcoma (KS) [6,7]. Many more cases of PCP and KS emerged, alerting U.S. Centers for Disease Control and Prevention (CDC) and a CDC task force was formed to monitor the outbreak [8].

In the early days, the CDC used to call it with prevalent symptoms present in cases with this new condition such as, lymphadenopathy, the disease after which the discoverers of HIV originally named the virus [9,10]. They also used Kaposi's Sarcoma and Opportunistic Infections, the name by which a task force had been set up in 1981 [11]. At one point, the CDC coined the phrase "the 4H disease", since the syndrome seemed to affect Haitians, homosexuals, hemophiliacs, and heroin users [12]. In the general press, the term "GRID", which stood for gay-related immune deficiency, had been coined [13]. However, after determining that AIDS was not isolated to the gay community [11], it was realized that the term GRID was misleading and the term AIDS was introduced at a meeting in July 1982 [14]. By September 1982 the CDC started referring to the disease as AIDS [15-32].

The United States Center for Disease Control and Prevention also created a classification system for HIV, and updated it in 2008 [33]. This system classified HIV infections based on CD4 count and clinical symptoms [33], and describes the infection in three stages: stage1 to stage 3 and another nonspecific unknown category, in Stage 1 CD4 count is greater or equal to 500 cells/μl and defines no AIDS defining conditions, in Stage 2 CD4 count ranges 200 to 500 cells/μl and it's too classified as no AIDS defining conditions in Stage 3 CD4 count falls below 200 cells/μl and marked as AIDS defining conditions there is another Unknown category and carries insufficient information is available to make any of the above classifications.

For surveillance purposes, the AIDS diagnosis still stands even if, after treatment, the $CD4^+$ T cell count rises to above 200 per μl of blood or other AIDS-defining illnesses are cured [4]

HIV is transmitted primarily via unprotected sexual intercourse (including anal and oral sex), contaminated blood transfusions, hypodermic needles, and from mother to child during pregnancy, delivery, or breastfeeding [17]. But some body fluids, such as saliva and tears, do not transmit HIV [18]. Prevention of HIV infection, primarily through safe sex and needle-exchange programs, is a key strategy to control the spread of the disease. There is no cure or vaccine; however, antiretroviral treatment can slow the course of the disease and may lead to a near-normal life expectancy. While antiretroviral treatment reduces the risk of death and complications from the disease, these medications are expensive and have side effects. Without treatment, the average survival time after infection with HIV is estimated to be 9 to 11 years, depending on the HIV subtype [19].

HIV/AIDS has had a great impact on society, both as an illness and as a source of discrimination. The disease also has significant economic impacts

HIV/AIDS affects the economics of both individuals and countries [4]. The gross domestic product of the most affected countries has decreased due to the lack of human capital [4,20]. Without proper nutrition, health care and medicine, large numbers of people die from AIDS-related complications. They will not only be unable to work, but will also require significant medical care. It is estimated that as of 2007 there were 12 million AIDS orphans [20]. Many are cared for by elderly grandparents [21].

AIDS stigma has been further divided into the following three categories one is Instrumental AIDS stigma which delineate a reflection of the fear and apprehension that are likely to be associated

with any deadly and transmissible illness [22]. Next category is termed as Symbolic AIDS stigma where the use of HIV/AIDS to express attitudes toward the social groups or lifestyles perceived to be associated with the disease [22] and lastly courtesy AIDS stigma points toward stigmatization of people connected to the issue of HIV/AIDS or HIV-positive people [23]. Often, AIDS stigma is expressed in conjunction with one or more other stigmas, particularly those associated with homosexuality, bisexuality, promiscuity, prostitution, and intravenous drug use [24].

Despite being home to the world's third-largest population suffering from HIV/AIDS (with South Africa and Nigeria having more), the AIDS prevalence rate in India is lower than in many other countries. In 2007, India's AIDS prevalence rate stood at approximately 0.30%-the 89th highest in the world [25]. The spread of HIV in India is primarily restricted to the southern and north-eastern regions of the country and India has also been praised for its extensive anti-AIDS campaign [26].

The US$2.5 billion National AIDS Control Plan III was set up by India in 2007 and received support from UNAIDS [27]. Extensive labor migration and low literacy levels in certain rural areas resulting in lack of awareness and gender disparity are the main factors which have contributed to India's large HIV-infected population [27]. The Government of India has also raised concerns about the role of intravenous drug use and prostitution in spreading AIDS, especially in north-east India and certain urban pockets [27].

According to National AIDS Control Organization of India, the prevalence of AIDS in India in 2013 was 0.27, which is down from 0.41 in 2002 [28]. While the National AIDS Control Organization estimated that 2.39 million people live with HIV/AIDS in India in 2008-09 [29], a more recent investigation by the Million Death Study Collaborators in the British Medical Journal (2010) estimates the population to be between 1.4-1.6 million people [30].

The last decade has seen a 50% decline in the number of new HIV infections [31]. According to more recent National AIDS Control Organization data, India has demonstrated an overall reduction of 57 percent in estimated annual new HIV infections (among adult population) from 0.274 million in 2000 to 0.116 million in 2011, and the estimated number of people living with HIV was 2.08 million in 2011 [32-40].

The six high prevalence states account for only 39% of the cases, includes Odisha, Bihar, West Bengal, Uttar Pradesh, Rajasthan, Madhya Pradesh and Gujarat account for 41% of new infections of the 1.2 lakh estimated new infections in 2009 [41].

West Bengal also witnesses large-scale migration, both into and out of the state. Hostile and lonely environments, separation from families, lack of access to information, health services and social support systems can lead to social and sexual practices that make migrants more susceptible to HIV exposure. This also translates into an increased vulnerability for married women. Most married women have only their husbands as sexual partners, but lack the awareness and power to negotiate safer sex with them.

The state receives migrants from all neighbouring states and countries. According to the comprehensive national survey on migration (1993) conducted by national sample survey organization, these migrant populations account for 24.68% of the total population of the state. A significant number of the out-migrants have Mumbai and Gujarat as their destinations, with their families staying back in the state.

Till October 31, 2012 there were 50734 sero positive cases documented in ICTC and 36241 registered in ART centers, till October 31, 2012, 13695 patients were on ART Burdwan, Kolkata, Puruliya and Uttar-Dinajpur district topped the chart in term of HIV positive cases. There is currently no cure or effective HIV vaccine. Treatment consists of a single trial of the vaccine RV 144 published in 2009 found a partial reduction in the risk of transmission of roughly 30%, stimulating some hope in the research community of developing a truly effective vaccine [37]. Further trials of the RV 144 vaccine are ongoing [38,39] high active antiretroviral therapy (HAART) which slows progression of the disease [34] and as of 2010 more than 6.6 million people were taking them in low and middle income countries [3]. Treatment also includes preventive and active treatment of opportunistic infections.

Current HAART options are combinations (or "cocktails") consisting of at least three medications belonging to at least two types, or "classes," of antiretroviral agents [36]. Initially treatment is typically a non-nucleoside reverse transcriptase inhibitor (NNRTI) plus two nucleoside analogue reverse transcriptase inhibitors (NRTIs) [37]. Typical NRTIs include: zidovudine (AZT) or tenofovir (TDF) and lamivudine (3TC) or emtricitabine (FTC) [36]. Combinations of agents which include a protease inhibitors (PI) are used if the above regimen loses effectiveness [36] recently US-FDA approved once-daily fixed-dose combination pill of the antivirals dolutegravir, abacavir, and lamivudine (Triumeq) for the treatment of HIV infection in adults aged 18 years and older to ensure better compliance [42]. The focus in treating a case of HIV positive case is to stay with 3 dose HAART regimen, as most researches across the world shows high degree of efficacy with it. Not only in cases of adult HIV but also HIV in pregnancy, is transmission to neonate thwarted by zidovudine and nevirapine therapy. But to increase the horizon and spectrum of care, now globally, treatment approach is shifted towards preventing it at the inception. Focusing and finding out high risk population and occupations and diseases associated with it. so preventive therapy targeting at risk population, i.v drug user, sex workers, health professionals and people with STD are given due importance now a days, and as research work going on to thwart the virus in every step of pathogenesis, in days ahead we can expect a more apt preventive and curative approach for HIV and AIDS and will be able to prevent loss of human resource both through mortality and morbidity.

The fact lies HIV and AIDS endanger and cripple not only patients, but society as well and its detrimental effect neither limited to harming physical wellbeing, but mental, social and economic aspect of human life as a whole and its curse not limited to any geographic boundaries, therefore actually a grave challenge to the existence and survival of human race, because its harmful effect not limited to AIDS and AIDS related condition, but also along with other diseases, opportunistic infections and unhygienic practices and social ails, like sexually transmitted diseases, intravenous drug users, commercial sex workers, and particularly lack of awareness leads to a situation, where the more deprived, downtrodden and underprivileged section of society is subjected to its venomous bite more, recognizing this situation public health experts and health administration of countries and international bodies like WHO stressed on multipronged approach that encompass not only clinical, pharmacological, but preventive approach, awareness development via including both print and electronic media, community leaders and celebrities, rehabilitation of cured, removing social stigma from the mind of public. encouraging part is not only government bodies and international organizations but many non-governmental organization joined hands and selflessly working round the clock to achieve the mission, and some encouraging signs are

already evident, by success of national programs, successful case finding and HAART therapy cure rate, but we have to keep up the momentum, some things are done in right path, but much more need to be done to uproot the evil from the heart of society to usher in a new age of AIDS free earth.

References

1. Cohen MS, Hellmann N, Levy JA, DeCock K, Lange J (2008) The spread, treatment, and prevention of HIV-1: evolution of a global pandemic. J Clin Invest 118: 1244-1254.
2. UNAIDS (2013) UNAIDS reports a 52% reduction in new HIV infections among children and a combined 33% reduction among adults and children since 2001.
3. UNAIDS (2011) World AIDS day report.
4. Mandell GL, Bennett JE, Dolan R (2010) Principles and Practice of Infectious Diseases. USA.
5. Gottlieb MS (2006) Pneumocystis pneumonia-Los Angeles. 1981. Am J Public Health 96: 980-981.
6. Friedman-Kien AE (1981) Disseminated Kaposi's sarcoma syndrome in young homosexual men. J Am Acad Dermatol 5: 468-471.
7. Hymes KB, Cheung T, Greene JB, Prose NS, Marcus A, et al. (1981) Kaposi's sarcoma in homosexual men-a report of eight cases. Lancet 2: 598-600.
8. Basavapathruni A, Anderson KS (2007) Reverse transcription of the HIV-1 pandemic. FASEB J 21: 3795-3808.
9. Centers for Disease Control (CDC) (1982) Persistent, generalized lymphadenopathy among homosexual males. MMWR Morb Mortal Wkly Rep 31: 249-251.
10. Barré-Sinoussi F, Chermann JC, Rey F, Nugeyre MT, Chamaret S, et al. (1983) Isolation of a T-lymphotropic retrovirus from a patient at risk for acquired immune deficiency syndrome (AIDS). Science 220: 868-871.
11. Centers for Disease Control (CDC) (1982) Opportunistic infections and Kaposi's sarcoma among Haitians in the United States. MMWR Morb Mortal Wkly Rep 31: 353-354, 360-361.
12. American Association for the Advancement of Science (2008) Making Headway Under Hellacious Circumstances.
13. Altman LK (1982) New homosexual disorder worries health officials. The New York Times.
14. Kher U (1982) A Name for the Plague. Time.
15. Centers for Disease Control (CDC) (1982) Update on acquired immune deficiency syndrome (AIDS)--United States. MMWR Morb Mortal Wkly Rep 31: 507-508, 513-514.
16. Kallings LO (2008) The first postmodern pandemic: 25 years of HIV/AIDS. J Intern Med 263: 218-243.
17. Markowitz SB, Rom WN (2007) Environmental and occupational medicine. (4thedn.) Wolters Kluwer/Lippincott Williams & Wilkins, Philadelphia.
18. Centers for Disease Control and Prevention (2003) HIV and Its Transmission.
19. UNAIDS (2007) 2007 AIDS epidemic update. WHO.
20. Bell C, Devarajan S, Gersbach H (2003) The long-run economic costs of AIDS: theory and an application to South Africa. World Bank Policy Research.
21. Greener R (2002) AIDS and macroeconomic impact. In: Forsyth S (ed.) State of The Art: AIDS and Economics. IAEN. pp. 49-55.
22. Herek GM, Capitanio JP (1999) AIDS Stigma and sexual prejudice. American Behavioral Scientist 42: 1126-1143.
23. Snyder M, Omoto AM, Crain AL (1999) Punished for their good deeds: Stigmatization for AIDS volunteers. AmericanBehavioral Scientist 42: 1175-1192.
24. Sharma, AK (2012) Population and society. Concept Pub. Co., New Delhi.
25. CIA (2014) World Factbook publication-AIDS prevalence rates.
26. BBC (2005) Clinton lauds India Aids campaign.
27. Embassy of India, Source of Infections in AIDS cases in India.
28. http://www.ndtv.com/video/player/news/world-aids-day-india-records-sharp-drop-in-number-of-cases/299798.
29. http://nacoonline.org/upload/REPORTS/NACO%20Annual%20Report%202010-11.pdf.
30. http://www.bmj.com/content/340/bmj.c621.
31. Hindustan Times (2011) India sees 50% decline in new hiv infections: UN report.
32. http://www.ndtv.com/article/india/world-aids-day-india-records-sharp-drop-in-number-of-cases-299730.
33. Schneider E, Whitmore S, Glynn KM, Dominguez K, Mitsch A, et al. (2008) Revised surveillance case definitions for HIV infection among adults, adolescents, and children aged<18 months and for HIV infection and AIDS among children aged 18 months to<13 years-United States, 2008. MMWR. Recommendations and reports 57: 1-12.
34. May MT, Ingle SM (2011) Life expectancy of HIV-positive adults: a review. Sex Health 8: 526-533.
35. WHO (2010) Antiretroviral therapy for HIV infection in adults and adolescents: recommendations for a public health approach. World Health Organization.
36. WHO (20113) Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. World Health Organization.
37. Reynell L, Trkola A (2012) HIV vaccines: an attainable goal? Swiss Med Wkly 142: w13535.
38. US Army Office of the Surgeon General (2011) HIV Vaccine Trial in Thai Adults.
39. US Army Office of the Surgeon General (2010) Follow up of Thai Adult Volunteers With Breakthrough HIV Infection After Participation in a Preventive HIV Vaccine Trial.
40. Quevedo-Gómez MC, Krumeich A, Abadía-Barrero CE, Pastrana-Salcedo EM, van den Borne H (2011) Structural actions toward HIV/AIDS prevention in Cartagena, Colombia: a qualitative study. Rev Panam Salud Publica 30: 65-73.
41. Department of AIDS Control National AIDS Control Organisation Ministry of Health & Family Welfare (2015) Annual report. Government of India.
42. Tomasulo P (2000) Searching Medscape. Med Ref Serv Q 19: 63-70.