

Basic Facts About HIV And AIDS

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Abstract

This a basic report on the current status of acquired immune deficiency syndrome AIDS/HIV. It deals with the current status of this horrible disease. It defines the basic information and terminology and lists the method of management for non medical readers. This report would give the reader the primer to understand this disease.

THE EPIDEMIOLOGICAL BACKGROUND

The epidemiology and burden of HIV in the developing world had two distinct viruses. HIV types 1 and 2 (HIV-1/HIV-2) cause AIDS. HIV-1 is responsible for the great majority of infections globally. The life cycle of the virus can be viewed at web link <http://www.aids.org/factSheets/400-HIV-Life-Cycle.html>

While HIV-2 is very rare outside West Africa, individual cases of HIV-2 infection have been described in other parts of Africa, Europe, the Americas, and Asia (India), but most people with HIV-2 infection have some epidemiological link to West Africa.

Several reports published by international health agencies like the World Health Organization WHO and the United Nations agencies UNFPA conclude that AIDS is the leading cause of death in sub-Saharan Africa and the fourth biggest killer worldwide.[Table 1]

Figure 1

GLOBAL SUMMARY OF THE HIV/AIDS EPIDEMIC DECEMBER 2004		
Number of people living with HIV/AIDS in 2004	Total	39.4 million (35.9 - 44.3 million)
	Adults	37.2 million (33.8 - 41.7 million)
	Women	17.6 million (16.3 - 19.5 million)
	Children under 15 years	2.2 million (2.0 - 2.6 million)
People newly infected with HIV in 2004	Total	4.9 million (4.3 - 6.4 million)
	Adults	4.3 million (3.7 - 5.7 million)
	Children under 15 years	640 000 (570 000 - 750 000)
AIDS deaths in 2004	Total	3.1 million (2.8 - 3.5 million)
	Adults	2.6 million (2.3 - 2.9 million)
	Children under 15 years	510 000 (460 000 - 600 000)

The ranges around the estimates in this table define the boundaries within which the actual numbers lie.

Since the epidemic began more than 24 years ago at least 60 million people worldwide have been infected with the virus and currently more than 45 million people live with HIV. The cumulative number can be read from UNFPA AIDS Clock at http://www.unfpa.org/aids_clock/main.htm

These reports warn that the rates of infection are rising fastest in Eastern Europe and Russia. In 2001, there were an estimated 250000 new infections in this region. Russia has seen a 15-fold increase in infections over the years. Most of

these cases are related to illegal drug use.

Sub-Saharan Africa continues to be the worst affected area. The report says that AIDS killed 2.3 million people in 2001 and that there were 3.4 million new HIV infections. The region is the only one where more women than men are infected by the virus. More than 28 million people in the region currently live with HIV, a prevalence of 8%. Most of these people, the report says, do not know they have the virus.

The epidemic also “threatens human welfare, developmental progress, and social stability on an unprecedented scale.” Hardest hit countries could lose 20% of their gross domestic product by 2020. Steep drops in life expectancies are now beginning to occur. If it were not for HIV and AIDS, the average life expectancy in sub-Saharan Africa would be 62 years; it currently stands at 47 years.

The report says that marked increases in rates of infection in Asia and the Pacific, which have some of the world's most populous countries, are also of “particular concern.” Reported HIV infections in China rose by 67% in the first six months of 2001, compared with the previous year. India has a prevalence of about 1% representing an estimated 3.86 million people.^[3]

HUMAN IMMUNODEFICIENCY VIRUS AND ACQUIRED IMMUNODEFICIENCY SYNDROME

HUMAN IMMUNODEFICIENCY VIRUS (HIV)

The abbreviation HIV stands for the virus named 'human immunodeficiency virus'. HIV is a member of retroviruses that infect cells of the human immune system (mainly CD4 positive T cells and macrophages—key components of the cellular immune system), and destroy or impair their function. Infection with this virus results in the progressive depletion of the immune system, leading to 'immune deficiency'.

The immune system is considered deficient when it can no longer fulfill its role of fighting off infection and diseases. Immunodeficient people are much more vulnerable to a wide range of infections, most of which are very rare among people without immune deficiency. Diseases associated with severe immunodeficiency are known as 'opportunistic infections', because they take advantage of a weakened immune system.

ACQUIRED IMMUNODEFICIENCY SYNDROME

(AIDS)

AIDS stands for 'acquired immunodeficiency syndrome' and describes the collection of symptoms and infections associated with acquired deficiency of the immune system. Infection with HIV has been established as the underlying cause of AIDS. The level of HIV in the body and the appearance of certain infections are used as indicators that HIV infection has progressed to AIDS.

MANIFESTATION OF AIDS

THE SYMPTOMS OF HIV INFECTION

Most people infected with HIV do not know that they have become infected because no symptoms develop immediately after the initial infection. Some people have a glandular fever-like illness (with fever, rash, joint pains and enlarged lymph nodes), which can occur at the time of development of antibodies to HIV and usually takes place between six weeks and three months after an infection has occurred this is called seroconversion.

Despite the fact that HIV infection does not cause any initial symptoms, an HIV-infected person is highly infectious and can transmit the virus to another person. The only way to determine whether HIV is present in a person's body is by taking an HIV test.

HIV infection causes a gradual depletion and weakening of the immune system. This results in an increased susceptibility of the body to infections and can lead to the development of AIDS.

WHEN WE CAN SAY THAT A PERSON DOES HAVE AIDS?

The term AIDS applies to the most advanced stages of HIV infection.

The majority of people infected with HIV, if not treated, develop signs of AIDS within 8-10 years.

MEDICAL MANAGEMENT OF AIDS

AIDS is identified on the basis of certain infections, grouped by the (WHO):

- Stage I HIV disease is asymptomatic and not categorized as AIDS
- Stage II (includes minor mucocutaneous manifestations and recurrent upper respiratory tract infections)
- Stage III (includes unexplained chronic diarrhea

for longer than a month, severe bacterial infections and pulmonary tuberculosis) or

- Stage IV (includes Toxoplasmosis of the brain, Candidiasis of the esophagus, trachea, bronchi or lungs and Kaposi's Sarcoma) HIV diseases are used as indicators of AIDS.

Most of these conditions are opportunistic infections that can be treated easily in healthy

The length of time taken by infected patient to show signs of the disease can vary widely between individuals. With a healthy lifestyle, the time between infection with HIV and becoming ill with AIDS can be 10–15 years, sometimes longer. Antiretroviral therapy can slow down the progression of AIDS by decreasing viral load in an infected body.

There is no cure for HIV/AIDS. Progression of the disease can be slowed down but cannot be stopped completely. The right combination of antiretroviral drugs can slow down the damage that HIV causes to the immune system and delay the onset of AIDS.

The available treatment and care consist of a number of different elements, including voluntary counseling and testing (VCT), support for the prevention of onward transmission of HIV, follow-up counseling, advice on food and nutrition, treatment of STIs, management of nutritional effects, prevention and treatment of opportunistic infections (OIs), and the provision of antiretroviral drugs. They are used in the treatment of HIV infection.

Antiretroviral drugs work as follow: Inside an infected cell, HIV produces new copies of itself, which can then go on to infect other healthy cells within the body. The more cells HIV infects, the greater its impact on the immune system (immunodeficiency). Antiretroviral drugs slow down the replication and, therefore, the spread of the virus within the body, by interfering with its replication process in different ways.

NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS:

HIV needs an enzyme called reverse transcriptase to generate new copies of itself. This group of drugs inhibits reverse transcriptase by preventing the process that replicates the virus's genetic material.

NON-NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS:

This group of drugs also interferes with the replication of HIV by binding to the reverse transcriptase enzyme itself. This prevents the enzyme from working and stops the production of new virus particles in the infected cells.

PROTEASE INHIBITORS

Protease is a digestive enzyme that is needed in the replication of HIV to generate new virus particles. It breaks down proteins and enzymes in the infected cells, which can then go on to infect other cells. The protease inhibitors prevent this breakdown of proteins and therefore slow down the production of new virus particles.

Other drugs that inhibit other stages in the virus's cycle (such as entry of the virus and fusion with an uninfected cell) are currently being tested in clinical trials.

The use of ARVs in combinations of three or more drugs has been shown to dramatically reduce AIDS-related illness and death. While not a cure for AIDS, combination ARV therapy has enabled HIV-positive people to live longer, healthier, more productive lives by reducing viraemia (the amount of HIV in the blood) and increasing the number of CD4+ cells (white blood cells that are central to the effective functioning of the immune system).

For antiretroviral treatment to be effective for a long time, different antiretroviral drugs need to be combined. This is what is known as combination therapy. The term 'Highly Active Anti-Retroviral Therapy' (HAART) is used to describe a combination of three or more anti-HIV drugs.

If one drug is taken on its own, it has been found that, over a period of time, changes in the virus enable it to build up resistance to the drug. The drug is then no longer effective and the virus starts to reproduce to the same extent as before. If two or more antiretroviral drugs are taken together, the rate at which resistance develops can be reduced substantially. Usually, the combination consists of two drugs that inhibit the reverse transcriptase enzyme and one protease.

Antiretroviral drugs should only be taken under medical supervision.

In developing countries, only about 5% of needy patients are receiving anti-retrovirals, while there is near universal access in high-income countries. The high cost of the medicines, inadequate health care infrastructure and lack of financing

has prevented wide use of combination ARV treatment in low- and middle-income countries.

Twelve ARV medicines have been included in the WHO Essential Medicines List. The long-sought inclusion of ARVs in WHO's Essential Medicines List will encourage governments in hard-hit countries to further expand the distribution of these vital drugs to those who need them. Also, increased political and economic commitment in recent years, stimulated by people living with HIV/AIDS, civil society and other partners, has opened the scope for dramatic expansion of access to HIV therapy.

WHAT KIND OF CARE IS AVAILABLE WHEN ARVS ARE NOT ACCESSIBLE?

Other elements of care can help maintain a high quality of life when ARVs are not available. These include adequate nutrition, counseling, prevention and treatment of opportunistic infections and generally staying healthy.

Post-exposure preventive (PEP) treatment consists of medication, laboratory tests and counseling. PEP treatment must be initiated within hours of possible HIV exposure and must continue for a period of approximately four weeks. PEP treatment has not been proven to prevent the transmission of HIV. However, research studies suggest that, if the medication is initiated quickly after possible HIV exposure (ideally within two hours and not later than 72 hours following such exposure), it may be beneficial in preventing HIV infection.

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