AIDS

Your task is:

1. Summarise the problem of AIDS (1.000 words maximum**).**

2. You are a young Administrator at DG RTD. In the frame of the preparation of the 8th Framework Programme for Research (8 FP), your DG asks you to draft a "Paper" setting up the launch of a new research-field on AIDS to be included in the 8 FP (600 words maximum**).**

N.B. For the sake of this "simulation", please consider AIDS as being a NEW disease recently discovered/appeared in Europe.

BACKGROUND INFORMATION:

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1 part of this file is about "Mission Statement Unit DG RTD F 3" (page 28)

1 part of this file is about "AIDS in Europe" (page 29-30)

1 part of this file is about "Action on HIV/AIDS in the European Union and neighbouring countries 2006 – 2009" (page 31-34)

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For other uses, see AIDS (disambiguation).

Acquired immunodeficiency syndrome (AIDS) *Classification and external resources*
The Red ribbon is a symbol for solidarity with HIV-positive people and those living with AIDS.

ICD-10	B24.
ICD-9	042
DiseasesDB	5938
MedlinePlus	000594
eMedicine	emerg/253
MeSH	D000163

List of abbreviations used in this article

AIDS: Acquired immune deficiency syndrome
HIV: Human immunodeficiency virus
CD4+: T helper cells
CCR5: Chemokine (C-C motif) receptor 5
CDC: Centers for Disease Control and Prevention
WHO: World Health Organization
PCP: Pneumocystis pneumonia
TB: Tuberculosis
MTCT: Mother-to-child transmission
HAART: Highly active antiretroviral therapy
STI/STD: Sexually transmitted infection/disease

Acquired immune deficiency syndrome or **acquired immunodeficiency syndrome** (**AIDS** or **Aids**) is a set of symptoms and infections resulting from the damage to the human immune system caused by the human immunodeficiency virus (HIV).[1] This condition progressively reduces the effectiveness of the immune system and leaves individuals susceptible to opportunistic infections and tumors. HIV is transmitted through direct contact of a mucous membrane or the bloodstream with a bodily fluid containing HIV, such as blood, semen, vaginal fluid, preseminal fluid, and breast milk.[2][3] This transmission can involve anal, vaginal or oral sex, blood transfusion, contaminated hypodermic needles, exchange between mother and baby during pregnancy, childbirth, or breastfeeding, or other exposure to one of the above bodily fluids.

AIDS is now a pandemic.[4] In 2007, an estimated 33.2 million people lived with the disease worldwide, and it killed an estimated 2.1 million people, including 330,000 children.[5] Over three-quarters of these deaths occurred in sub-Saharan Africa,[5] retarding economic growth and destroying human capital.[6] Most researchers believe that HIV originated in sub-Saharan Africa during the twentieth century.[7] The disease was first identified by the U.S. Centers for Disease Control and Prevention in 1981 and its cause identified by American and French scientists in the late 1980s.[8]

Although treatments for AIDS and HIV can slow the course of the disease, there is currently no vaccine or cure. Antiretroviral treatment reduces both the mortality and the morbidity of HIV infection, but these drugs are expensive and routine access to antiretroviral medication is not available in all countries.[9] Due to the difficulty in treating HIV infection, preventing infection is a key aim in controlling the AIDS epidemic, with health organizations promoting safe sex and needle-exchange programmes in attempts to slow the spread of the virus.

Symptoms

A generalized graph of the relationship between HIV copies (viral load) and CD4 counts over the average course of untreated HIV infection; any particular individual's disease course may vary considerably. CD4$^+$ T Lymphocyte count (cells/mm^3) HIV RNA copies per mL of plasma

The symptoms of AIDS are primarily the result of conditions that do not normally develop in individuals with healthy immune systems. Most of these conditions are infections caused by bacteria, viruses, fungi and parasites that are normally controlled by the elements of the immune system that HIV damages. Opportunistic infections are common in people with AIDS.[10] HIV affects nearly every organ system. People with AIDS also have an increased risk of developing various cancers such as Kaposi's sarcoma, cervical cancer and cancers of the immune system known as lymphomas. Additionally, people with AIDS often have systemic symptoms of infection like fevers, sweats (particularly at night), swollen glands, chills, weakness, and weight loss.[11][12] The specific opportunistic infections that AIDS patients develop depend in part on the prevalence of these infections in the geographic area in which the patient lives.

Pulmonary infections

X-ray of *Pneumocystis jirovecii* caused pneumonia. There is increased white (opacity) in the lower lungs on both sides, characteristic of *Pneumocystis* pneumonia

Pneumocystis pneumonia (originally known as *Pneumocystis carinii* pneumonia, and still abbreviated as PCP, which now stands for **P**neumo**c**ystis **p**neumonia) is relatively rare in healthy, immunocompetent people, but common among HIV-infected individuals. It is caused by *Pneumocystis jirovecii*. Before the advent of effective diagnosis, treatment and routine prophylaxis in Western countries, it was a common immediate cause of death. In developing countries, it is still one of the first indications of AIDS in untested individuals, although it does not generally occur unless the CD4 count is less than 200 cells per µL of blood.[13]

Tuberculosis (TB) is unique among infections associated with HIV because it is transmissible to immunocompetent people via the respiratory route, is easily treatable once identified, may occur in early-stage HIV disease, and is preventable with drug therapy. However, multidrug resistance is a potentially serious problem. Even though its incidence has declined because of the use of directly observed therapy and other improved practices in Western countries, this is not the case in developing countries where HIV is most prevalent. In early-stage HIV infection (CD4 count >300 cells per µL), TB typically presents as a pulmonary disease. In advanced HIV infection, TB often presents atypically with extrapulmonary (systemic) disease a common feature. Symptoms are usually constitutional and are not localized to one particular site, often affecting bone marrow, bone, urinary and gastrointestinal tracts, liver, regional lymph nodes, and the central nervous system.[14]

Gastrointestinal infections

Esophagitis is an inflammation of the lining of the lower end of the esophagus (gullet or swallowing tube leading to the stomach). In HIV infected individuals, this is normally due to fungal (candidiasis) or viral (herpes simplex-1 or cytomegalovirus) infections. In rare cases, it could be due to mycobacteria.[15]

Unexplained chronic diarrhea in HIV infection is due to many possible causes, including common bacterial (*Salmonella*, *Shigella*, *Listeria* or *Campylobacter*) and parasitic infections; and uncommon opportunistic infections such as cryptosporidiosis, microsporidiosis, *Mycobacterium avium* complex (MAC) and viruses,[16] astrovirus, adenovirus, rotavirus and cytomegalovirus, (the latter as a

course of colitis). In some cases, diarrhea may be a side effect of several drugs used to treat HIV, or it may simply accompany HIV infection, particularly during primary HIV infection. It may also be a side effect of antibiotics used to treat bacterial causes of diarrhea (common for *Clostridium difficile*). In the later stages of HIV infection, diarrhea is thought to be a reflection of changes in the way the intestinal tract absorbs nutrients, and may be an important component of HIV-related wasting.[17]

Neurological and psychiatric involvement

HIV infection may lead to a variety of neuropsychiatric sequelae, either by infection of the now susceptible nervous system by organisms, or as a direct consequence of the illness itself.

Toxoplasmosis is a disease caused by the single-celled parasite called *Toxoplasma gondii*; it usually infects the brain causing toxoplasma encephalitis but it can infect and cause disease in the eyes and lungs.[18] Cryptococcal meningitis is an infection of the meninx (the membrane covering the brain and spinal cord) by the fungus *Cryptococcus neoformans*. It can cause fevers, headache, fatigue, nausea, and vomiting. Patients may also develop seizures and confusion; left untreated, it can be lethal.

Progressive multifocal leukoencephalopathy (PML) is a demyelinating disease, in which the gradual destruction of the myelin sheath covering the axons of nerve cells impairs the transmission of nerve impulses. It is caused by a virus called JC virus which occurs in 70% of the population in latent form, causing disease only when the immune system has been severely weakened, as is the case for AIDS patients. It progresses rapidly, usually causing death within months of diagnosis.[19]

AIDS dementia complex (ADC) is a metabolic encephalopathy induced by HIV infection and fueled by immune activation of HIV infected brain macrophages and microglia which secrete neurotoxins of both host and viral origin.[20] Specific neurological impairments are manifested by cognitive, behavioral, and motor abnormalities that occur after years of HIV infection and is associated with low $CD4^+$ T cell levels and high plasma viral loads. Prevalence is 10–20% in Western countries[21] but only 1–2% of HIV infections in India.[22][23] This difference is possibly due to the HIV subtype in India. AIDS related mania is sometimes seen in patients with advanced HIV illness; it presents with more irritability and cognitive impairment and less euphoria than a manic episode associated with true

bipolar disorder. Unlike the latter condition, it may have a more chronic course. This syndrome is less often seen with the advent of multi-drug therapy.

Tumors and malignancies

Kaposi's sarcoma

Patients with HIV infection have substantially increased incidence of several malignant cancers. This is primarily due to co-infection with an oncogenic DNA virus, especially Epstein-Barr virus (EBV), Kaposi's sarcoma-associated herpesvirus (KSHV), and human papillomavirus (HPV).[24][25]

Kaposi's sarcoma (KS) is the most common tumor in HIV-infected patients. The appearance of this tumor in young homosexual men in 1981 was one of the first signals of the AIDS epidemic. Caused by a gammaherpes virus called Kaposi's sarcoma-associated herpes virus (KSHV), it often appears as purplish nodules on the skin, but can affect other organs, especially the mouth, gastrointestinal tract, and lungs.

High-grade B cell lymphomas such as Burkitt's lymphoma, Burkitt's-like lymphoma, diffuse large B-cell lymphoma (DLBCL), and primary central nervous system lymphoma present more often in HIV-infected patients. These particular cancers often foreshadow a poor prognosis. In some cases these lymphomas are AIDS-defining. Epstein-Barr virus (EBV) or KSHV cause many of these lymphomas.

Cervical cancer in HIV-infected women is considered AIDS-defining. It is caused by human papillomavirus (HPV).[26]

In addition to the AIDS-defining tumors listed above, HIV-infected patients are at increased risk of certain other tumors, such as Hodgkin's disease and anal and rectal carcinomas. However, the incidence of many common tumors, such as breast cancer or colon cancer, does not increase in HIV-infected patients. In areas where HAART is extensively used to treat AIDS, the incidence of many AIDS-related malignancies has decreased, but at the same time malignant cancers overall have become the most common cause of death of HIV-infected patients.[27]

Other opportunistic infections

AIDS patients often develop opportunistic infections that present with non-specific symptoms, especially low-grade fevers and weight loss. These include infection with *Mycobacterium avium-intracellulare* and cytomegalovirus (CMV). CMV can cause colitis, as described above, and CMV retinitis can cause blindness. Penicilliosis due to *Penicillium marneffei* is now the third most common opportunistic infection (after extrapulmonary tuberculosis and cryptococcosis) in HIV-positive individuals within the endemic area of Southeast Asia.[28]

Cause

For more details on this topic, see HIV.

Scanning electron micrograph of HIV-1, colored green, budding from a cultured lymphocyte.

AIDS is the most severe acceleration of infection with HIV. HIV is a retrovirus that primarily infects vital organs of the human immune system such as $CD4^+$ T cells (a subset of T cells), macrophages and dendritic cells. It directly and indirectly destroys $CD4^+$ T cells.[29] Once HIV has killed so many $CD4^+$ T cells that there are fewer than 200 of these cells per microliter (µL) of blood, cellular immunity is lost. Acute HIV infection progresses over time to clinical latent HIV infection and then to early symptomatic HIV infection and later to AIDS, which is identified either on the basis of the amount of $CD4^+$ T cells remaining in the blood, and/or the presence of certain infections, as noted above.[30]

In the absence of antiretroviral therapy, the median time of progression from HIV infection to AIDS is nine to ten years, and the median survival time after developing AIDS is only 9.2 months.[31] However, the rate of clinical disease progression varies widely between individuals, from two weeks up to 20 years. Many factors affect the rate of progression. These include factors that influence the body's ability to defend against HIV such as the infected person's general immune function.[32][33] Older people have weaker immune systems, and therefore have a greater risk of rapid disease progression than younger people. Poor access to health care and the existence of coexisting infections such as tuberculosis also may predispose people to faster disease progression.[31][34][35] The infected person's genetic inheritance plays an important role and some people are resistant to certain strains of HIV. An example of this is people with the homozygous CCR5-Δ32 variation are resistant to infection with certain strains of HIV.[36] HIV is genetically variable

and exists as different strains, which cause different rates of clinical disease progression.[37][38][39]

Sexual transmission

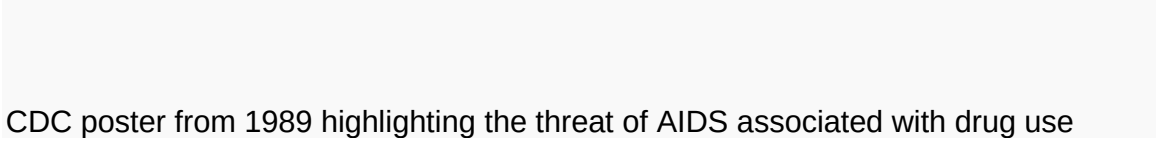
Sexual transmission occurs with the contact between sexual secretions of one person with the rectal, genital or oral mucous membranes of another. Unprotected receptive sexual acts are riskier than unprotected insertive sexual acts, and the risk for transmitting HIV through unprotected anal intercourse is greater than the risk from vaginal intercourse or oral sex. However, oral sex is not entirely safe, as HIV can be transmitted through both insertive and receptive oral sex.[40] The risk of HIV transmission from exposure to saliva is considerably smaller than the risk from exposure to semen, one would have to swallow liters of saliva from a carrier to run a significant risk of becoming infected.[41] Sexual assault greatly increases the risk of HIV transmission as protection is rarely employed and physical trauma to the vagina frequently occurs, facilitating the transmission of HIV.[42]

Other sexually transmitted infections (STI) increase the risk of HIV transmission and infection, because they cause the disruption of the normal epithelial barrier by genital ulceration and/or microulceration; and by accumulation of pools of HIV-susceptible or HIV-infected cells (lymphocytes and macrophages) in semen and vaginal secretions. Epidemiological studies from sub-Saharan Africa, Europe and North America suggest that genital ulcers, such as those caused by syphilis and/or chancroid, increase the risk of becoming infected with HIV by about four-fold. There is also a significant although lesser increase in risk from STIs such as gonorrhea, Chlamydial infection and trichomoniasis, which all cause local accumulations of lymphocytes and macrophages.[43]

Transmission of HIV depends on the infectiousness of the index case and the susceptibility of the uninfected partner. Infectivity seems to vary during the course of illness and is not constant between individuals. An undetectable plasma viral load does not necessarily indicate a low viral load in the seminal liquid or genital secretions. However, each 10-fold increase in the level of HIV in the blood is associated with an 81% increased rate of HIV transmission.[43][44] Women are more susceptible to HIV-1 infection due to hormonal changes, vaginal microbial ecology and physiology, and a higher prevalence of sexually transmitted diseases.[45][46] People who have been

infected with one strain of HIV can still be infected later on in their lives by other, more virulent strains.

Exposure to blood-borne pathogens



CDC poster from 1989 highlighting the threat of AIDS associated with drug use

This transmission route is particularly relevant to intravenous drug users, hemophiliacs and recipients of blood transfusions and blood products. Sharing and reusing syringes contaminated with HIV-infected blood represents a major risk for infection with HIV. Needle sharing is the cause of one third of all new HIV-infections in North America, China, and Eastern Europe. The risk of being infected with HIV from a single prick with a needle that has been used on an HIV-infected person is thought to be about 1 in 150 (see table above). Post-exposure prophylaxis with anti-HIV drugs can further reduce this risk.[47] This route can also affect people who give and receive tattoos and piercings. Universal precautions are frequently not followed in both sub-Saharan Africa and much of Asia because of both a shortage of supplies and inadequate training. The WHO estimates that approximately 2.5% of all HIV infections in sub-Saharan Africa are transmitted through unsafe healthcare injections.[48] Because of this, the United Nations General Assembly has urged the nations of the world to implement precautions to prevent HIV transmission by health workers.[49]

The risk of transmitting HIV to blood transfusion recipients is extremely low in developed countries where improved donor selection and HIV screening is performed. However, according to the WHO, the overwhelming majority of the world's population does not have access to safe blood and between 5% and 10% of the world's HIV infections come from transfusion of infected blood and blood products.[50]

Perinatal transmission

The transmission of the virus from the mother to the child can occur *in utero* during the last weeks of pregnancy and at childbirth. In the absence of treatment, the transmission rate between a mother and her child during pregnancy, labor and delivery is 25%. However, when the mother takes antiretroviral therapy and gives birth by caesarean section, the rate of transmission is just 1%.[51] The risk of infection is influenced by the viral load

of the mother at birth, with the higher the viral load, the higher the risk. Breastfeeding also increases the risk of transmission by about 4 %.[52]

Misconceptions

Main article: HIV and AIDS misconceptions

A number of misconceptions have arisen surrounding HIV/AIDS. Three of the most common are that AIDS can spread through casual contact, that sexual intercourse with a virgin will cure AIDS, and that HIV can infect only homosexual men and drug users. Other misconceptions are that any act of anal intercourse between gay men can lead to AIDS infection, and that open discussion of homosexuality and HIV in schools will lead to increased rates of homosexuality and AIDS.[53]

Pathophysiology

The pathophysiology of AIDS is complex, as is the case with all syndromes.[54] Ultimately, HIV causes AIDS by depleting $CD4^+$ T helper lymphocytes. This weakens the immune system and allows opportunistic infections. T lymphocytes are essential to the immune response and without them, the body cannot fight infections or kill cancerous cells. The mechanism of $CD4^+$ T cell depletion differs in the acute and chronic phases.[55] During the acute phase, HIV-induced cell lysis and killing of infected cells by cytotoxic T cells accounts for $CD4^+$ T cell depletion, although apoptosis may also be a factor. During the chronic phase, the consequences of generalized immune activation coupled with the gradual loss of the ability of the immune system to generate new T cells appear to account for the slow decline in $CD4^+$ T cell numbers.

Although the symptoms of immune deficiency characteristic of AIDS do not appear for years after a person is infected, the bulk of $CD4^+$ T cell loss occurs during the first weeks of infection, especially in the intestinal mucosa, which harbors the majority of the lymphocytes found in the body. [56] The reason for the preferential loss of mucosal $CD4^+$ T cells is that a majority of mucosal $CD4^+$ T cells express the CCR5 coreceptor, whereas a small fraction of $CD4^+$ T cells in the bloodstream do so.[57] HIV seeks out and destroys CCR5 expressing $CD4^+$ cells during acute infection. A vigorous immune response eventually controls the infection and initiates the clinically latent phase. However, $CD4^+$ T cells in mucosal tissues remain depleted throughout the infection, although enough remain to initially ward off life-threatening infections.

Continuous HIV replication results in a state of generalized immune activation persisting throughout the chronic phase. [58] Immune activation, which is reflected by the increased activation state of immune cells and release of proinflammatory cytokines, results from the activity of several HIV gene products and the immune response to ongoing HIV replication. Another cause is the breakdown of the immune surveillance system of the mucosal barrier caused by the depletion of mucosal $CD4^+$ T cells during the acute phase of disease.[59] This results in the systemic exposure of the immune system to microbial components of the gut's normal flora, which in a healthy person is kept in check by the mucosal immune system. The activation and proliferation of T cells that results from immune activation provides fresh targets for HIV infection. However, direct killing by HIV alone cannot account for the observed depletion of $CD4^+$ T cells since only 0.01-0.10% of $CD4^+$ T cells in the blood are infected. A major cause of $CD4^+$ T cell loss appears to result from their heightened susceptibility to apoptosis when the immune system remains activated. Although new T cells are continuously produced by the thymus to replace the ones lost, the regenerative capacity of the thymus is slowly destroyed by direct infection of its thymocytes by HIV. Eventually, the minimal number of $CD4^+$ T cells necessary to maintain a sufficient immune response is lost, leading to AIDS

Cells affected

The virus, entering through which ever route, acts primarily on the following cells:[60]

1. Lymphoreticular system:
    1. CD_4+ T-Helper cells
    2. CD_4+ Macrophages
    3. CD_4+ Monocytes
    4. B-lymphocytes
2. Certain endothelial cells
3. Central nervous system:
    1. Microglia of the nervous system
    2. Astrocytes
    3. Oligodendrocytes

4. Neurones - indirectly by the action of cytokines and the gp-120

The effect

The virus has cytopathic effects but how it does it is still not quite clear. It can remain inactive in these cells for long periods, though. This effect is hypothesized to be due to the CD_4-gp120 interaction.[61]

- The most prominent effect of the HIV virus is its T-helper cell suppression and lysis. The cell is simply killed off or deranged to the point of being function-less (they do not respond to foreign antigens). The infected B-cells can not produce enough antibodies either. Thus the immune system collapses leading to the familiar AIDS complications, like infections and neoplasms (vide supra).
- Infection of the cells of the CNS cause acute aseptic meningitis, subacute encephalitis, vacuolar myelopathy and peripheral neuropathy. Later it leads to even AIDS dementia complex.
- The CD_4-gp120 interaction (vide supra) is also permissive to other viruses like Cytomegalovirus, Hepatitis virus, Herpes simplex virus, etc. These viruses lead to further cell damage i.e. cytopathy.

Molecular basis

For details, see:

- Structure and genome of HIV,
- HIV replication cycle
- HIV tropism

Diagnosis

The diagnosis of AIDS in a person infected with HIV is based on the presence of certain signs or symptoms. Since June 5, 1981, many definitions have been developed for epidemiological surveillance such as the Bangui definition and the 1994 expanded World Health Organization AIDS case definition. However, clinical staging of patients was not an intended use for these systems as they are neither sensitive, nor specific. In developing countries, the World Health Organization staging system for HIV infection and disease, using clinical and laboratory data, is used and in developed countries, the Centers for Disease Control (CDC) Classification System is used.

WHO disease staging system

Main article: WHO Disease Staging System for HIV Infection and Disease

In 1990, the World Health Organization (WHO) grouped these infections and conditions together by introducing a staging system for patients infected with HIV-1.[62] An update took place in September 2005. Most of these conditions are opportunistic infections that are easily treatable in healthy people.

- Stage I: HIV infection 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
- Stage IV: includes toxoplasmosis of the brain, candidiasis of the esophagus, trachea, bronchi or lungs and Kaposi's sarcoma; these diseases are indicators of AIDS.

CDC classification system

Main article: CDC Classification System for HIV Infection

There are two main definitions for AIDS, both produced by the Centers for Disease Control and Prevention (CDC). The older definition is to referring to AIDS using the diseases that were associated with it, for example, lymphadenopathy, the disease after which the discoverers of HIV originally named the virus.[63][64] In 1993, the CDC expanded their definition of AIDS to include all HIV positive people with a $CD4^+$ T cell count below 200 per µL of blood or 14% of all lymphocytes.[65] The majority of new AIDS cases in developed countries use either this definition or the pre-1993 CDC definition. 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.

HIV test

Main article: HIV test

Many people are unaware that they are infected with HIV.[66] Less than 1% of the sexually active urban population in Africa has been tested, and this proportion is even lower in rural populations. Furthermore, only 0.5% of pregnant women attending urban health facilities are counseled, tested or receive their test results. Again, this proportion is even lower in rural health facilities.[66] Therefore, donor

blood and blood products used in medicine and medical research are screened for HIV.

HIV tests are usually performed on venous blood. Many laboratories use *fourth generation* screening tests which detect anti-HIV antibody (IgG and IgM) and the HIV p24 antigen. The detection of HIV antibody or antigen in a patient previously known to be negative is evidence of HIV infection. Individuals whose first specimen indicates evidence of HIV infection will have a repeat test on a second blood sample to confirm the results. The window period (the time between initial infection and the development of detectable antibodies against the infection) can vary since it can take 3–6 months to seroconvert and to test positive. Detection of the virus using polymerase chain reaction (PCR) during the window period is possible, and evidence suggests that an infection may often be detected earlier than when using a fourth generation EIA screening test. Positive results obtained by PCR are confirmed by antibody tests.[67] Routinely used HIV tests for infection in neonates, born to HIV-positive mothers, have no value because of the presence of maternal antibody to HIV in the child's blood. HIV infection can only be diagnosed by PCR, testing for HIV pro-viral DNA in the children's lymphocytes.[68]

Prevention

Estimated per act risk for acquisition of HIV by exposure route[69]	
Exposure Route	**Estimated infections per 10,000 exposures to an infected source**
Blood Transfusion	9,000[70]
Childbirth	2,500[51]
Needle-sharing injection drug use	67[71]
Percutaneous needle stick	30[72]
Receptive anal intercourse*	50[73][74]

Insertive anal intercourse*	6.5[73][74]
Receptive penile-vaginal intercourse*	10[73][74][75]
Insertive penile-vaginal intercourse*	5[73][74]
Receptive oral intercourse*§	1[74]
Insertive oral intercourse*	0.5[74]§
*** assuming no condom use § source refers to oral intercourse performed on a man**	

The three main transmission routes of HIV are sexual contact, exposure to infected body fluids or tissues, and from mother to fetus or child during perinatal period. It is possible to find HIV in the saliva, tears, and urine of infected individuals, but there are no recorded cases of infection by these secretions, and the risk of infection is negligible.[76]

Sexual contact

The majority of HIV infections are acquired through unprotected sexual relations between partners, one of whom has HIV. The primary mode of HIV infection worldwide is through sexual contact between members of the opposite sex.[77][78][79] During a sexual act, only male or female condoms can reduce the chances of infection with HIV and other STDs and the chances of becoming pregnant. The best evidence to date indicates that typical condom use reduces the risk of heterosexual HIV transmission by approximately 80% over the long-term, though the benefit is likely to be higher if condoms are used correctly on every occasion.[80] The male latex condom, if used correctly without oil-based lubricants, is the single most effective available technology to reduce the sexual transmission of HIV and other sexually transmitted infections. Manufacturers recommend that oil-based lubricants such as petroleum jelly, butter, and lard not be used with latex condoms, because they dissolve the latex, making the condoms porous. If necessary, manufacturers recommend using water-based lubricants. Oil-based lubricants can however be used with polyurethane condoms.[81]

The female condom is an alternative to the male condom and is made from polyurethane, which allows it to be used in the presence of oil-based lubricants. They are larger than male condoms and have a stiffened ring-shaped opening, and are designed to be inserted into the vagina. The female condom contains an inner ring, which keeps the condom in place inside the vagina – inserting the female condom requires squeezing this ring. However, at present availability of female condoms is very low and the price remains prohibitive for many women. Preliminary studies suggest that, where female condoms are available, overall protected sexual acts increase relative to unprotected sexual acts, making them an important HIV prevention strategy.[82]

Studies on couples where one partner is infected show that with consistent condom use, HIV infection rates for the uninfected partner are below 1% per year.[83] Prevention strategies are well-known in developed countries, however, recent epidemiological and behavioral studies in Europe and North America have suggested that a substantial minority of young people continue to engage in high-risk practices and that despite HIV/AIDS knowledge, young people underestimate their own risk of becoming infected with HIV.[84]

Randomized controlled trials have shown that male circumcision lowers the risk of HIV infection among heterosexual men by up to 60%.[85] It is expected that this procedure will be actively promoted in many of the countries affected by HIV, although doing so will involve confronting a number of practical, cultural and attitudinal issues. Some experts fear that a lower perception of vulnerability among circumcised men may result in more sexual risk-taking behavior, thus negating its preventive effects.[86]

Exposure to infected body fluids

Health care workers can reduce exposure to HIV by employing precautions to reduce the risk of exposure to contaminated blood. These precautions include barriers such as gloves, masks, protective eyeware or shields, and gowns or aprons which prevent exposure of the skin or mucous membranes to blood borne pathogens. Frequent and thorough washing of the skin immediately after being contaminated with blood or other bodily fluids can reduce the chance of infection. Finally, sharp objects like needles, scalpels and glass, are carefully disposed of to prevent needlestick injuries with contaminated items.[87] Since intravenous drug use is an important factor in HIV transmission in developed countries, harm reduction strategies such as needle-exchange programmes are used in attempts to reduce the infections caused by drug abuse.[88][89]

Mother-to-child transmission (MTCT)

Current recommendations state that when replacement feeding is acceptable, feasible, affordable, sustainable and safe, HIV-infected mothers should avoid breast-feeding their infant. However, if this is not the case, exclusive breast-feeding is recommended during the first months of life and discontinued as soon as possible.[90]

Treatment

See also HIV Treatment and Antiretroviral drug.

Abacavir – a nucleoside analog reverse transcriptase inhibitors (NARTIs or NRTIs)

The chemical structure of Abacavir

There is currently no vaccine or cure for HIV or AIDS. The only known methods of prevention are based on avoiding exposure to the virus or, failing that, an antiretroviral treatment directly after a highly significant exposure, called post-exposure prophylaxis (PEP).[91] PEP has a very demanding four week schedule of dosage. It also has very unpleasant side effects including diarrhea, malaise, nausea and fatigue.[92]

Antiviral therapy

Current treatment for HIV infection consists of highly active antiretroviral therapy, or HAART.[93] This has been highly beneficial to many HIV-infected individuals since its introduction in 1996 when the protease inhibitor-based HAART initially became available.[9] Current optimal HAART options consist of combinations (or "cocktails") consisting of at least three drugs belonging to at least two types, or "classes," of antiretroviral agents. Typical regimens consist of two nucleoside analogue reverse transcriptase inhibitors (NARTIs or NRTIs) plus either a protease inhibitor or a non-nucleoside reverse transcriptase inhibitor (NNRTI). Because HIV disease progression in children is more rapid than in adults, and laboratory parameters are less predictive of risk for disease progression, particularly for young infants, treatment recommendations are more aggressive for children than for adults.[94] In developed countries where HAART is available, doctors assess the viral load, rapidity in CD4 decline, and patient readiness while deciding when to recommend initiating treatment.[95]

HAART allows the stabilization of the patient's symptoms and viremia, but it neither cures the patient of HIV, nor alleviates the symptoms, and high levels of HIV-1, often HAART resistant, return once treatment is stopped.[96][97] Moreover, it would take more than the lifetime of an individual to be cleared of HIV infection using HAART.[98] Despite this, many HIV-infected individuals have experienced remarkable improvements in their general health and quality of life, which has led to the plummeting of HIV-associated morbidity and mortality.[99][100][101] In the absence of HAART, progression from HIV infection to AIDS occurs at a median of between nine to ten years and the median survival time after developing AIDS is only 9.2 months.[31] HAART is thought to increase survival time by between 4 and 12 years.[102][103]

For some patients, which can be more than fifty percent of patients, HAART achieves far less than optimal results, due to medication intolerance/side effects, prior ineffective antiretroviral therapy and infection with a drug-resistant strain of HIV. Non-adherence and non-persistence with therapy are the major reasons why some people do not benefit from HAART.[104] The reasons for non-adherence and non-persistence are varied. Major psychosocial issues include poor access to medical care, inadequate social supports, psychiatric disease and drug abuse. HAART regimens can also be complex and thus hard to follow, with large numbers of pills taken frequently.[105][106][107] Side effects can also deter people from persisting with HAART, these include lipodystrophy, dyslipidaemia, diarrhoea, insulin resistance, an increase in cardiovascular risks and birth defects.[108] Anti-retroviral drugs are expensive, and the majority of the world's infected individuals do not have access to medications and treatments for HIV and AIDS.

Future research

It has been postulated that only a vaccine can halt the pandemic because a vaccine would possibly cost less, thus being affordable for developing countries, and would not require daily treatments. However, even after almost 30 years of research, HIV-1 remains a difficult target for a vaccine.[109]

Research to improve current treatments includes decreasing side effects of current drugs, further simplifying drug regimens to improve adherence, and determining the best sequence of regimens to manage drug resistance. A number of studies have shown that measures to prevent opportunistic infections can be beneficial when treating patients with HIV infection or AIDS. Vaccination against hepatitis A and B is advised for patients who are not infected with these viruses

and are at risk of becoming infected.[110] Patients with substantial immunosuppression are also advised to receive prophylactic therapy for Pneumocystis jiroveci pneumonia (PCP), and many patients may benefit from prophylactic therapy for toxoplasmosis and Cryptococcus meningitis as well.[92]

Alternative medicine

Various forms of alternative medicine have been used to treat symptoms or alter the course of the disease.[111] Acupuncture has been used to alleviate some symptoms, such peripheral neuropathy, but cannot cure the HIV infection.[112] Several randomized clinical trials testing the effect of herbal medicines have shown that there is no evidence that these herbs have any effect on the progression of the disease, but may instead produce serious side-effects.[113]

Some data suggest that multivitamin and mineral supplements might reduce HIV disease progression in adults, although there is no conclusive evidence on if they reduce mortality among people with good nutritional status.[114] Vitamin A supplementation in children probably has some benefit.[114] Daily doses of selenium can suppress HIV viral burden with an associated improvement of the CD4 count. Selenium can be used as an adjunct therapy to standard antiviral treatments, but cannot itself reduce mortality and morbidity.[115]

Current studies indicate that that alternative medicine therapies have little effect on the mortality or morbidity of the disease, but may improve the quality of life of individuals afflicted with AIDS. The psychological benefits of these therapies are the most important use.[111]

Epidemiology

Main article: AIDS pandemic

Estimated prevalence of HIV among young adults (15-49) per country at the end of 2005

The AIDS pandemic can also be seen as several epidemics of separate subtypes; the major factors in its spread are sexual transmission and vertical transmission from mother to child at birth and through breast milk.[4] Despite recent, improved access to antiretroviral treatment and care in many regions of the world, the AIDS pandemic claimed an estimated 2.1 million (range 1.9–2.4 million) lives in 2007 of which an estimated 330,000 were children under 15 years.[5] Globally, an

estimated 33.2 million people lived with HIV in 2007, including 2.5 million children. An estimated 2.5 million (range 1.8–4.1 million) people were newly infected in 2007, including 420,000 children.[5]

Sub-Saharan Africa remains by far the worst affected region. In 2007 it contained an estimated 68% of all people living with AIDS and 76% of all AIDS deaths, with 1.7 million new infections bringing the number of people living with HIV to 22.5 million, and with 11.4 million AIDS orphans living in the region. Unlike other regions, most people living with HIV in sub-Saharan Africa in 2007 (61%) were women. Adult prevalence in 2007 was an estimated 5.0%, and AIDS continued to be the single largest cause of mortality in this region.[5] South Africa has the largest population of HIV patients in the world, followed by Nigeria and India.[116] South & South East Asia are second worst affected; in 2007 this region contained an estimated 18% of all people living with AIDS, and an estimated 300,000 deaths from AIDS.[5] India has an estimated 2.5 million infections and an estimated adult prevalence of 0.36%.[5] Life expectancy has fallen dramatically in the worst-affected countries; for example, in 2006 it was estimated that it had dropped from 65 to 35 years in Botswana.[4]

Prognosis

Without treatment, the net median survival time after infection with HIV is estimated to be 9 to 11 years, depending on the HIV subtype,[5] and the median survival rate after diagnosis of AIDS in resource-limited settings where treatment is not available ranges between 6 and 19 months, depending on the study.[117] In areas where it is widely available, the development of HAART as effective therapy for HIV infection and AIDS reduced the death rate from this disease by 80%, and raised the life expectancy for a newly-diagnosed HIV-infected person to about 20 years.[118]

As new treatments continue to be developed and because HIV continues to evolve resistance to treatments, estimates of survival time are likely to continue to change. Without antiretroviral therapy, death normally occurs within a year.[31] Most patients die from opportunistic infections or malignancies associated with the progressive failure of the immune system.[119] The rate of clinical disease progression varies widely between individuals and has been shown to be affected by many factors such as host susceptibility and immune function[32][33][36] health care and co-infections,[31][119] as well as which particular strain of the virus is involved.[38][120][121]

History

Main article: AIDS origin

AIDS was first reported June 5, 1981, when the U.S. Centers for Disease Control and Prevention recorded a cluster of *Pneumocystis carinii* pneumonia (now still classified as PCP but known to be caused by *Pneumocystis jirovecii*) in five homosexual men in Los Angeles.[122] In the beginning, the Centers for Disease Control and Prevention (CDC) did not have an official name for the disease, often referring to it by way of the diseases that were associated with it, for example, lymphadenopathy, the disease after which the discoverers of HIV originally named the virus.[63][64] They also used *Kaposi's Sarcoma and Opportunistic Infections*, the name by which a task force had been set up in 1981.[123] In the general press, the term *GRID*, which stood for Gay-related immune deficiency, had been coined.[124] The CDC, in search of a name, and looking at the infected communities coined “the 4H disease,” as it seemed to single out Haitians, homosexuals, hemophiliacs, and heroin users.[125] However, after determining that AIDS was not isolated to the homosexual community,[123] the term GRID became misleading and *AIDS* was introduced at a meeting in July 1982.[126] By September 1982 the CDC started using the name AIDS, and properly defined the illness.[127]

A more controversial theory known as the OPV AIDS hypothesis suggests that the AIDS epidemic was inadvertently started in the late 1950s in the Belgian Congo by Hilary Koprowski's research into a poliomyelitis vaccine.[128][129] According to scientific consensus, this scenario is not supported by the available evidence.[130][131][132]

A recent study states that HIV probably moved from Africa to Haiti and then entered the United States around 1969.[133]

Society and culture

Stigma

Ryan White became a poster child for HIV after being expelled from school because of his infection.

AIDS stigma exists around the world in a variety of ways, including ostracism, rejection, discrimination and avoidance of HIV infected people; compulsory HIV

testing without prior consent or protection of confidentiality; violence against HIV infected individuals or people who are perceived to be infected with HIV; and the quarantine of HIV infected individuals.[134] Stigma-related violence or the fear of violence prevents many people from seeking HIV testing, returning for their results, or securing treatment, possibly turning what could be a manageable chronic illness into a death sentence and perpetuating the spread of HIV.[135]

AIDS stigma has been further divided into the following three categories:

Instrumental AIDS stigma—a reflection of the fear and apprehension that are likely to be associated with any deadly and transmissible illness.[136]

Symbolic AIDS stigma—the use of HIV/AIDS to express attitudes toward the social groups or lifestyles perceived to be associated with the disease.[136]

Courtesy AIDS stigma—stigmatization of people connected to the issue of HIV/AIDS or HIV- positive people.[137]

Often, AIDS stigma is expressed in conjunction with one or more other stigmas, particularly those associated with homosexuality, bisexuality, promiscuity, and intravenous drug use.

In many developed countries, there is an association between AIDS and homosexuality or bisexuality, and this association is correlated with higher levels of sexual prejudice such as anti-homosexual attitudes.[138] There is also a perceived association between AIDS and all male-male sexual behavior, including sex between uninfected men.[136]

Economic impact

Main article: Economic impact of AIDS

Changes in life expectancy in some hard-hit African countries. Botswana Zimbabwe Kenya South Africa Uganda

HIV and AIDS affects economic growth by reducing the availability of human capital.[6] Without proper nutrition, health care and medicine that is available in developed countries, large numbers of people are falling victim to AIDS. They will not only be unable to work, but will also require significant medical care. The forecast is that this will likely cause a collapse of economies and societies in countries with a significant AIDS populationi. In some heavily infected areas, the epidemic has left behind many orphans cared for by elderly grandparents.[139]

The increased mortality in this region will result in a smaller skilled population and labor force. This smaller labor force will be predominantly young people, with reduced knowledge and work experience leading to reduced productivity. An increase in workers' time off to look after sick family members or for sick leave will also lower productivity. Increased mortality will also weaken the mechanisms that generate human capital and investment in people, through loss of income and the death of parents. By killing off mainly young adults, AIDS seriously weakens the taxable population, reducing the resources available for public expenditures such as education and health services not related to AIDS resulting in increasing pressure for the state's finances and slower growth of the economy. This results in a slower growth of the tax base, an effect that will be reinforced if there are growing expenditures on treating the sick, training (to replace sick workers), sick pay and caring for AIDS orphans. This is especially true if the sharp increase in adult mortality shifts the responsibility and blame from the family to the government in caring for these orphans.[139]

On the level of the household, AIDS results in both the loss of income and increased spending on healthcare by the household. The income effects of this lead to spending reduction as well as a substitution effect away from education and towards healthcare and funeral spending. A study in Côte d'Ivoire showed that households with an HIV/AIDS patient spent twice as much on medical expenses as other households.[140]

AIDS denialism

Main article: AIDS denialism

A small group of activists, including several scientists who do not study HIV/AIDS, question the connection between HIV and AIDS,[141] the existence of HIV itself,[142] or the validity of current testing and treatment methods. Though these claims have been examined and thoroughly rejected by the scientific community,[143] they continue to be promulgated through the Internet[144] and have had a significant political impact, particularly in South Africa, where President Thabo Mbeki's embrace of AIDS denialism has been blamed for an ineffective response to that country's AIDS epidemic.[145][146][147]

Framework Programme 7

Introduction

The **Seventh Framework Programme (FP7)** is the next programme in a series of multi-annual Framework Programmes that have been the European Union's main instrument for funding research and development since 1984. FP7 will be implemented starting 1st January 2007 through 31st December 2013 (84 months).
Conducting European research policies and implementing European Research Programmes is in the first instance a legal and political obligation resulting from the Amsterdam Treaty, which has a whole section about research and technological development. Research and technological development is an essential element in industrialized countries and for the support to other policies such as consumer protection and preservation of the environment.
During FP5 in 2000, The Lisbon Strategy was adopted with the ambitious goal to raise EU as the world's most dynamic and competitive economy by 2010. FP7 was designed as a key contribution for the Lisbon Strategy and it is deeply different from other FPs with a longer duration and a two times higher budget compared to previous FP6.
The broad objectives of FP7 have been grouped into four categories: **Cooperation**, **Ideas**, **People** and **Capacities**. For each type of objective, there is a specific programme corresponding to the main areas of EU research policy. All specific programmes work together to promote and encourage the creation of European poles of (scientific) excellence. The non-nuclear research activities of the Joint Research Centre (JRC) are grouped under a specific programme with individual budget allocation.
Any Company, University and Research Centre are allowed to participate in a collaborative project supported by FP7. Eligible FP7 participants are from Member States, Associated Countries and from currently candidate countries for future accession.

The FP7 was proposed by the European Commission and adopted by Council and the European Parliament following a co-decision procedure.

FP7 Structure and budget

The Seventh Framework Programme will be organised in four programmes corresponding to four basic components of European Research.

1. Cooperation

The aim of this programme is to gain leadership in key scientific and technology areas by supporting cooperation between universities, industry, research centres and public authorities across the European Union as well as with the rest of the world. The programme will cover the whole range of research activities performed in trans-national cooperation, from collaborative projects and networks to the coordination of national research programmes.

The Cooperation programme consists in nine broadly defined themes that can adapt to evolving needs and opportunities that may arise during the lifetime of the FP7:

a) Health
b) Food, agriculture and biotechnology
c) Information and communication technologies
d) Nanosciences, nanotechnologies, materials and new production technologies
e) Energy
f) Environment (including climate change)
g) Transport (including aeronautics)
h) Socio-economic sciences and the humanities
i) Security and space

Each of these programmes will be the subject of a specific programme.

Total budget for this area is: **32,365 millions euro**

2. Ideas

The aim of this programme is to stimulate the dynamism, creativity and excellence of European research at the frontier of knowledge. This will be done by supporting 'investigator-driven' research projects carried out across all fields by individual teams in competition at the European level. A European Research Council will be created to fund these projects in all scientific and technological fields. Projects will be funded on the basis of proposals presented by researchers on subjects of their choice and evaluated on the sole criterion of excellence as judged by peer review.

Total budget for this area is: **7,460 millions euro**

3. People

The aim of this programme is to develop and strengthen, quantitatively and qualitatively, the human potential in research and technology in Europe, by stimulating people to enter into the researcher's profession, encouraging European researchers to stay in Europe, and attracting to Europe researchers from the entire world.

This will be done by putting into place a coherent set of 'Marie Curie' actions, addressing researchers at all stages of their careers, from initial research training to life-long learning and career development; by supporting longer term co-operation programmes between organisations from academia and industry by fostering mutually beneficial research collaboration with researchers from outside Europe and

by specific actions supporting the creation of a genuine European labour market for researchers.
Total budget for this area is: **4,728 millions euro**

4. Capacities
This programme will aim to enhance research and innovation capacities throughout Europe and to ensure their optimal use. Its activities will include optimizing the use and development of research infrastructures, supporting regional research-driven clusters, unleashing the full research potential existing in the EU's convergence regions and outermost regions, supporting research for the benefit of SMEs, bringing science and society closer together and developing and co-ordinating an international science and technology co-operation policy.
Through their combined impact, these programmes will allow for the emergence and reinforcement of European poles of excellence in various fields.
Total budget for this area is: **4,217 millions euro**

The non-nuclear research activities of the **Joint Research Centre** are grouped under a specific programme with an individual budget allocation of **1,751** millions euro.

Moreover, under the Euratom Treaty, the European Commission will continue to support civil nuclear research, through a separate FP7 with duration five years (2007-2011). The amended proposals for FP7 **Euratom** are organised in two specific programmes corresponding to the indirect actions on fusion energy research and nuclear fission and radiation protection, and the direct research activities by the Joint Research Centre. A total of **2,700** millions euro is foreseen for this area.

Mission Statement Unit DG RTD F 3:

- "**Unit F3 - Infectious Diseases**
  The unit promotes research and supports relevant EU policies in the area of "translational research in infectious diseases" with emphasis on HIV/AIDS, malaria and tuberculosis, emerging epidemics, neglected infectious diseases and antimicrobial drug resistance. It manages research actions to support the competitiveness of European science and industry in all these fields. The unit also aims to foster the implementation of the European and Developing Countries Clinical Trials Partnership (EDCTP) and contributes to global coordination efforts in Poverty Related and Neglected Infectious Diseases. In addition, the unit supports the implementation of the Innovative Medicines Initiative Joint Undertaking".

Europe's population becomes more complacent, and HIV cases steadily rise as a new regional survey reveals worrying levels of ignorance about the basic facts

More than twenty years since AIDS came to the world's attention, and the epidemic shows no sign of disappearing.

News coverage of AIDS in recent years has focused almost exclusively on Africa. This has helped portray the disease as a problem for developing countries. And while almost 95% of new cases are recorded in the developing world, governments and the media have largely ignored the rising number of cases in their own European backyard.

A total of 23,600 new HIV infections were recorded in the EU in 2005. In some countries, the number of reported cases has doubled since 1998. Equally disconcerting is the fact that heterosexual sex is now the most common means of transmission. This proves that 'safe sex' messages are not getting through to young people in Europe, who are fast becoming less likely to use condoms than reported five years ago.

Ignorance is not bliss

Emma Bickerstaff from the London-based National AIDS Trust (NAT), an NGO that works to raise awareness of issues surrounding HIV and AIDS, says that the problem amongst young people is less about complacency and more about ignorance. 'Sex education is not a compulsory part of the school curriculum,' adding that 'many people leave school with almost no knowledge of HIV or other sexually transmitted diseases.'

This viewpoint is backed up by a recent EU-wide survey by Eurobarometer. When questioned, 45% of EU citizens said they thought it was possible to become infected with HIV by sharing a glass with, donating blood to, or taking care of an HIV/AIDS sufferer. And while 69% of French respondents knew that it was not possible to catch HIV through kissing on the mouth, only 16% of Slovakians were so sure. Knowledge of the dangers of HIV/AIDS appears to be lower in the newer EU member states. For example, just 16% of Slovakians and Latvians, 17% of Lithuanians and 25% of Estonians knew that the disease could not be transmitted by donating blood to an HIV sufferer, compared with 89% of Swedes and 87% of Danes.

Blazing the campaign trail

So what can be done to educate Europeans about the the world's biggest preventable killler to come? The 15-24 age group accounted for more than 50% of new HIV cases in Europe in 2005. These people are too young to remember the hard-hitting information campaigns of the 1980s and in the last 20 years there has been no major publicity drive aimed at raising mass awareness of HIV and AIDS. Worse, many of the prevention programmes put in place when AIDS first became a major health issue have not been sustained.

But while the 1980s campaigns were very successful at getting basic messages to a large number of people very quickly, Bickerstaff believes that they actually created a lot of long-term stigma around HIV. It was portrayed as a deadly disease that could spread throughout the population very quickly. This bred complacency when such scenarios did not take place. Worse; it also stopped some sufferers and at-risk groups from seeking help for fear of having their HIV revealed. ‘HIV has changed in the last 25 years,’ Bickerstaff muses. ‘It is no longer a death sentence. If tested early, you can have a normal life expectancy. It is more of a long-term health condition.’

Know your audience

With World AIDS Day approaching, the European Union recently launched a new public awareness campaign under the banner: ‘AIDS – Remember Me?’ At the same time, some member states have launched their own advertising efforts. But patterns of infection differ across Europe and new campaigns need to be targeted at high-risk groups.

In Great Britain, ‘NAT’ says that gay men and the African community account for a large proportion of new infections, whereas in Eastern Europe, a lack of needle exchange schemes means that drug users who inject are at particular risk. ‘Knowing your epidemic, and understanding the drivers of the epidemic – factors including male-female inequality and homophobia - is absolutely fundamental to the long-term response to AIDS,’ says Dr Peter Piot, executive director of UNAIDS.

For the EU, this means not only tackling its own AIDS problem but also helping to improve the situation outside its borders. According to the World Health Organisation, the number of reported HIV infections in Europe and Central Asia rose from 30,000 in 1985 to 900,000 in 2005, 90% of which were in Estonia, Russia and Ukraine. With only 64% those who needed antiretroviral treatment actually receiving it in 2005, AIDS in Europe is far from being under control.

Action on HIV/AIDS in the European Union and neighbouring countries 2006 - 2009

Building on its working paper entitled "Coordinated and integrated approach to combat the HIV/AIDS epidemic within the European Union and in its neighbourhood", the European Commission is trying to bring together all of the interested parties in a joint action programme. In this paper the Commission lays down targets and measures to be implemented by the end of 2009 for each of the areas in which action is needed. More detailed proposals for the main areas of action for the period 2006 - 2010 are presented in the Annex.

ACT

Communication from the Commission to the Council and the European Parliament of 15 December 2005 on combating HIV/AIDS within the European Union and in the neighbouring countries, 2006-2009 [COM(2005) 654 final - Not published in the Official Journal]

SUMMARY

There are signs of a decline in action on HIV/AIDS at the moment, particularly as regards prevention, surveillance and measures to combat discrimination. This trend runs counter to the targets which have been set, regarding for example the elimination of mother-to-child transmission and universal access to treatment.

In view of this, the European Commission plans to promote joint action at Community level to complement national and international initiatives. The measures to be taken under this initiative will be targeted on:

- the involvement of civil society;
- surveillance;
- prevention;
- testing;
- treatment, care and support;
- research;
- cooperation with neighbouring countries.

Involvement of civil society

The main objective in this area is to increase the involvement of civil society in all aspects of the fight against HIV/AIDS.

Several initiatives have already been taken with this aim in mind:

- representatives of civil society have become involved in the HIV/AIDS Think Tank;
- a forum of 30 European organisations has been set up to improve the exchange of information.

In future, the Commission plans to foster cooperation and dialogue with patients and non-governmental organisations (NGOs) to ensure that they are even more actively involved in the design, implementation and follow-up of policy on HIV/AIDS. In an effort to strengthen its partnership with the private sector, the Commission is also inviting representatives of industry, including the Union of Industrial and Employers Confederations of Europe (UNICE), to strengthen their response to the epidemic and to play their part in implementing the EU's HIV/AIDS prevention strategy.

Surveillance

The objectives in the area of surveillance are as follows:

- to improve and harmonise surveillance systems to monitor the epidemic, risk behaviour and vulnerability to HIV/AIDS;
- to ensure effective provision of data and information on other sexually transmitted infections;
- to support surveillance of HIV testing.

Surveillance of HIV/AIDS in Europe has until now been coordinated by the EuroHIV network, which is co-financed by the Commission. In 2008 the European Centre for Disease Prevention and Control (ECDC) will assume responsibility for this network.

The Commission plans to take the following measures, working with the Member States, neighbouring countries, the ECDC and other partners:

- help to introduce complete geographic coverage of HIV case reporting;
- reassess the objectives of AIDS surveillance and include its reporting in an integrated surveillance system;
- design a standardised approach for appropriate prevention indicators;
- develop estimates of HIV incidence in Europe;
- facilitate the setting-up of sentinel surveillance in high-risk groups;
- facilitate implementation of practical solutions to address the confidentiality obstacles.

Prevention

The measures to be taken in the area of prevention will aim primarily:

- to facilitate the implementation of the measures adopted;
- to ensure that all citizens have access to information, education and services;
- to improve services for injecting drug users;
- to prevent discrimination against migrants;
- to support the monitoring and evaluation of the methods used.

In the absence of a vaccine or cure, prevention remains the most effective way to combat HIV/AIDS. In view of the situation within the European Union (constant increase in the number of cases), there is a need to step up prevention activities both among the general public and among specific groups (young people, women, sex workers, drug users, etc.).

The Commission therefore intends to promote:

- the implementation of prevention programmes, particularly for the most vulnerable groups;
- safe sex ;
- measures to address the increase in risk-taking behaviour among young people;
- the evaluation of the risks of mother-to-child transmission and the risks associated with drug dependence;
- the development of training programmes for healthcare staff and other professionals caring for those with HIV/AIDS.

Counselling, testing, treatment and support

The objectives in this field are:

- to combat discrimination against and stigmatisation of those living with HIV/AIDS;
- to promote universal access to effective treatment and care;
- to improve social and labour market integration;

These objectives are all interlinked. For example, affordable and accessible services and good treatment reduce stigmatisation and social exclusion. They also encourage responsible sexual behaviour, which helps to prevent the spread of the virus.

The measures to attain these objectives will focus on:

- capacity-building among service providers;
- enhancing the role of NGOs active in this field;
- further developing HIV/AIDS surveillance at European level;
- producing a set of European reference models for Member States and European Neighbourhood Policy partners;
- access to antiretroviral drugs, counselling and testing.

Research

In this area the Commission plans:

- to increase commitments to research and development for vaccines and microbicides;
- to promote access to treatment by developing affordable treatments and diagnosis;
- to support public health research;
- to support private sector involvement;
- to support the use of behavioural prevention methods.

Since the entry into force of the Sixth Framework Programme of Research and Development research into HIV/AIDS has become a top priority for the European Commission. EUR 50 million has been allocated to financing research into prevention and treatment. There has also been an emphasis on the new Member States and neighbouring countries in eastern Europe, which have been invited to take part in both EU-funded proposals, such as the network of excellence on therapeutic clinical trials, and the evaluation process.

Reflecting the Commission's desire for continuity, the Seventh Framework Programme, soon to be negotiated with the Member States, will continue to give priority to HIV/AIDS research. The

Commission has proposed an increase in the funding allocated to this programme, particularly in the area of biotechnology, translational research and delivery of healthcare.

HIV/AIDS and the European Neighbourhood Policy

The European Commission intends to increase the involvement of neighbouring countries * in the EU's HIV/AIDS activities in order to perpetuate the exchange of information and best practice.

The Commission will also call on these countries to look into ways of developing a coordinated approach to the HIV/AIDS epidemic through the HIV/AIDS Think Tank and the Civil Society Forum.

Action Plan

The Action Plan annexed to the Communication sets out the measures to be taken according to a strict timetable by the parties involved in each of the priority areas. The various proposals stress in particular the exchange of best practice, training and programmes to raise public awareness.

Key terms used in the act

- Neighbouring countries: Russian Federation, Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Israel, Jordan, Lebanon, Libya, Moldova, Morocco, the Palestinian Authority, Syria, Tunisia, Ukraine.