

# Epidemiology of AIDS

**AIDS** is one of the most serious infectious diseases today. It occurs en masse, affecting entire continents, so it can be appropriately described as a **pandemic**.

 For more information see *AIDS*.

Around 1981, the first cases of AIDS were observed in the United States among homosexual men, so the disease was also given the name **GRID** (Gay-Related Immune Deficiency). Over time, the researchers discovered that AIDS had occurred much earlier, as early as 1959, when a man, Bantu, who lived in the Belgian Congo, died of, at that time, an unknown disease. **The first official record AIDS case was made on June 5, 1981**, when the Center for Disease Control in the United States recorded 5 cases of patients with nearly eradicated immune systems. <sup>[1]</sup>

## AIDS in the world

Since its discovery, the disease has spread to all parts of the world and 67 million people have been infected by HIV, of whom 30 million have died from AIDS. The epidemic has not developed uniformly globally.

While in North America and Europe, where the first cases were diagnosed and the number of newly infected individuals increased at the beginning of the epidemic, the numbers of new infections did not increase much later on due to extensive preventive education. In other parts of the world, the opposite was true.

The largest increase in the number of newly infected has been recorded in recent years. It is estimated that in **2007** AIDS claimed 2.1 million (1.9-2.4 million) lives. Out of these deaths, 330,000 were children under the age of 15. In the same year, there were 3.2 million people living with HIV, including 2.5 million children. New infections are estimated at 2.5 million (ranging from 1.8 to 4.1 million) in 2007, of which 420,000 are children. <sup>[2]</sup>



Prevalence of AIDS worldwide (2008)

## Causative agent (epidemiological history)

The causative agent of acquired immunodeficiency syndrome is a **retrovirus** (containing viral RNA and reverse transcriptase), which preferentially attacks CD4+ lymphocytes (but also others). Because this virus mutates very easily, it is not yet possible to produce a sufficiently effective vaccine.

There are 2 known viruses responsible for AIDS:

- **HIV-1**: 5-10 times higher risk of vertical transmission, infectivity, and AIDS development; typically located in Europe, Asia, America;
- **HIV-2**: restricted to West Africa.

It is isolated from blood, semen, vaginal secretions, saliva, tears, breast milk, and urine. The virus is very sensitive to the external environment, it is destroyed by, for example, chlorine preparations, soap, temperatures above 60 °C. Also, the infectious dose required for infection is relatively high.

## Source

The only source of infection is an **infected person**.

 For more information see *AIDS diagnosis*.

## Transmission

- **Blood route** - contaminated blood or blood derivatives; sharing needles and syringes; bloody sexual practices; shared toothbrushes, razor blades, insufficiently sterilized tools, piercings. Tattoos also pose a certain risk.
- **Sexual intercourse** - semen, vaginal secretions
- **Mother to child** (vertical transmission) - prenatally (in utero), perinatally, breast milk

## Stages of HIV infection

1. **Acute HIV infection** - symptoms of **primary infection**.
2. **Asymptomatic** (latent) HIV infection - clinical category **A**.
3. **Symptomatic** phase of HIV infection - clinical category **B**.

4. **AIDS** - clinical category **C**.

## Treatment

The basis is prevention and early treatment of opportunistic infections, as well as antiviral therapy.

## Epidemiological measures

**Preventive measures** include testing stored blood and its derivatives (since 1987), conscientious sex education (safe sex with a limited number of partners), and education regarding substance abuse (education about needle and syringe sharing between drug users). HIV-positive women in the Western world are prohibited from breastfeeding (even in this way mother-to-child transmission is possible), unlike women in developing countries where breastfeeding is recommended despite this risk (the child would otherwise starve to death, there is a lack of alternative diet or there is not enough of it).

**Repressive measures** mean reporting HIV positivity, AIDS, and AIDS-associated death to the National Reference Laboratory for AIDS.

HIV / AIDS is a major health, economic, social, ethical, and political issue in the world that needs to be addressed. In an effort to tackle this problem as effectively as possible, HIV / AIDS programs are being formulated around the world, the basic aim of which is to limit the further spread of the disease in the population and its impact in all spheres of society affected. These programs are undertaken by anti-AIDS organizations (WHO, UNAIDS), to which several facts (to which they also subordinate the direction of their activities) are clear. These were also expressed at the *UN General Assembly on HIV / AIDS* on June 27th 2001:

1. The main factors contributing to the spread of the disease are **poverty, backwardness, and illiteracy** and, in connection with this, the problem of HIV / AIDS multiplies poverty and the spread of the epidemic is exacerbated by armed conflicts and natural disasters. <sup>[3]</sup>
2. **Stigmatization, silencing, discrimination, and rejection** as well as non-confidentiality undermine prevention, care and treatment efforts, and exacerbate the impact of the epidemic on individuals, families, communities, and nations. <sup>[3]</sup>
3. **Prevalence of the infection among women is higher worldwide** than men, not only because of earlier sexual maturation, but also, and with much greater impact, inequality, discrimination, and the oppression of women in society in most African countries, Asia, and Latin America. Therefore, gender equality and women's rights are essential elements in reducing the vulnerability of women and girls to HIV / AIDS. <sup>[3]</sup>

## Epidemiology of AIDS in the Czech Republic

There were **1189 HIV-positive** people in the Czech Republic as of December 31st, **2008**, of which **265 had AIDS**. <sup>[4]</sup>

### Distribution according to the mode of transmission of HIV infection

- sexual transmission accounts for 85.8% of the spread of HIV in the Czech Republic (1,020 HIV +, of which 653 are homo / bisexual) <sup>[4]</sup>;
- IDU (injecting drug users) alone: 5.2% (62 people) <sup>[4]</sup>;
- homo / bisexual method + IDU accounts for 1.7% (20 people) <sup>[4]</sup>;
- hemophiliacs: 1.4% (14 people) <sup>[4]</sup>;
- blood recipients: 1.2% (14 people) <sup>[4]</sup>;
- mother-to-child transmission: 0.3% (4 people) <sup>[4]</sup>;
- nosocomial infections: 0.2% (2 persons) <sup>[4]</sup>;
- other / unexplained cases: 4.2% (50 persons) <sup>[4]</sup>.

In fact, the estimated number of people with HIV in the Czech Republic is about 5-10 times higher. However, the Czech Republic remains a country with a low level of reported cases of HIV / AIDS, with an overall prevalence of "*116 cases of HIV / AIDS per million inhabitants*" (mostly in Prague and the Karlovy Vary Region). <sup>[4]</sup>

## References

### Related Articles

- AIDS
- AIDS diagnosis

### Citations

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