CHAPTER 1

Epidemiology of HIV infection in Poland in light of the situation in Europe and worldwide

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Acquired immunodeficiency syndrome (AIDS) results from infection with the human immunodeficiency virus (HIV) and is characterized by immunological disorders, a consequence of dysfunction and a decrease in the number of CD4+ lymphocytes. Clinically, AIDS is characterized by the coexistence of multiple comorbid conditions, opportunistic diseases, neurological disorders, psychological disorders, progressive exploitation of the organism, development of cancers, as well as diseases of skin and mucosa with atypical presentation (Mroczkowski, 2012).

The first case of AIDS was described in the USA in 1981. From the mid-80s, new cases were observed among the young individuals, which were difficult to diagnose and were treatment-resistant, with fast progress leading to death. Analysis of the frozen blood samples in New York City and San Francisco showed that HIV reached the USA in the late 70s. In 4.5% of the blood samples collected from men in San Francisco, the anti-HTLV-III/LAV antibodies (the name of the virus before the introduction of "HIV") were identified. Similar antibodies were detected in the 80s in the blood samples collected in Switzerland, and later in 1983 in Uganda. Currently, it is believed that the HIV/AIDS epidemic began in Africa, then moved to the USA and other countries of North America, and later reached Europe and Asia. The first HIV infection was reported in Poland in 1985 (Mroczkowski, 2012).

HIV can be transmitted in the following ways,

- sexual intercourse (hetero-, homo- and bisexual),
- with blood (sharing needles for drug use, exposition of the mucosa and open wounds of an infected person, blood and blood substitutes transfusion),
- mother-to-child (mainly during the perinatal period and breast-feeding).

According to the UNAIDS report from 2013, the number of people living with HIV infection across the world has been estimated at 78 million since the beginning of the epidemic, with 39 million deaths due to AIDS-related complications (UNAIDS, 2014).

In recent years, there has been a decline in the number of new HIV infection diagnoses among adults. In 2009, there were 2.5 million new diagnoses, while in 2013 – 2.1 million. The number of AIDS-related deaths is also decreasing, i.e., from 2 million in 2009 to 1.5 million in 2013. The highest number of deaths was recorded in 2005, when it reached 2.4 million (UNAIDS, 2014).

The HIV epidemic has taken different forms worldwide, depending on the prevalence of infection, availability of health care and antiretroviral treatment (ARV). In Africa, the majority of people infected with HIV live in South Africa – approx. 6.3 million. Heterosexual relationship is the predominant way of infection, with women constituting half of the HIV-infected population. This grounds the fact that the second most common HIV infection transmission way is from mother to child. Lately, in the African countries south of the Sahara (e.g., Senegal), sexual contacts among men who have sex with men (MSM) (UNAIDS, 2014) are the predominant route of infection.

In South and Southeast Asia, the HIV epidemiology is rather stable, although different between the countries. In several countries like India, Nepal, or Thailand, a decline in new infections by 25% has been observed since 2009, while in Bangladesh and the Philippines in the same time period a 20% increase has been noted.

In Asia, HIV infection is most commonly found among drug users using injections. The second most common way of infection are sexual services and men having sex with men. It is estimated that in Asia 4.5 million people show intravenous drug use, half of them being located in China (UNAIDS, 2014).

In the Caribbean, the escalation of HIV infection problem varies between the regions. The lowest rate of HIV infection is observed in Cuba, while the highest in the Bahamas. Moreover, there is an increase in the number of HIV-infected women. It is estimated that women comprise more than half of the infected people in this region. In 2013, there were 250,000 people living with HIV in the Caribbean, including 12,000 women. Sexual intercourse is the main way of HIV transmission in the Caribbean.

In South and Central America, more than 1.5 million people live with HIV. Out of those, 94,000 were diagnosed in 2013. Infection predominates among MSM, e.g., in Peru it accounts for 56% of cases. The

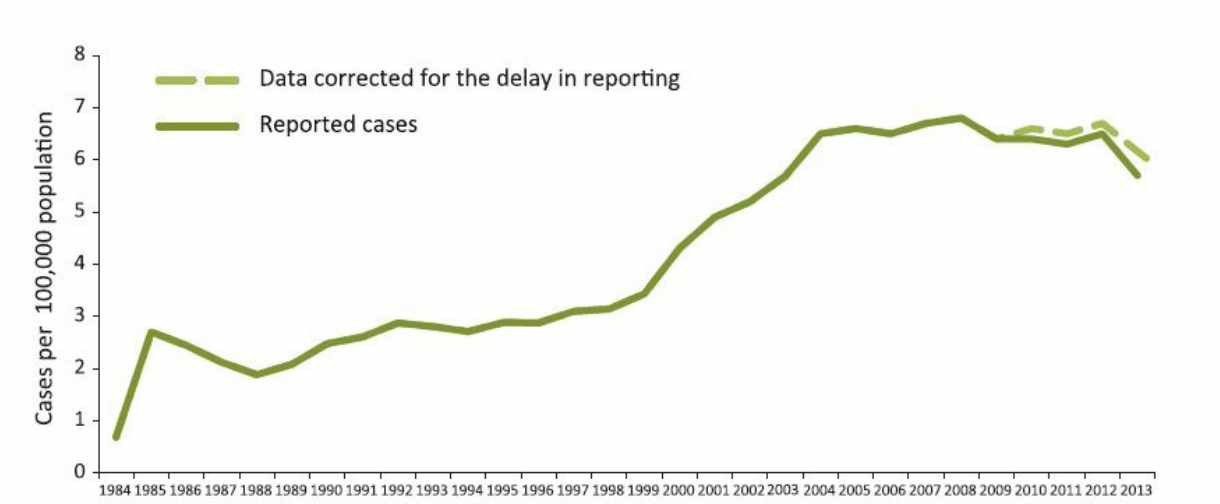
second most common way of infection is the intravenous injection of the psychoactive substances, causing another 2 million diagnoses.

The Trans-Tasman region is considered to have low HIV incidence. In 2013, 43% of HIV-infected individuals were treated with ARV. Epidemiology of HIV infection varies across the Trans-Tasman region. In Australia and New Zealand, infections are found predominantly among MSM and show a steady increase in the number of infections. It is estimated that in the Trans-Tasman region, there are more than 57,000 people living with HIV, out of whom 4,500 individuals were infected in 2013 (UNAIDS, 2014).

In Europe, HIV infections are less numerous. However, the epidemic is characterized by a large variety between the regions. The 2013 Report by the European Center for Disease Prevention and Control (ECDC) shows that the number of new HIV infections reported annually in the European Union has stabilized at around 30,000 (HIV/AIDS Report, 2013).

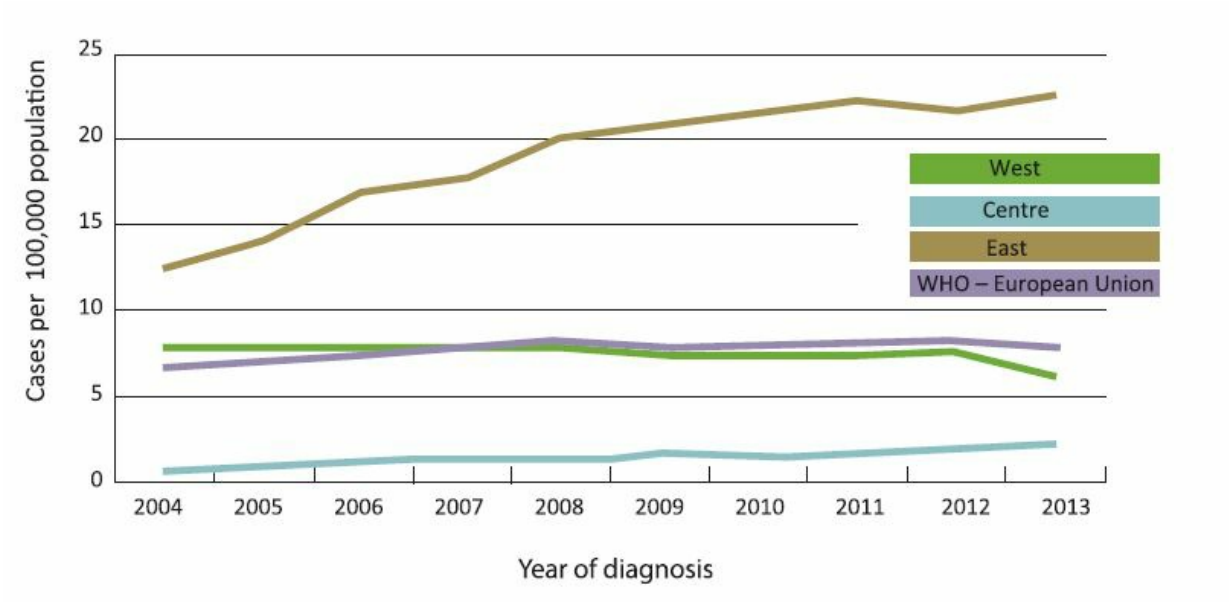
In Central and Western Europe, a systematic increase is observed in the number of new HIV infection cases among MSM and a slight decrease in HIV infections transmitted through heterosexual contacts. However, in Eastern Europe and Central Asia, there is an increase in the number of HIV infections through the intravenous psychoactive substances use. There is also an increase in the number of women who are infected from their sex partners using drugs (HIV/AIDS Report, 2013; Wiessing et al., 2008). A pressing epidemic concern in this region is the occurrence of HIV infection among children.

The epidemiological situation in Poland has been monitored by the National Institute of Hygiene (PZH) since the onset of the epidemic. The first centres offering HIV-focused diagnosis and treatment were established in the late 80s and early 90s. Strategies were forced to maximize the access to HIV testing. Since 1987, all blood samples collected at blood donation stations have been tested. At the end of the 80s and in the early 90s, strategies were introduced to diagnose and prevent HIV infection transmission among injecting drug users. In the 90s, the first clinics for the anonymous HIV testing began to function in the majority of large cities in Poland.



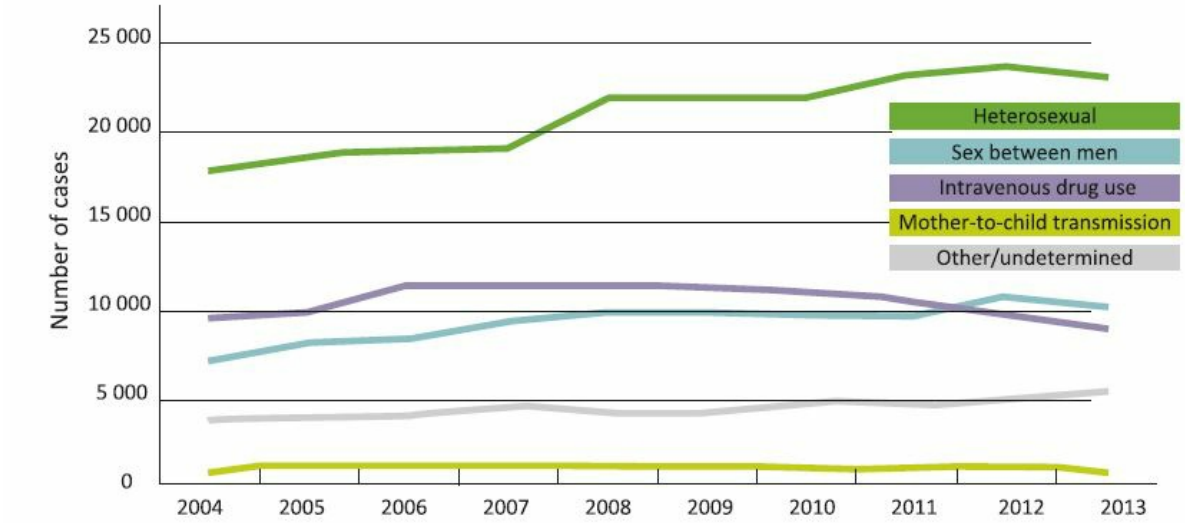
EEA – European Economic Area
Source: ECDC/WHO (2014). HIV/AIDS Surveillance in Europe, 2013.

Figure 1.1. The rate of the new reported HIV infection cases in 1984–2013, EU/EEA



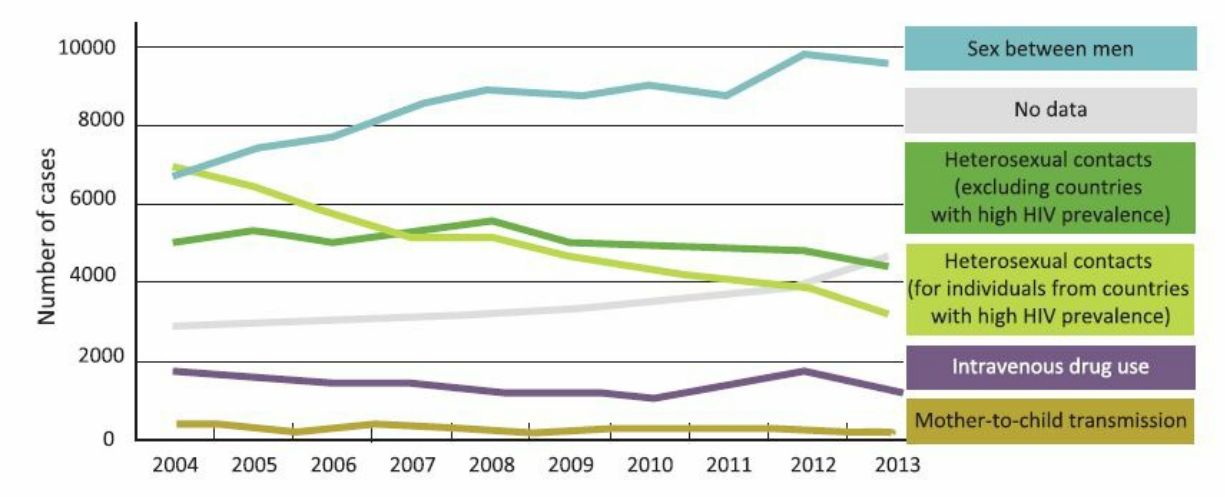
WHO – World Health Organization
The figure does not account for data from Russian Federation, Turkmenistan and Uzbekistan.
Source: ECDC/WHO (2014). HIV/AIDS Surveillance in Europe, 2013.

Figure 1.2. Index of the new HIV infection diagnoses due to the geographic region and the year of diagnosis, WHO European Region, in 2004–2013



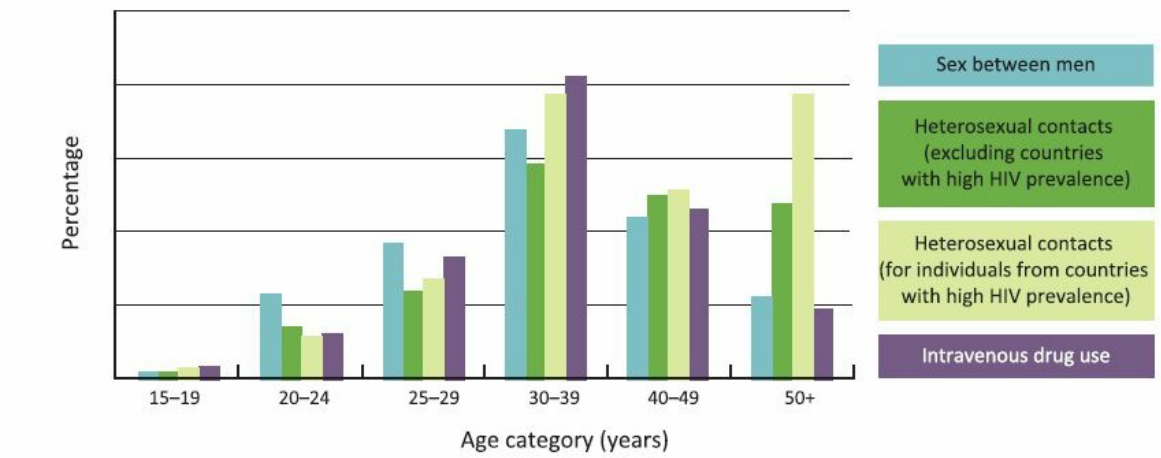
EU – European Union
The figure does not account for data from Russian Federation, Turkmenistan, Uzbekistan, Estonia, Poland, Turkey, Italy and Spain.
Source: ECDC/WHO (2014). HIV/AIDS Surveillance in Europe, 2013.

Figure 1.3. The number of new HIV infections due to the route of transmission and the year of the infection, WHO European Region, in 2004–2013



EU – European Union
EEA – European Economic Area
The figure does not account for data from Poland, Estonia, Italy and Spain.
Source: ECDC/WHO (2014). HIV/AIDS Surveillance in Europe, 2013.

Figure 1.4. HIV diagnosis due to the route of transmission in 2004–2013, EU/EEA



Excluding data on individuals <15 years of age, other/unknown routes of infection, mother-to-child transmission, infection due to blood transfusion, hospital-acquired infections. The figure does not account for data from Poland and Estonia.
Source: ECDC/WHO (2014). HIV/AIDS Surveillance in Europe, 2013.

Figure 1.5. Percentage of new HIV infections due to age and route of transmission, EU/EEA, 2013 (*N* = 22,472)

According to the PZH data, by the end of May 2015, more than 1,920 people were infected with HIV. In 3,246 individuals, AIDS was diagnosed, with 1,299 death cases (PZH, 2015).

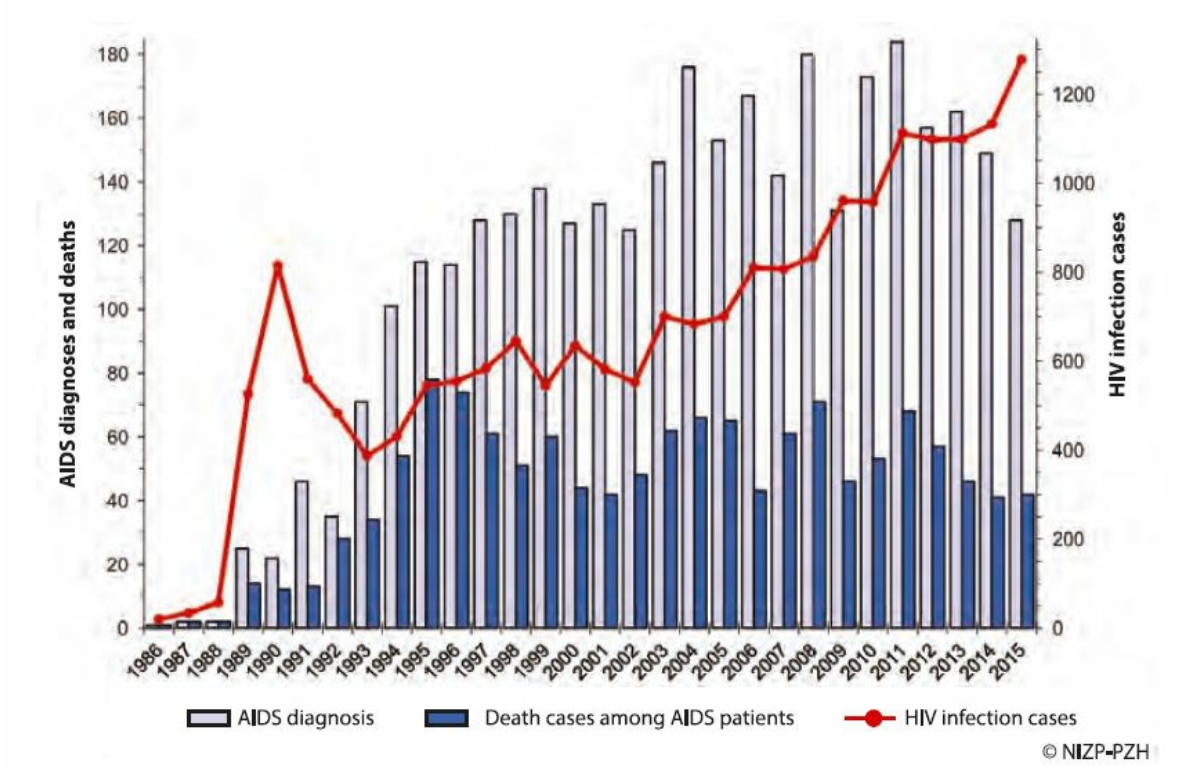


Figure 1.6. HIV infections, AIDS diagnosis, death cases among AIDS patients in 1986–2014 in Poland

The epidemiological trends in Poland presented below are based on the example of HIV-infected patients registered in the Prophylactic and Therapeutic Outpatient Clinic (Pol. Poradnia Profilaktyczno-Lecznicza – PPL) at the Hospital of Infectious Diseases in Warsaw (Pol. Wojewódzki Szpital Zakaźny). The hospital provides medical care mainly to patients from the Mazovia Voivodeship, however, patients from other regions of Poland can also get treatment there. Figure 1.7 presents the proportion of women to men registered at the PPL between 1990 and 2014 (in total 4,950 cases, including 939 women and 4,011 men).

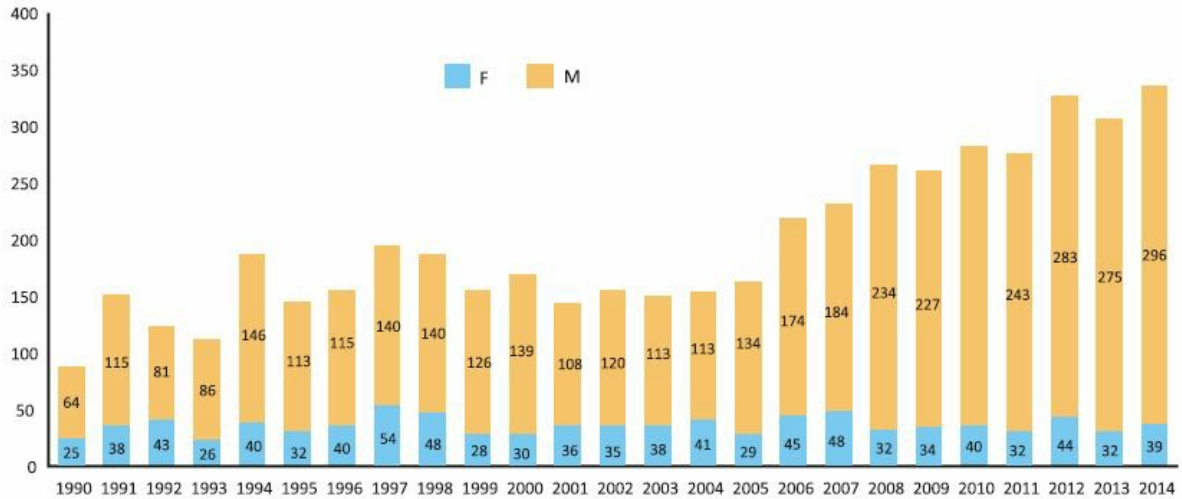


Figure 1.7. Men and women infected with HIV between 1990 and 2014, registered at the Prophylactic and Therapeutic Outpatient Clinic (PPL) in Warsaw

The most numerous age group at the PPL comprises young individuals between 30 and 40 years of age (41%). People between 40 and 50 years old represent 27%, people aged 50 and older comprise 17%, while individuals under 20 years of age account for only 15%.

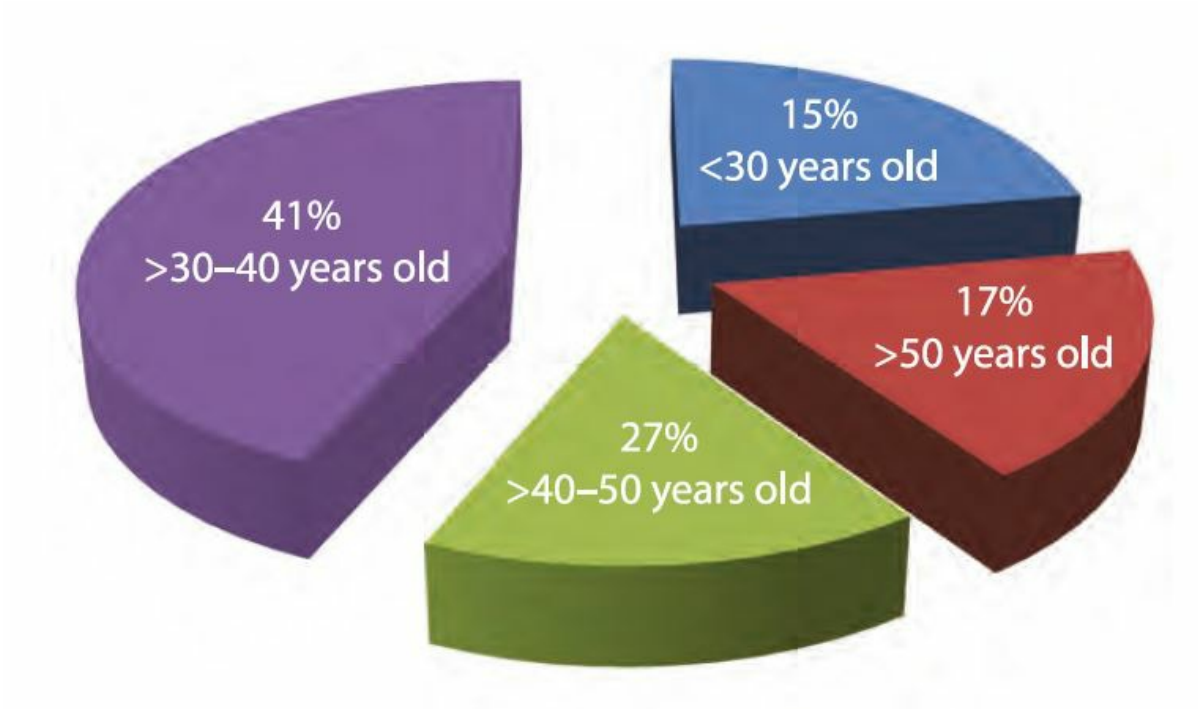
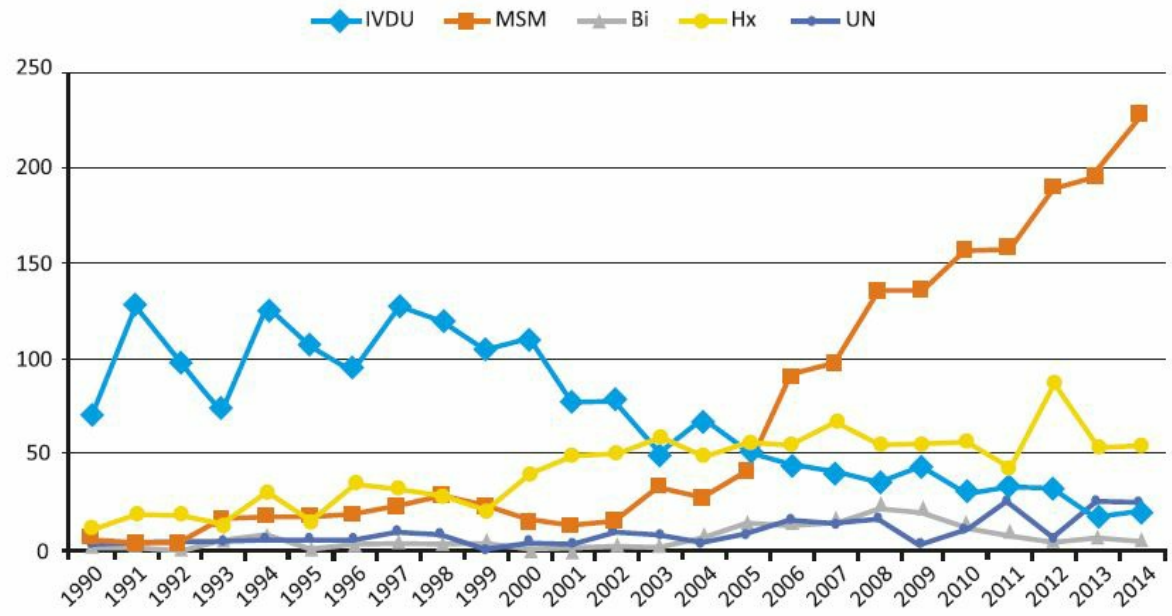


Figure 1.8. Age groups of patients at the PPL

The dominant group of patients in the beginning of the HIV epidemic at the PPL in Warsaw in 1990–2004 were the intravenous drug users, who accounted for 1,853 cases (37.5%). Between 2005 and 2014, there was an increase in HIV infections among MSM. This route of transmission was reported in 1,621 cases (32.7% of all PPL HIV-infected patients). Between 2000 and 2014, there was a slow but continuous increase in the number of infections among heterosexual individuals with 1,003 new patients (20.3%), and a small increase in the bisexual group with 176 new patients (3.5%).

Occasional cases of parenteral transmission were reported during transfusion of blood-related products before 1987 (i.e., before the introduction of standard diagnostic HIV tests at the blood donation stations throughout Poland). Vertical infections were diagnosed in 39 patients (0.8%). Only 258 (5.2%) individuals were unable or did not want to report the route of infection.



IV DU – intravenous drug use, MSM – infected through homosexual contact, Hx – infected through heterosexual contact, Bi – infected through homosexual or heterosexual contact, UN – unknown route of infection or during blood transfusion.

Figure 1.9. Routes of HIV infection among the PPL patients in 1990–2014

AIDS-related deaths have been reported at the PPL since 1994. At that time, the death rate was 3.4%. In the following years, especially since 2002, when combination antiretroviral therapy has already been used, a systematic decline has been observed in the death rates. In 2012, the percentage dropped to 0.1%.

Interestingly, a simultaneous increase in the proportion of deaths has been observed at the PPL. This trend might indicate that late-stage HIV cases are still being mainly referred to the PPL, although currently the most common cause of death are the non-HIV-related diseases such as heart attacks and cancers (Chylak-Nowosielska et al., 2013).

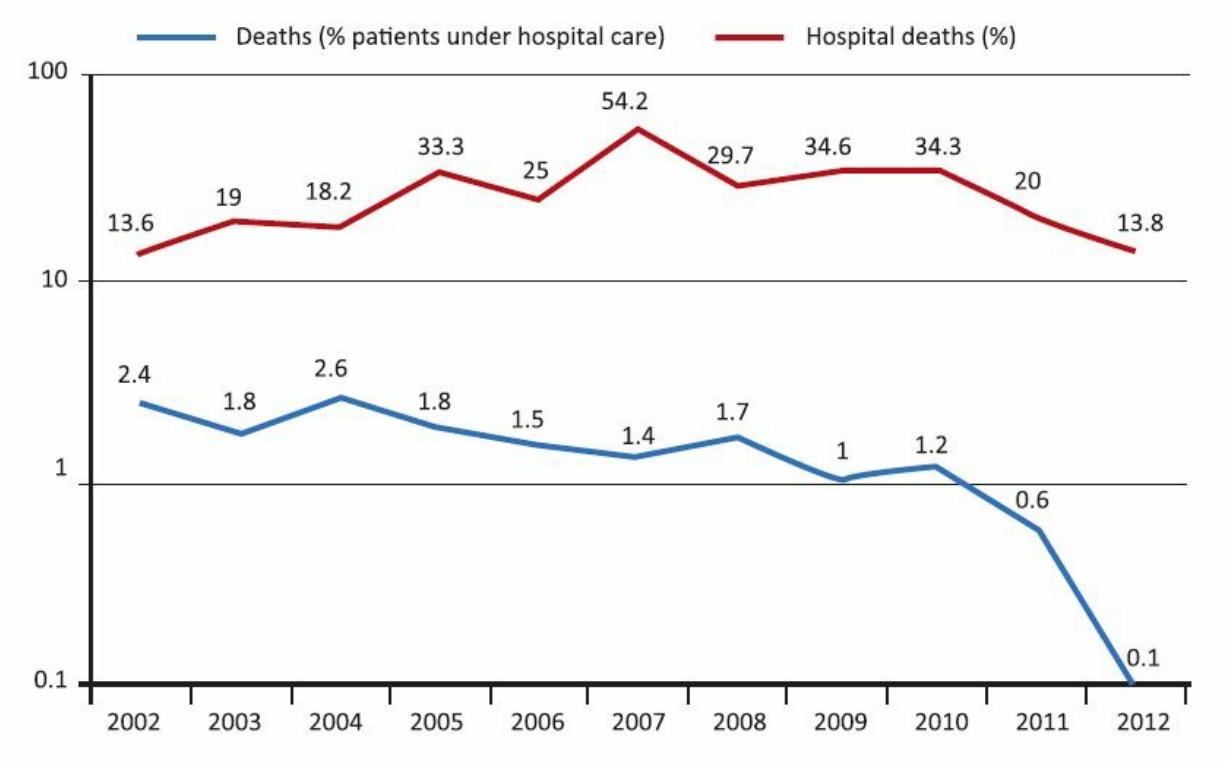


Figure 1.10. Deaths among HIV/AIDS patients at the PPL in 2002–2012

In 2013, 13 million people living with HIV were receiving ARV treatment. The proportion of untreated patients has clearly decreased, from 90% in 2006 to 63% in 2013. Between 2010 and 2013, 5.6 million people were prescribed with the ARV therapy. One out of three patients treated with ARV in the world is located in the Republic of South Africa, while one out of ten in Uganda, Nigeria, Mozambique, or Tanzania. Approx. 7% of patients treated in the world live in India. It is also estimated nowadays that 3 out of 4 people treated for HIV infection are from sub-Saharan Africa.

According to the latest guidelines of the European AIDS Clinical Society, every patient with recognized HIV infection should receive ARV treatment (EACS, 2015). The percentage of people receiving treatment in the first year after registering at the PPL increased from 50% in 2010–2011 to 90% in 2013–2014 (Shepherd et al., 2015).

The abovementioned issue poses a new challenge for the medical care of the HIV-infected population and requires increases in funding not only for treatment, but also for more global medical attention.

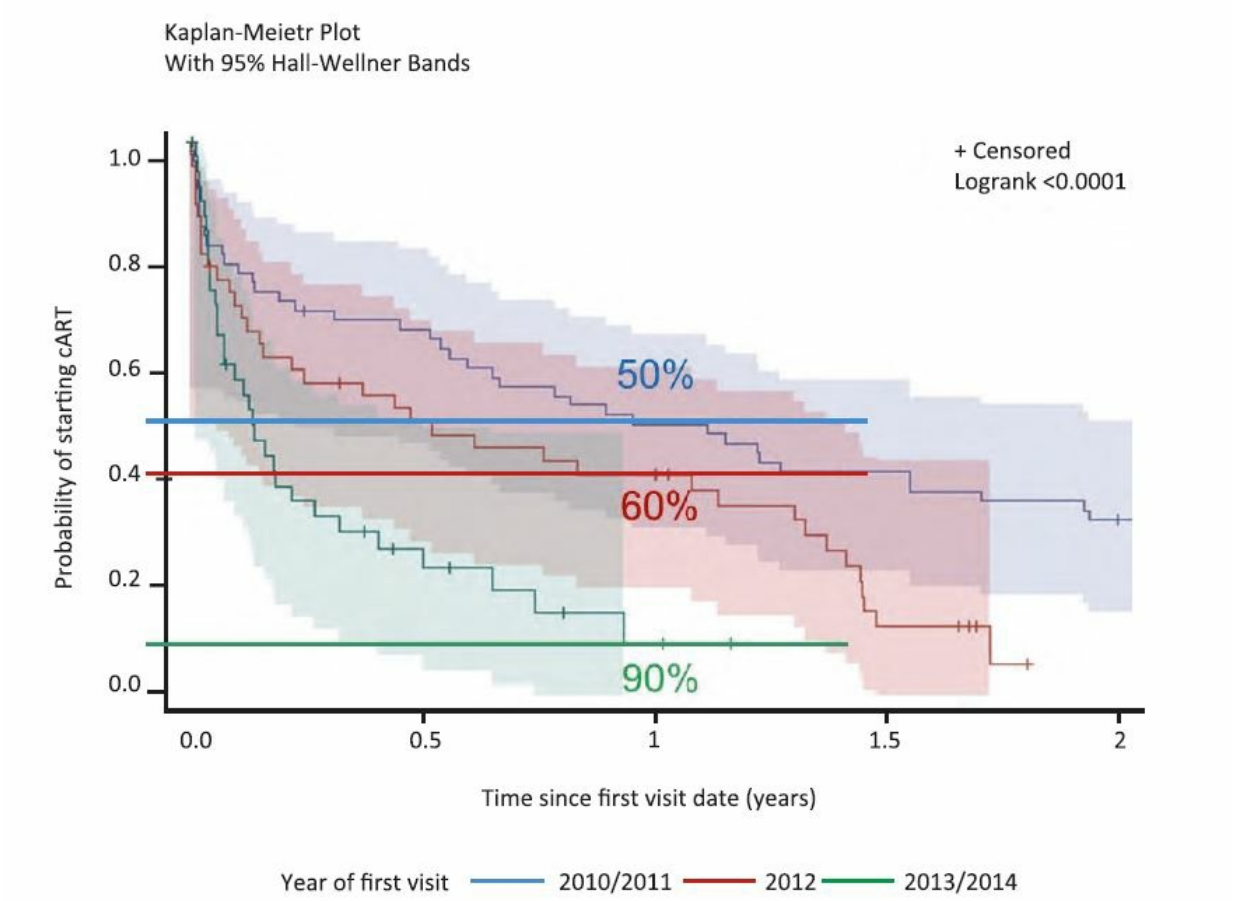


Figure 1.11. Percentage of patients receiving ARV treatment within the first year of being registered at the PPL

Conclusions

Since 2001, a reversal of certain trends in the HIV epidemic has been observed. The number of infected heterosexual individuals has been increasing, while the number of people infected through the intravenous drug use has been declining. In recent years, in Western Europe as well as at the PPL in Warsaw, the number of new infections among MSM men has been growing alarmingly, as indicated by the internal PPL data, reports from the PZH, as well as UNAIDS data from 2014 (Rosińska, Janiec, Niedźwiedzka-Stadnik, 2013).

It is estimated that 50% of people infected with HIV in Poland are not aware of their infection, which is the main source of the ongoing epidemic. The fact that HIV infection in Poland mainly affects young people entering sex life and starting a family is also disturbing.

Consistent with the current UNAIDS policy, until 2020, 90% of all people living with HIV should be aware of their serologic status. Furthermore, 90% of all people with recognized HIV infection will be receiving ARV, and 90% of all people taking the medication will fully benefit from it (UNAIDS, 2014).

These ambitious plans require a significant increase in funding the prevention methods, early diagnosis as well as treatment. This postulates a very serious challenge for the health care system.

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