

HIV in Europe

Advances in Diagnosis and Treatment



HIV is a virus that attacks – and if left untreated, can destroy – the human immune system. When an HIV patient's immune system is weakened to a point where the body is vulnerable to other infections, he or she is said to have Acquired Immune Deficiency Syndrome, or AIDS. HIV and AIDS have been present in Europe since at least the early 1980s. According to the World Health Organization (WHO), about 2.3 million people in the European region are now living with HIV, with more than 120,000 new infections reported in 2010 alone.¹ Worldwide, an estimated 34 million people are currently infected with HIV.²

Today's Epidemic

- HIV/AIDS is a major public health issue in Europe, and in recent years rates of HIV transmission have been increasing in a number of countries and regions. Between 2004 and 2011, the rate of new HIV infections in Europe increased by 16 per cent, with the highest rates seen in Eastern Europe.³
- In Western and Central Europe, most new infections occur among men who have sex with men (MSM).⁴ In Russia and Ukraine – which together account for nearly 90 per cent of new infections in Eastern Europe and Central Asia – the epidemic is concentrated among injecting drug users.⁵
- AIDS deaths have declined dramatically in Western Europe (by about 74 per cent between 2004 and 2011), largely due to the availability of effective treatments.⁶ In contrast, AIDS deaths have increased in Eastern Europe and Central Asia (by about 5 per cent between 2004 and 2011), where only one-quarter of the estimated 510,000 people in need of treatment are currently receiving HIV therapy.⁷
- More than half of the estimated 2.3 million people living with HIV in Europe are also chronically infected with hepatitis C, which is due in part to injecting drug use being a common transmission route for both diseases.⁸

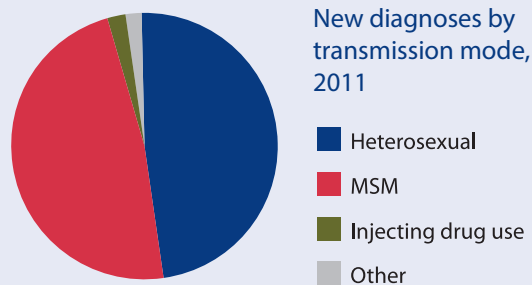
Importance of HIV Testing

It is estimated that half of all HIV-positive individuals in Europe do not know they are infected.⁹ The HIV test is an important first step to getting people with HIV into care programmes in order to prevent disease progression and transmission of the virus. Studies show that a positive HIV test result is associated with a 60–80 per cent reduction in risk behaviour – people who know their status are much more likely to take the steps needed to reduce transmission to their partners.¹⁰

Nevertheless, about half of HIV cases in Europe are diagnosed late, when patients' CD4 cell counts (a measure of immune system health) fall below 350 cells per microliter.¹¹ HIV therapy may be less effective when the disease has progressed to an advanced stage.

United Kingdom HIV Facts

- By the end of 2011, an estimated 96,000 people in the UK were living with HIV, with nearly a quarter unaware of their infection. The majority of those affected are MSM and African-born women.
- The UK has the highest number of new annual HIV infections in Western Europe. In 2011, 6,280 people in the UK were newly diagnosed with HIV.
- Current guidelines from the British HIV Association recommend initiating antiretroviral treatment when a patient's CD4 cell count falls below 350 cells per microliter. Based on these guidelines, 88 per cent of diagnosed UK HIV patients in need of treatment are currently receiving it.
- With early diagnosis, a 35-year-old with HIV in the UK today can expect to live for more than 30 additional years.
- However, in 2011 an estimated 47 per cent of adult patients were diagnosed late, when treatment may be less effective.



Sources: Health Protection Agency. HIV in the United Kingdom: 2012 Report. *Health Protection Report* Volume 4, Number 47, 26 November 2012. May, M. et al. Impact of late diagnosis and treatment on life expectancy in people with HIV-1: UK Collaborative HIV Cohort (UK CHIC) Study. *British Medical Journal* 2011;343:d6016.

Antiretroviral Treatment

In the 1980s and 1990s, before effective treatments for HIV/AIDS existed, most patients died within 12 months of diagnosis.¹² Today, potent anti-HIV drug combinations have helped to transform HIV infection into a long-term, chronic disease for many patients. However, the majority of Europeans living with HIV are not currently on treatment.

Since 1987, 30 antiretroviral medicines have been approved in Europe for the treatment of HIV.¹³ These drugs are grouped into five classes based on how they block HIV from replicating in the body (see table). Today's treatment regimens contain three or more medications selected from at least two different classes of antiretrovirals with the aim of fully suppressing HIV replication in the body and preventing the development of HIV drug resistance. Resistance can emerge because the virus replicates very rapidly, and if it is not effectively treated and suppressed, HIV can make billions of copies of itself in the body each day. Tiny genetic changes occur during replication that can lead the virus to mutate quickly and become resistant to the effects of HIV drugs.

Drug Class	Year Introduced	How They Work
Nucleoside and nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)	1987	Blocks the action of HIV reverse transcriptase, a key enzyme necessary for viral replication and the initial infection of CD4 cells.
Protease inhibitors	1996	Targets the HIV protease enzyme, which breaks HIV protein chains into smaller pieces to complete viral replication.
Non-nucleoside reverse transcriptase inhibitors (NNRTIs)	1997	Stops the action of HIV reverse transcriptase enzyme by slowing the rate of important chemical reactions involved in DNA synthesis. Similar to NRTIs.
Entry inhibitors	2003	Prevents the virus from entering and infecting healthy CD4 cells by blocking binding or fusion mechanisms.
Integrase inhibitors	2007	Blocks the integrase enzyme that HIV uses to integrate its genetic material with the DNA of human cells.

Simplifying HIV Therapy

For HIV therapy to be effective, patients should remain on combination therapy and adhere to the dosing schedule to keep viral replication suppressed. Clinical research has shown that patients must adhere to their regimens at least 95 per cent of the time for optimal outcomes.¹⁴ Adherence used to be a constant challenge, with early treatment regimens involving 20 or more pills dosed throughout the day. Early HIV medications were also associated with severe side effects, such as the body disfiguring metabolic syndrome called lipodystrophy, which could discourage adherence.

Today's simpler, less toxic regimens have been shown to improve patient adherence.¹⁵ Over the past decade, a number of medications have been introduced that can be taken once a day, and newer drugs are generally easier to tolerate in terms of side effects. Additionally, medications from different classes have been combined into fixed-dose combination tablets, helping to reduce daily pill burden. In fact, today it is possible to take a complete treatment regimen in a single once-daily tablet.

When to Start Treatment

An HIV-positive individual is diagnosed with AIDS when severe infections or cancers are present or the patient's CD4 cell count drops below 200 cells per microliter of blood. By comparison, a healthy, HIV-negative person normally has 500–1,600 CD4 cells per microliter.

Europe's leading medical authority on HIV/AIDS care, the European AIDS Clinical Society, now recommends that antiretroviral treatment be initiated when a patient's CD4 cell count is 350 cells per microliter or less, and recommends that HIV therapy be considered for all patients with CD4 counts of 350–500 cells per microliter (in the past, it was recommended that HIV therapy be considered at this stage of the disease only for certain patients, such as individuals co-infected with

hepatitis C).¹⁶ This shift toward earlier initiation of treatment is based on studies showing that starting HIV therapy when the patient has a CD4 count of 350 cells per microliter or above may improve survival, lower the risk of disease progression, reduce treatment-related side effects and help to prevent the development of co-morbidities such as cardiovascular disease and cancer.^{17,18,19}

Treatment as Prevention

A growing body of evidence suggests that antiretroviral treatment may help individuals with HIV avoid transmitting the virus to others. By lowering viral load (the amount of HIV in the blood), HIV therapy can make patients less infectious. In May 2011, a large, randomised clinical trial showed that early initiation of antiretroviral therapy for HIV-infected individuals reduced their risk of sexually transmitting HIV to an uninfected partner by 96 per cent.²⁰ This and similar findings from other clinical studies suggest that expanding HIV testing and treatment programmes could reduce the incidence of new infections.²¹

A Cure?

Current antiretroviral medicines reduce the level of HIV in the blood, but cannot completely eliminate it from the body – small amounts of the virus lay dormant in immune system cells, which is known as latent HIV infection. In recent years, scientists have ramped up their efforts to find a cure for HIV infection. Current research is focused on finding ways to clear the virus from latent reservoirs of HIV in immune system cells and on modifying patients' immune systems so that HIV cannot replicate in their bodies. While much more research is needed, many scientists are optimistic that a cure for HIV/AIDS will eventually be found.

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