HIV in Germany 2022 and 2023
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The number of new HIV infections in Germany and among people of German origin who have contracted HIV abroad is estimated to be 1,900 in 2022 and 2,200 in 2023, which means that the number of new HIV infections in 2023 will be roughly the same as in 2019 before the COVID-19 pandemic. Compared to previous years, the proportion of first diagnoses with advanced infection or in the AIDS stage remained roughly constant. As HIV generally no longer leads to death, the number of people living with an HIV infection in Germany rose to 96,700 by the end of 2023. Of these, around 8,200 HIV infections have not yet been diagnosed. The current data indicates that the expansion of target group-specific testing programmes and an earlier start to treatment have been successful in Germany. However, further measures are needed to improve testing services and to ensure access to treatment for all people living with HIV in Germany.

Disclaimer

This document is a translation of the German article “Schätzung der Anzahl der HIV-Neuinfektionen in den Jahren 2022 und 2023 sowie der Gesamtzahl der Menschen, die Ende 2023 mit HIV in Deutschland leben”. The German text is authoritative, and no liability is assumed for any translation errors or for the translation’s correctness in case of subsequent revisions to the German original – DOI 10.25646/12212
Estimate of the number of new HIV infections in 2022 and 2023 and the total number of people living with HIV in Germany at the end of 2023

Summary
► In many cases HIV diagnoses are made many years after the infection. Routine surveillance based on laboratory reports therefore only provides limited information on the current spread of HIV in Germany. The number of new HIV infections and the total number of people living with HIV in Germany can only be estimated with the help of mathematical models.
► The number of new HIV infections in Germany and among people of German origin who have contracted HIV abroad is estimated to be 1,900 in 2022 and 2,200 in 2023, which puts 2023 at around the same level as 2019 before the corona virus pandemic.
► The estimated number of new HIV infections among men who have sex with men (MSM) was around 1,100 in 2022 and around 1,200 in 2023, lower than in 2019 (1,400) but higher than in 2021 (estimated at around 1,000). The estimate shows that around 370 people were newly infected with HIV through injecting drug use in 2022 and around 380 in 2023. The estimated number of new infections in this group has been increasing slowly but steadily since 2010. Around 520 people were infected with HIV through heterosexual contact in Germany in 2022 and around 620 in 2023. We also see an increase in this group compared to the pre-pandemic level (2019: 420). The course of the next two years will show whether the increases in these two groups observed in the model are real trends.
► In 2022 and 2023, around 33% of first-time HIV diagnoses (around 1,200 out of 3,500 in each year) were not made until advanced immunodeficiency and just over half of these, 18%, were not made until full-blown AIDS (around 620 out of 3,500). Compared to previous years, the proportion of first-time diagnoses with an advanced infection or in the AIDS stage remained more or less constant.
► As HIV generally no longer leads to death, the number of people living with HIV in Germany increased to 96,700 by the end of 2023. Of these, around 8,200 HIV infections have not yet been diagnosed. While the number of as yet undiagnosed MSM declined, it slightly increased in the other groups. Overall, the estimated number of undiagnosed infections has fallen since 2010. The proportion of diagnosed HIV infections is around 92%. These figures do not include the undiagnosed infections of people of non-German origin living in Germany whose infection was acquired abroad.
► The proportion of people diagnosed with HIV infection who receive antiretroviral therapy has risen from around 80% in 2006 to around 99% in 2023. Around 96% of these therapies were successful, i.e. viral load was suppressed to less than 200 viral copies/ml blood.
► The current data indicate that the expansion of target group-specific testing services and an earlier start of treatment have also been successful in Germany. However, further action is needed to improve testing services and to ensure access to treatment for all people living with HIV in Germany.
► The influence of HIV pre-exposure prophylaxis (PrEP), used almost exclusively by MSM, on the incidence of infection cannot be reliably assessed due to the changes in sexual and testing behaviour in 2020 and 2021 that occurred in the context of the coronavirus disease 2019 (COVID-19) pandemic. However, the observed decline in new HIV diagnoses and the estimated decline in new infections among MSM since 2019 indicate that PrEP use has prevented new infections. In addition, there was a temporary reduction in the risk of transmission due to contact restrictions, which probably also led to a reduction in sexual contacts. On the other hand, the partially restricted access to testing services could have led to
delayed diagnoses of HIV infections. Further efforts are needed to make PrEP more widely known and available beyond the group of MSM, as well as to ensure a continuous surveillance of PrEP in Germany.

1. Introduction

Diagnosis of HIV often occurs many years after HIV infection. The number of new HIV infections and the number of people in Germany living with HIV cannot be measured directly, but can only be estimated with the help of mathematical models. This is why the Robert Koch Institute (RKI) regularly produces estimates of the evolution of the HIV epidemic. These estimates are designed in particular to allow the planning of prevention measures, to improve the evidence base for the provision of adequate medical care and for taking health policy decisions. To describe the HIV/AIDS epidemic, HIV notifications in accordance with the Infection Protection Act (IfSG), the AIDS case register with AIDS and HIV death reports to the RKI, which was discontinued in 2023, the cause of death statistics of the statistical offices of the federal states and data on prescriptions for antiretroviral drugs in accordance with Section 300 of the German Social Security Code V are used.

The estimate of new HIV infections is based on the reported number of HIV diagnoses and statistics on how long after infection the diagnoses were made. This is used to estimate the number of new HIV infections and the number of undiagnosed HIV infections. The estimation of the time trends of new HIV infections, deaths among people with HIV and the number of people living with HIV in Germany is carried out anew each year on the basis of all available data and information. As many of the new HIV infections diagnosed in 2022 and 2023 were acquired much earlier and therefore the number of infections from earlier years can now be better determined, the estimated values can change over the entire period. The calculations therefore provide an updated estimate of the entire course of the HIV epidemic up until now every year. A more detailed description of the mathematical model can be found in the Epidemiological Bulletin 47/2018.

2. Estimate of new HIV infections in Germany over time

The back-calculation leads to an estimate of the overall course of the epidemic from the early 1980s to the present day. The estimated number of new HIV infections initially fell significantly over time from peak values in the mid-1980s in all age groups until the end of the 1990s. In the years 2000 to around 2007, there was then another significant increase in HIV infections to up to 3,500 new infections per year. After a decline, there was a plateau from 2010 onwards with around 2,500 new infections per year, see Figure 1. The number of new HIV infections in Germany has continued to fall since 2016. This decline was even more pronounced in the pandemic years 2020 and 2021. In 2022, the estimated number of new infections was 1,900 (95% confidence interval [CI]: 1,700 – 2,200), in 2023 it was 2,200 (95% confidence interval [CI]: 1,900 – 2,400), returning to roughly the same level as in the pre-pandemic year 2019 (2,100 (95% confidence interval [CI]: 1,900 – 2,300)).

Time course of HIV infections acquired in Germany or by people of German origin abroad

Figure 2 shows the differences in the evolution of the epidemic in the various HIV transmission groups. Of the estimated total number of new HIV infections in 2022, around 1,100 (53%) were MSM, with an estimated 1,200 in 2023. Around 520 people (27%) were infected through heterosexual transmission in Germany in 2022, 310 of whom were women (6%) and 210 men (11%). In 2023, the number increased to around 620, of which around 360 were women and 270 men. In addition, around 370 (19%) people were infected through injecting drug use (PWID) in 2022, and around 380 in 2023, of which around 280 were men and 100 women.

The trends in the three main groups affected in Germany are different: In the MSM group, the estimated number of new infections dropped from around 2,800 in 2007 to around 1,000 in both 2020 and 2021, and has since increased again slightly, but remains below the level of the last pre-pandemic year 2019. For PWID, the modelling shows a significant increase in estimated new infections since 2010. In the two pandemic years, the number of esti-
mated new infections stabilised, but has continued to increase in the last two years.

Figure 3 shows that the number of heterosexual HIV transmissions among women has been around 300 per year for the past 30 years. For men with heterosexual transmission, it has also remained relatively constant at just under 200 new infections per year. The modelling currently indicates a slight increase in both women and men. However, this increase should be interpreted with caution, as increases estimated by the modelling in this group have not materialized in the past.
Time course of first HIV diagnoses (in Germany) in people of non-German origin who acquired their HIV infection abroad

HIV infections acquired abroad by people of non-German origin are not included in the estimate of new HIV infections in Germany. However, they are included in the estimate of the total number of people living with HIV in Germany. The estimation model cannot model the migration process to Germany, especially since no information is collected on the time of entry into Germany. Therefore, the number of people of non-German origin living in Germany with an undiagnosed HIV infection acquired abroad cannot be estimated and cannot be taken into account when estimating the total number of people living with HIV in Germany.

Missing information in the HIV reporting form, for example on the transmission risk, was supplemented by multiple imputation. At the level of first HIV diagnoses, trends in the individual groups can therefore be shown in full – with a corresponding degree of uncertainty.

Figure 4a shows the development over time of estimated first HIV diagnoses in Germany, including the number of first diagnoses among people of non-German origin who acquired their infection abroad. The sharp increase in HIV diagnoses among people from Eastern Europe in 2022 and 2023, which primarily reflects the admission of refugees from Ukraine with mostly already known HIV infection, is clearly recognizable (approx. 800 people in 2022 and 600 in 2023). However, the number of first HIV diagnoses in people from other regions of the world is also increasing again following the COVID-19 pandemic.

Figure 4b shows the development over time of first diagnoses of infections acquired abroad, broken...
Fig. 4a | Estimated trends in the number of first HIV diagnoses in Germany. Infections acquired in Germany or by persons of German origin abroad are categorized by transmission route, infections acquired by non-Germans abroad by region of origin, 2001–2023.

Fig. 4b | Estimated number of first HIV diagnoses among people of non-German origin who contracted HIV abroad in relation to the number of people living in Germany from the corresponding region of origin according to the Central Register of Foreigners, 2004–2023. CI = Confidence interval
down by region of origin for people of non-German origin. The first HIV diagnoses in people from a region are shown in relation to the total number of people with a nationality from this region who were registered in Germany in the respective year. For all foreign regions of origin, the number of first HIV diagnoses in 2022 and 2023 increased again compared to the previous year after the temporary decline in the pandemic years 2020 and 2021 and exceeded the level of the pre-pandemic year 2019. The number of first diagnoses (in Germany) of people originating from Europe increased particularly sharply.

Around 12 first HIV diagnoses per 100,000 inhabitants were reported for people originating from Europe (outside Germany). In contrast, this figure was just under 40 per 100,000 inhabitants for people from Southeast Asia and around 55 per 100,000 inhabitants for people from the Americas/Oceania. For people from sub-Saharan Africa, this figure was around 120 first HIV diagnoses per 100,000 inhabitants in 2023.

**HIV infections that were first diagnosed with advanced immunodeficiency**

The majority of AIDS cases in Germany are diagnosed in people whose HIV infection was previously unknown. An HIV infection in the AIDS stage or with less than 200 CD4 cells/µl of blood is referred to as advanced immunodeficiency. Figure 5 shows that the number of HIV diagnoses with advanced immunodeficiency is declining among MSM and – to a lesser extent – also among heterosexual transmissions. In contrast, the number of transmissions associated with injecting drug use is increasing. We observe a similar dynamic in the number of HIV diagnoses with AIDS in these groups. These different movements correspond to the declining number of new infections among MSM reported at the beginning of this chapter, the relatively constant number of heterosexual transmissions and the increasing number of drug use-associated HIV transmissions up to 2019.

The proportion of HIV diagnoses that are made in connection with an AIDS diagnosis has remained relatively constant in all affected groups over the last 10 years.²

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3. Estimating the number of people living with HIV in Germany

Modelling the course of the HIV epidemic in Germany leads to an estimate of around 96,700 (95% CI: 88,100–99,400) people living with HIV in Germany by the end of 2023.

Of the estimated 78,200 infections acquired in Germany or by people of German origin abroad (95% CI: 74,200–83,500), around 73% (n = 57,000) are attributable to MSM and around 15% (n = 11,700) to women (10.1%, n = 7,900) and men (4.9%, n = 3,800) who became infected through heterosexual contact. Around 9,000 (12%) of all people with HIV acquired their infection through injecting drug use, of which around 5,600 are men and 3,400 women. In addition, there are approximately 450 people (0.6%) who became infected with HIV, mostly in the early 1980s, through blood transfusions or blood products. This group is not included in the back-calculation model for determining the number of new HIV infections per year, but is added at the end when determining the total number of people living with HIV. It is therefore not included in Figures 1 to 3.

Of the people living with HIV in Germany, around 18,600 (19%) are people of foreign origin who have also been infected with HIV abroad. Of the approx. 8,600 infections acquired in Africa (46%), infections via heterosexual contacts dominate, while MSM and PWID (Eastern Europe) dominate among the 5,300 infections acquired in other European countries (28%). The approx. 2,300 infections acquired in Asia (12%) are mainly distributed among heterosexually acquired infections and infections in MSM and the 1,500 infections from the Americas and Oceania (8%) mainly affect MSM. In addition, there are around 900 children, adolescents and young adults (5%) who were infected through mother-to-child transmission before, during or after birth.

As can be seen in Figure 6, the number and age distribution of people under 40 living with HIV has remained virtually unchanged over the last 30 years. In the older age groups, however, the number of people living with HIV has been rising continuously since the mid-1990s. Among the over-40s, the total number of people living with HIV has increased around fivefold since the early 1990s. On the one hand, this is due to the ageing process of the HIV

![Fig. 6](image-url)  Estimated number of people living with HIV in Germany by 5-year age group (excluding transfusion-associated and mother-to-child infections), 1980-2023
population with significantly reduced mortality due to the introduction of antiretroviral combination therapy since the mid-1990s, but on the other hand it is also due to an increased proportion of new infections in older age groups.

The number of men over 50 living with HIV in 2023 was around 41,900, while the number of women over 50 was around 8,800.

**Estimated number of HIV infections by diagnosis and treatment status**

The Joint United Nations Program on HIV/AIDS (UNAIDS) has formulated the goal that at least 95% of all people living with HIV should be diagnosed with HIV by 2025 and that at least 95% of these should receive antiretroviral treatment. HIV should no longer be detectable in the blood of at least 95% of those receiving treatment (“95-95-95 target”, see https://aidstargets2025.unaids.org/). Figure 7a shows that the last two targets have already been met in Germany in 2023, but the first target remains below the target level with around 92% of people diagnosed. The proportion of people with diagnosed HIV infection receiving treatment was around 99% in Germany in 2023. Similar to this proportion, the proportion of people under successful treatment has also been rising for many years and has been above 95% since 2015.3

The estimated total number of people living with HIV in Germany has been growing at a roughly linear rate since 2000. During this period, it has more than doubled from less than 40,000 to around 96,700. During the same period, the proportion of people with HIV receiving antiretroviral treatment has also continued to increase. In 2006, around 64% of all people living with HIV in Germany received HIV treatment; by 2023, this figure had risen to 90% (see Fig. 7b). Among people diagnosed with HIV, the proportion receiving HIV treatment has risen from 80% in 2006 to 99% in 2023. Since antiretroviral treatment was recommended by the World Health Organization (WHO) for all people with HIV regardless of their CD4 count at the end of 2015, the number of people diagnosed with HIV who are not yet receiving antiretroviral therapy is falling in Germany. In 2023, we estimate that this number will still be around 1,300 people in Germany.

![Percentage](image)

**Fig. 7a** | Proportion of people living with HIV in Germany who are diagnosed, treated and successfully treated (continuum of care) in 2023. Figures do not include undiagnosed infections acquired abroad. Antiretroviral therapy (ART) is considered successful if fewer than 200 viral copies per ml are detectable in the blood. CI = Confidence interval
Estimated number of as yet undiagnosed HIV infections

The number of undiagnosed HIV infections acquired in Germany or abroad by people of German origin can be estimated with the help of mathematical modelling. This estimate is based on the HIV diagnoses known to date and the distribution of the duration between HIV infection and diagnosis known from cohort studies using clinical markers.

The area marked in blue in Figure 8 shows the estimated total number of undiagnosed infections at the end of 2023 by year of the respective HIV infection. The longer ago the time of infection, the higher the proportion of infections already diagnosed. The blue line marks the number of estimated new HIV infections in the respective year, while the orange line shows the course of newly diagnosed infections in the respective year, as expected within the model. For MSM, the modelled number of new diagnoses has been higher than the number of new infections since 2010, i.e. more infections are diagnosed than there are new infections, thus reducing the number of undiagnosed infections. For heterosexual HIV transmissions and HIV transmissions associated with injecting drug use, on the other hand, the modelled number of new diagnoses has been below the number of new infections since 2012, i.e. the estimated number of undiagnosed infections is increasing. The figure also shows the reported number of new HIV diagnoses in brown, which form the starting point for the modelling. For MSM in particular, there is an abrupt decline in 2020 and then a roughly constant number of diagnoses until 2023.

The total number of people living with undiagnosed HIV infection in Germany rose from around 8,100 in 2001 to around 11,500 in 2009 and has been slowly declining since then – in 2023 it is estimated to be 8,200 (95% CI: 7,600–8,900), see progression of the dark grey bars in Figure 7b.

Around 4,900 of these approx. 8,200 as yet undiagnosed HIV infections are distributed among MSM (=9% of around 57,000 people with HIV estimated among MSM of German origin), 1,400...
The number of women under 50 living with HIV in Germany in 2023 was around 11,200, of whom around 9,900 had already been diagnosed with HIV infection. Around 1,300 women of childbearing age had not yet been diagnosed with HIV infection.

4. Limitations of the modelling

There is a considerable proportion of HIV notifications in accordance with the IfSG that contain incomplete information. This applies in particular to the information on the measured CD4 count at the time of HIV diagnosis, but also to information on the clinical stage, the transmission risk, the probable place of infection and the country of origin. Furthermore, there are reports where it is not possible to decide whether they are first-time or duplicate reports. Reports with missing information are taken into account in the HIV estimation with the help of multiple imputation; this involves simulating different possible variants of complete data sets, which are then averaged at the end. This takes into account the greater uncertainty of the results within the assumptions of multiple imputation.

The determination of the number of people with HIV is based on the reported HIV diagnoses and the place of residence at the time of HIV diagnosis. Changes of residence after HIV diagnosis are not reported, so the distribution of people with diagnosed HIV infections across the federal states is determined from the distribution of people under treatment, assuming a fixed treatment rate.

The supply cascade can so far only be determined overall and not by transmission group. Only the first two columns and thus the number of undiagnosed HIV infections can be determined from the model-
ling. The number of treated HIV infections can only be determined in total, but not by transmission group, as it is calculated from the number of prescribed HIV drugs based on pharmacy billing data. The proportion of successfully treated people with HIV is based on data from a long-term clinical cohort of people undergoing specialist treatment, in which not all affected groups of people are adequately represented.

In the pharmacy billing data, no distinction can be made between therapeutic and prophylactic use of HIV medication as post-exposure prophylaxis (PEP) or PrEP. It is therefore assumed that there are certain trends in PrEP use and a continuously increasing consumption of HIV drugs due to an increasing number of people on HIV therapy.

The number of infections acquired abroad that have not yet been diagnosed cannot be estimated, as the time of entry into Germany is not recorded in the notification.

The number of people with HIV who emigrate from Germany can only be roughly estimated, as data on this is not available.

For the group of persons with a heterosexual transmission risk, in which a large proportion is of non-German origin, the high proportion of reports with incomplete information can lead to a blurring of trends in infections acquired in Germany and abroad. For example, the estimates of infections acquired in Germany (see Fig. 3) show fluctuations that are temporally related to events that primarily affected infections acquired abroad.

The back-calculation leads to an estimate of the entire course of the epidemic from the early 1980s to the present day. Many new infections are only diagnosed after a delay of several or even many years, so that the estimate of new infections in recent years is based on a systematically incomplete database of diagnoses that have already been made. Therefore, modelling the trends of infections in the present is subject to increased uncertainty and current trends may be over- or underestimated.

5. Discussion

The number of new HIV infections in Germany and among people of German origin who have been infected with HIV abroad is estimated at 1,900 in 2022 and 2,200 in 2023. It thus increased compared to the two pandemic years 2020 and 2021 and roughly reached the pre-pandemic level of 2019. The COVID-19 pandemic had changed the conditions for sexual contact as well as for drug use and HIV testing in 2020 and 2021. The modelling is only partially able to distinguish between a reduction in the number of new infections due to a reduction in sexual contact and a reduction in new diagnoses due to a lower use of routine check-ups. The significant reduction in the number of new HIV diagnoses in 2020 and 2021 and the subsequent return to pre-pandemic levels may therefore lead to an overestimation of the number of current new infections.

Although a slight increase in the number of new diagnoses of infections acquired in Germany can be observed for MSM from 2020 to 2021 and for PWID and people with a heterosexual transmission risk from 2021 to 2022, this does not continue for MSM in the following years 2022 and 2023 and for PWID and heterosexuals in 2023 (as yet unpublished data from the RKI). In contrast, diagnoses of infections acquired abroad increased in all groups in 2022 and 2023.

The increase in new infections in Germany observed in the modelling is based on the one hand on the development of new diagnoses with missing data and on the other hand on more frequent late diagnoses, which are interpreted by the model as an increase in new infections. However, the latter may also be partly due to delayed diagnoses caused by the COVID-19 pandemic. The course of the next two years will show whether these increases are real trends.

According to current estimates, the number of people with HIV whose infection has not yet been diagnosed has been slowly declining since 2010 and was around 8,200 in 2023. However, this figure does not yet include the undiagnosed infections of people of non-German origin living in Germany whose infection was acquired abroad. This number has probably increased in the last two years due to the increasing number of people migrating to Germany.
The trend in Germany is also different for the various groups. While the number of undiagnosed infections among MSM is falling, it is rising among people who inject drugs and possibly also in people with heterosexual transmission.

The proportion of people receiving antiretroviral treatment has risen from around 80% of those diagnosed with HIV in 2006 to 99% in 2023. The proportion of successful treatments among those receiving treatment is currently around 96%. Hardly any further progress can be made in the last two areas. However, it should be noted here that the figure of 96% successful treatments relates to people receiving specialist care. For refugees in Germany, those seeking asylum in Germany and also for drug users, there are geographical, linguistic and everyday barriers to access to such specialist medical care. Therefore, further improvements are certainly possible and necessary for these groups. Since 2015, the German-Austrian HIV treatment guidelines have recommended offering antiviral treatment for every HIV diagnosis, regardless of immune parameters such as the CD4 cell count. In addition to preventing disease progression and the occurrence of clinical complications, this also has an impact on HIV prevention (treatment as prevention strategy). This is because successful treatment (characterized by an undetectable viral load) means that HIV transmission by sexual means is no longer possible (undetectable = untransmissible; U = U).

According to the results of the estimation model, there are around 1,300 people living in Germany who have been diagnosed with HIV infection but are not (yet) receiving treatment.

In recent years, the estimated number of HIV infections among MSM has fallen significantly from around 2,900 in 2007 to around 1,200 in 2023. The decline in new infections is primarily due to the effective and earlier treatment of people with HIV and the increased willingness to be tested, broader testing services and earlier diagnosis of infections as well as the use of PrEP.

Since fall 2017, drug-based HIV PrEP has become affordable for more people in Germany. The number of people using PrEP has risen continuously since then. Since 01.09.2019, HIV PrEP can be prescribed at the expense of the SHI. There is no doubt that consistent use of PrEP drastically reduces the risk of HIV infection and therefore brings clearly proven individual benefits. It is more difficult to say to what extent PrEP use has a positive impact on the overall epidemiological trends. Although there has been a decline in new HIV infections in Germany since the introduction of PrEP, this is certainly still partly a success of the treatment as prevention strategy.

Since 2022, national PrEP surveillance has been set up and established at the RKI to investigate developments in PrEP use, PrEP needs and access barriers in various groups as well as effects on the incidence of infection. The trend in the number of PrEP users in Germany has shown a strong increase since the introduction of PrEP as part of statutory health insurance in September 2019, which was only interrupted in 2020 – most likely due to COVID-19. No decline or plateau in the number of PrEP users has been observed to date. As of the end of 2023, around 40,000 PrEP users were estimated in Germany, including PrEP on-demand and PrEP for people without statutory health insurance.

Around 98% of PrEP users are MSM. However, there is certainly a need for PrEP and, above all, a need for education and information about PrEP among other groups of people, such as people from trans*/non-binary communities, sex workers, migrants and drug users. There are also large regional differences in PrEP use, with metropolitan areas such as Berlin and Hamburg leading the way and reports that PrEP provision is difficult in rural areas. In addition, there are only a few PrEP-prescribing facilities whose services are also aimed at people outside the MSM group, presumably partly due to the requirements for prescribing PrEP within the framework of statutory health insurance and the resulting concentration on HIV specialized facilities.

Compared to 2017, a significant decline in the number of diagnoses of new HIV infections among MSM presumed to have occurred in Germany is observed in almost all federal states. In contrast, the number of diagnoses of HIV infections among
MSM of non-German origin who were presumably infected in Germany has hardly changed. The extent to which this could be related to varying levels of access to PrEP cannot be assessed at present. Data from a currently ongoing large online survey (EMIS-2024) may be able to shed light on this.

As PrEP has so far hardly been prescribed and used in other populations with an increased risk of HIV infection a substantial impact on the number of new infections with heterosexual transmission and among drug users is not yet to be expected. However, women with contact to bisexual men in Germany could also benefit indirectly from a reduction in HIV infections among MSM.

After many years of declining numbers of new infections, the modelling results for the transmission risk PWID show a gradual increase in new HIV infections since around 2010, which was only temporarily interrupted during the pandemic. In a number of large cities, larger and smaller infection clusters have been observed among substance users in recent years, in some cases repeatedly. The reasons for this are probably manifold. Probably only one of several possible causes is the increased use of stimulating and new psychoactive substances, which is sometimes associated with high injection frequencies and, in some cases, sexual risks. As part of the DRUCK 2.0 pilot study, which was used to collect data in 2021/22 to assess the situation regarding HIV and viral hepatitis in people with current injecting drug use in Berlin and Bavaria, a prevalence of 2.4% for HIV was observed, albeit with significant regional differences. A monitoring system for chronic infectious diseases in the context of drug use (including HIV) is currently being set up in several sentinel cities in Germany, which in 2025 will also include people who have ever injected drugs in their lives. Surveys of drug help facilities show that the supply of drug users with sterile injection equipment in the sense of a harm reduction strategy is not sufficiently financially secured everywhere and that the WHO’s target of 300 syringes and needles per person and per year is not achieved.

The modelling results for 2023 show that the number of new HIV infections transmitted heterosexually in Germany has remained virtually unchanged for 20 years. The reasons for this are probably complex. The HIV epidemic in this group is mainly fed by sexual contacts with PWID, MSM and people infected with HIV abroad; independent heterosexual chains of infection are limited and of minor importance for the spread of the HIV epidemic in Germany. Since around 2010, increasing intra-European mobility and migration have also played a role.

There is currently no concept of how new HIV infections through heterosexual contacts could be measurably reduced in Western European countries through PrEP. One challenge here is that PrEP is hardly known beyond MSM and there is only a willingness to take PrEP if a partner’s HIV infection is seriously considered. In addition, there are only a few PrEP-prescribing facilities whose services are also aimed at people with heterosexual contacts.

The number of HIV diagnoses among people from other European countries whose HIV infection was acquired outside Germany has fluctuated between 200 and 250 per year since 2016. As part of the mobility restrictions during the COVID-19 pandemic, the numbers fell, but rose again significantly in 2022 and 2023. In addition, a significant number of refugees from Ukraine with already known HIV infection were admitted to Germany in 2022 and 2023.

6. Recommendations for action

The modelling results and the HIV diagnosis figures show that the strategy to contain HIV in Germany has been successful, but that further efforts are needed to maintain the decline in new HIV infections.

Reducing new HIV infections

The proportion of people with HIV who receive effective antiretroviral treatment and are generally no longer infectious is increasing. The comparatively more positive development among MSM is probably due to the fact that it has been possible to increase the willingness to be tested in this group and to expand testing services with regular testing. The communication that HIV is no longer transmissible under effective treatment may also have contributed to a faster initiation of treatment in this group. In addition, the increasing use of PrEP and the recom-
The recommendation to start treatment immediately have had a positive effect.

The recommendation to use condoms remains a cornerstone of the prevention of HIV and sexually transmitted infections (STI). Any risks taken should be clarified promptly by means of an HIV or STI test.

Ensuring an adequate supply of sterile injection equipment and opioid substitution for people who inject drugs, the expansion of regular low-threshold testing services in drug help facilities, through outreach work and also in prison – as well as the initiation of antiretroviral treatment in line with guidelines are the recommended measures for preventing new HIV infections and for the early diagnosis and prevention of transmission in this group of people. These measures also have a significant effect on the reduction of hepatitis B and C infections.

HIV PrEP is an additional and effective tool for preventing new HIV infections. The coverage of costs for PrEP by the SHI has been evaluated and long-term national PrEP surveillance has been established. The evaluation and PrEP surveillance show that PrEP is highly effective in protecting against HIV infections – but also that the need for PrEP was not sufficiently covered in many rural regions, but also in some larger cities, so that further concepts and incentives for PrEP provision are important. In addition, a need for PrEP was identified in other groups of people, including people from trans* /non-binary communities, sex workers, migrants (African community) and drug users. Data from HIV testing facilities show that the majority of new HIV diagnoses in MSM would have met the criteria for offering HIV PrEP. A sustainable reduction in new infections with the help of PrEP in MSM and other populations would therefore require a more pro-active approach and identification of people who could benefit from PrEP.

**Reduce the number of undiagnosed infections**

A faster and earlier diagnosis of HIV infections helps to reduce the higher mortality and treatment costs associated with very late diagnoses and can also have a preventive effect, as successful HIV treatment prevents further transmissions.

The analyses of new HIV diagnoses among MSM suggest that in large cities with over 500,000 inhabitants, improved testing services and increased willingness to test have succeeded in reducing not only the number of recently acquired HIV diagnoses, but also the number of late diagnoses.

An expansion and more active advertising of HIV home-collection- and HIV self-tests – if possible with accompanying evaluation measures – could help to reduce testing gaps in rural regions and cities with fewer than 500,000 inhabitants. In addition, target group-specific, low-threshold testing services are essential in order to reach other groups, such as homeless people, drug users and people with a history of migration, in a culturally sensitive and non-stigmatizing way. The proportion of low-threshold drug help facilities with a (rapid) testing service is currently still insufficient, although low-threshold testing services have been facilitated since March 2020 by the abolition of the requirement to consult a doctor. Structural support is needed to train staff accordingly and expand the services. In addition, outreach medical services that offer the opportunity for testing should be implemented. To increase the willingness to test, factual information about the treatability and non-transmissibility of HIV in people who use drugs should be intensified.

Further efforts are also needed to reach people with undiagnosed HIV infection who do not take advantage of existing testing services. Medical specialists in the relevant disciplines (including general medicine, internal medicine, infectiology, gynaecology, addiction medicine) should offer tests for HIV and other STIs in accordance with guidelines, actively recommend an HIV test in the event of symptoms that could be attributable to HIV, comply with actively expressed requests for HIV testing wherever possible and actively provide information about PrEP, not only for MSM, in accordance with guidelines. Relevant here are the guideline of the Association of the Scientific Medical Societies in Germany (AWMF) 059/006: STI/STD counselling, therapy, diagnostics (2015), the “Recommendation of the State Commission AIDS (NRW) to improve the prevention of HIV and other sexually transmitted diseases and to facilitate access to STI examinations on appropriate occasions”, as well as the German-
HIV/AIDS in Germany – Key figures of the estimate*
Epidemiological information from the Robert Koch Institute (Data as of the end of 2023)

* The key figures are compiled each year on the basis of all data and information available up to the reporting date. They do not represent an update of previously published key figures. The results of the calculations may change from year to year as a result of updated data, newly acquired information and adjustments to the methodology, and provide a new assessment of the overall evolution of the HIV epidemic to date. The figures presented are therefore not directly comparable with previously published estimates.

Figures presented are rounded – the addition of sub-groups may only approximate the total figure presented. The methodology used to calculate the estimates is described in more detail in the Epidemiological Bulletin, issue 47/2018.

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**Estimated number of people living with HIV in Germany, as of the end of 2023 (95 % confidence interval)**

<table>
<thead>
<tr>
<th></th>
<th>Total number</th>
<th>Diagnosed with HIV</th>
<th>Not yet diagnosed with HIV</th>
<th>Related to population in million (15+ years)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Germany</strong> (by mode of transmission)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>&gt; 76.700 (72.300–81.100)</td>
<td>70.000 (65.900–74.200)</td>
<td>&gt; 6.700 (6.200–7.100)</td>
<td>35.4</td>
</tr>
<tr>
<td>Female</td>
<td>&gt; 20.100 (18.600–21.400)</td>
<td>18.500 (17.200–19.700)</td>
<td>&gt; 1.600 (1.400–1.800)</td>
<td>37.0</td>
</tr>
<tr>
<td>Sex between men</td>
<td>37.000 (33.900–40.200)</td>
<td>32.000 (28.900–35.100)</td>
<td>4.900 (4.500–5.300)</td>
<td>35.4</td>
</tr>
<tr>
<td>Heterosexual contacts</td>
<td>11.700 (10.700–12.500)</td>
<td>9.700 (8.900–10.400)</td>
<td>2.000 (1.800–2.300)</td>
<td>72.4</td>
</tr>
<tr>
<td>Injecting drug use</td>
<td>9.000 (8.100–9.800)</td>
<td>7.600 (6.800–8.400)</td>
<td>1.400 (1.100–1.700)</td>
<td>72.4</td>
</tr>
<tr>
<td>Blood products&lt;sup&gt;3&lt;/sup&gt;</td>
<td>~ 450</td>
<td>~ 450</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td><strong>Abroad</strong> (by region of origin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>&gt; 5.300 (5.000–5.700)</td>
<td>5.300 (5.000–5.700)</td>
<td>unestimable</td>
<td>8.4</td>
</tr>
<tr>
<td>Asia</td>
<td>&gt; 2.300 (2.100–2.500)</td>
<td>2.300 (2.100–2.500)</td>
<td>unestimable</td>
<td>2.5</td>
</tr>
<tr>
<td>Africa</td>
<td>&gt; 8.600 (8.000–9.300)</td>
<td>8.600 (8.000–9.300)</td>
<td>unestimable</td>
<td>0.6</td>
</tr>
<tr>
<td>Americas/Oceania</td>
<td>&gt; 1.500 (1.300–1.600)</td>
<td>1.500 (1.300–1.600)</td>
<td>unestimable</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Of those under antiretroviral treatment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 87.200 (82.900–92.100)</td>
<td>&gt; 87.200 (82.900–92.100)</td>
<td>&gt; 87.200 (82.900–92.100)</td>
<td>72.4</td>
</tr>
</tbody>
</table>

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**Estimated number of new HIV infections in Germany in the year 2023<sup>4</sup> (95 % confidence interval)**

<table>
<thead>
<tr>
<th>Total number</th>
<th>2.200 (1.900–2.400)</th>
</tr>
</thead>
<tbody>
<tr>
<td>By mode of transmission</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.700 (1.500–1.900)</td>
</tr>
<tr>
<td>Female</td>
<td>460 (380–540)</td>
</tr>
<tr>
<td>Sex between men</td>
<td>1.200 (1.000–1.300)</td>
</tr>
<tr>
<td>Heterosexual contacts</td>
<td>620 (520–750)</td>
</tr>
<tr>
<td>Injecting drug use</td>
<td>380 (300–480)</td>
</tr>
<tr>
<td>Mother-to-child-transmission&lt;sup&gt;5&lt;/sup&gt;</td>
<td>&lt; 10</td>
</tr>
</tbody>
</table>

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**Estimated number of HIV first diagnoses in Germany in the year 2023<sup>6</sup> (95 % confidence interval)**

<table>
<thead>
<tr>
<th>Total number</th>
<th>3.500 (3.400–3.700)</th>
</tr>
</thead>
<tbody>
<tr>
<td>With advanced immune deficiency&lt;sup&gt;7&lt;/sup&gt;</td>
<td>1.200 (1.000–1.300)</td>
</tr>
<tr>
<td>With AIDS</td>
<td>620 (570–650)</td>
</tr>
</tbody>
</table>

**Estimated number of deaths in people with HIV in Germany (95 % confidence interval)**

| Total number since beginning of Epidemic | 33.900 (34.900–32.900) |
| In the year 2023 | 730 (680–790) |

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1) Reported as Germany: HIV infections acquired in Germany or by people of German origin acquired outside Germany.
2) Reported as Abroad: HIV infections of people of foreign origin acquired abroad. They were subsequently diagnosed with HIV in Germany. An unknown proportion of these infections may have been diagnosed before arrival in Germany. Estimating the size of this group and their distribution among the federal states is fraught with uncertainty, as too little information is available on how many of these people remain in Germany permanently after their HIV diagnosis.
3) HIV infections acquired through contaminated blood products or clotting factor concentrates, predominantly before 1986.
4) HIV infections acquired abroad by people from other countries who were later diagnosed in Germany (“abroad infections”) are not included here.
5) Children who acquired HIV from their mother before, during or after birth.
6) This estimate was calculated from the reported first diagnoses and some of the unclear reports (not clearly identifiable as first or double reports). In contrast to the number of new HIV infections, the number of first HIV diagnoses also includes foreign infections diagnosed in Germany.
7) Clinical AIDS or CD4 cell count < 200 cells/µl blood.
Austrian guidelines on HIV pre-exposure prophylaxis. Offering an HIV test in the presence of an indicator disease, where HIV prevalence may be higher than in the general population, is recommended.

Make therapy accessible to all people living with HIV in Germany
Although access to HIV treatment is not a major problem for the vast majority of people living with HIV in Germany, there is no regulated access to appropriate HIV treatment for undocumented migrants and individuals from other European Union countries without valid health insurance. From an individual medical and public health perspective, all people living in Germany should have access to PrEP and, in the event of infection, to HIV treatment.

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9 Hanke, K., et al. A Recent HIV Outbreak Among People Who Inject Drugs in Munich, Germany, is Associated with Consumption of Synthetic Cathinones. in Open Forum Infectious Diseases. 2020.


24 Deutsche AIDS-Gesellschaft e.V. – DAIG e.V., Guideline report “German-Austrian guideline on HIV pre-exposure prophylaxis”. 2024.


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**Conflicts of interest**

All authors declare that there is no conflict of interest.