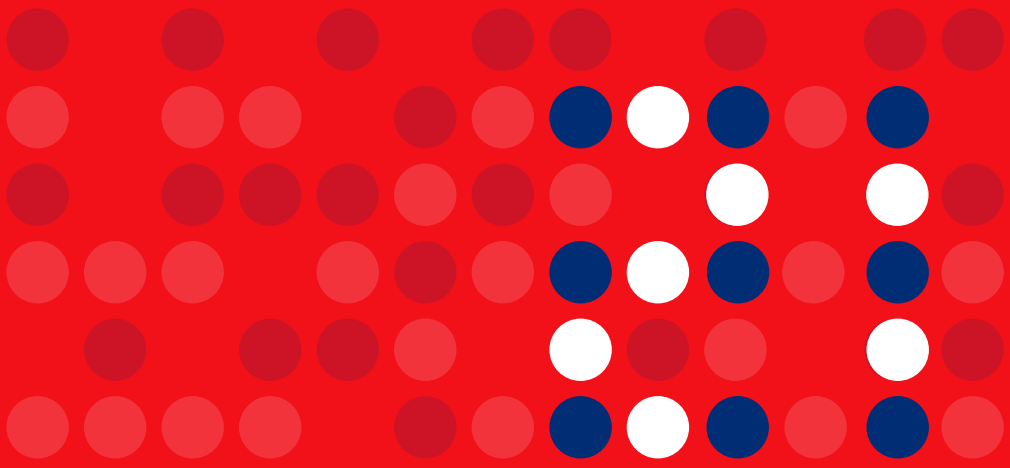
Human Immunodeficiency Virus (HIV)
Infection in the Netherlands

HIV Monitoring

HIV Monitoring Report 2021

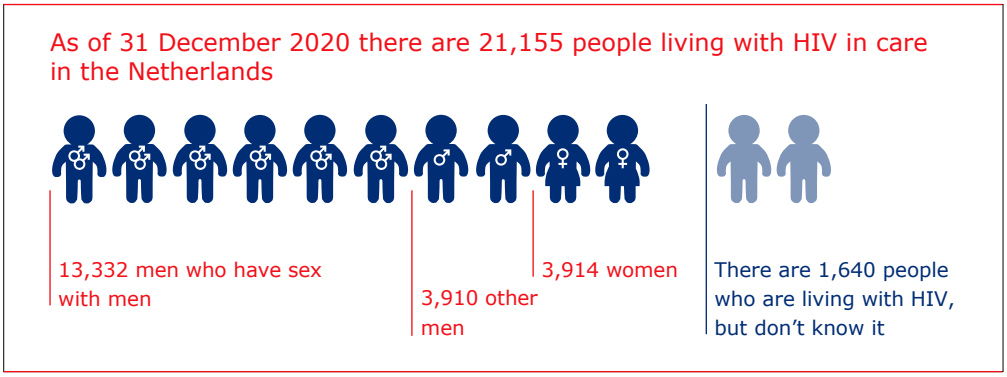
Executive summary



Executive summary

The HIV epidemic in the Netherlands in 2020

Figure 1: Number of people living with HIV and in care in the Netherlands in 2020.



The number of people with HIV and in care

As of 31 December 2020, 24,000 people were estimated to be living with HIV in the Netherlands (*Figure 1*). Of those, 21,155 were in care in one of the 24 adult or four paediatric HIV treatment centres.

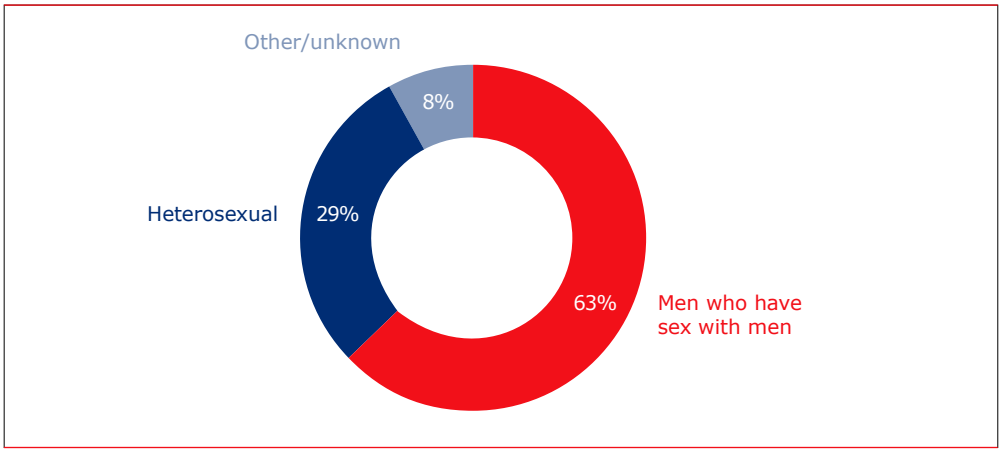
The trend of fewer new HIV diagnoses continued in 2020

Since 2008, the annual number of newly-diagnosed HIV infections has fallen steadily, and this trend continued in 2020. The projected number of new diagnoses for 2020 is 411, compared with 660 in 2018 and 604 in 2019. This means that the Netherlands is on track to meet its national HIV target to halve the number of new diagnoses in 2022, compared with 2015 (when there were 894). In addition, 173 individuals living with HIV who were born abroad arrived in the Netherlands in 2020, with a documented HIV diagnosis prior to arrival.

The majority of new HIV diagnoses continued to be among men who have sex with men

In 2020, the majority (63%) of newly-diagnosed infections were in men who acquired HIV via sex with other men (MSM), while 29% were acquired through heterosexual contact, and 8% through other or unknown modes of transmission (*Figure 2*).

Figure 2: Overview of the newly-diagnosed infections in 2020 divided into transmission groups.



Most people newly diagnosed with HIV had rapid access to specialised care

The majority of people newly diagnosed with HIV in 2020 (95%) entered specialised HIV care within four weeks of their diagnosis. This rate remained similar, regardless of where the diagnosis was made (i.e., hospital, general practice, sexual health centre, or other test location).

The decline in the number of newly-acquired infections continued in 2020

The estimated number of newly-acquired HIV infections has been declining, and reached 180 in 2020; a reduction of 82%, compared with the 2010 figure of 950. This downward trend confirmed that the Netherlands has achieved the UNAIDS fast-track target for 2020 – a 75% reduction in the number of annual, newly-acquired HIV infections, compared to 2010. Among MSM, the number of newly-acquired HIV infections fell by 91%, from 700 in 2010 to 60 in 2020, surpassing the UNAIDS target.

Late diagnosis remains a problem that needs attention

Many people are diagnosed with late-stage HIV infection; in other words, with an already markedly-impaired immune system (CD4 count below 350 cells/mm^3) or even AIDS. In 2020, this was the case for 42% of MSM, 71% of other men, and 67% of women. Although newly-diagnosed MSM had the lowest proportion of late-stage HIV infections, they accounted for 103 (50%) of all 205 individuals diagnosed with late-stage HIV in 2020.

Early diagnosis occurred mainly among MSM

Although diagnosis with late-stage HIV infection is common, a considerable proportion of people receive their HIV diagnosis early in the course of their infection. In total, 33% of MSM diagnosed in 2020 had a previously negative HIV test at most 12 months before diagnosis; these proportions remained much lower in other men (8%) and in women (9%).

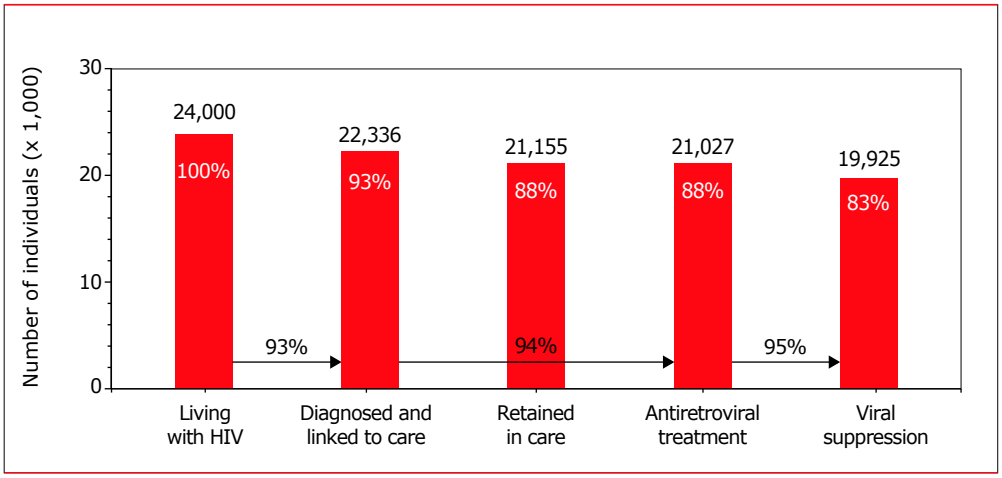
Continuum of HIV care in 2020: 93–94–95 – the Netherlands is on course to meet targets

One of the key goals of HIV treatment is to achieve viral suppression. The steps involved in reaching suppression are illustrated in a continuum of HIV care, which also gives a measure of progress towards achieving the UNAIDS 95-95-95 goals for HIV care by 2025.

The continuum of care for the Netherlands in 2020, confirmed that each of these goals is within reach (93-94-95, see *Figure 3*). The Netherlands is also closing in on achieving the national HIV targets of 95-95-95 by 2022.

- By the end of 2020, 24,000 individuals were estimated to be living with HIV, of whom an estimated 1,640 were still undiagnosed.
- In total, 22,336 of the 24,000 (93%) had been diagnosed, linked to care, and registered by SHM.
- Of the individuals who had been diagnosed, linked to care, and registered by SHM, the majority (21,027; 94%), had started antiretroviral treatment, and 19,925 of those (95%) had achieved viral suppression.
- Overall, 83% of the total estimated population living with HIV, and 89% of those diagnosed and linked to care, had a suppressed viral load by the end of 2020.

Figure 3: Continuum of HIV care for the total estimated population living with HIV in the Netherlands by the end of 2020, based on UNAIDS 95-95-95 goals for 2025: 93-94-95.



All STI surveillance regions closing in on the 95-95-95 targets

In 2020, all eight STI surveillance regions in the Netherlands were closing in on UNAIDS's 95-95-95 targets for 2025. The proportion of people living with HIV with a suppressed viral load, including those remaining undiagnosed, varied between 81% and 85%. More than half (54%) of all people estimated to be living with HIV were in Noord-Holland/Flevoland and in Zuid-Holland Zuid.

Many people with HIV live in the four largest cities

In total, 10,370 (43%) people with HIV were estimated to be living in the four largest cities (Amsterdam, Rotterdam, Den Haag, and Utrecht) in 2020. Of these 10,370 individuals, it was estimated that 560 have yet to be diagnosed.

The figures for the Netherlands are impressive compared with other parts of the world. Nonetheless, in 2020, there were 411 new diagnoses and an estimated 1,640 people who remained undiagnosed. To achieve a significant further decline in these numbers, novel transdisciplinary strategies are needed to simultaneously reduce the likelihood of HIV transmission in key populations at risk (including by provision of pre-exposure prophylaxis or PrEP), identify individuals with HIV infection early, rapidly link all people living with HIV to care, and immediately offer them the possibility of starting combination antiretroviral therapy (cART).

Information on the prior use of pre-exposure prophylaxis (PrEP) is now being collected
SHM has started collecting PrEP-related data from the electronic medical records (EMRs) of individuals newly diagnosed with HIV and first entering care: this information was retrospectively collected for individuals who newly entered care between January 2018 and June 2019. By July 2021, data had been collected for 1,987 individuals.

In 1,545 (77.8%) EMRs, no mention was made about prior use of PrEP, whereas in 442 (22.2%) EMRs, information was available on prior use of PrEP. The proportion of individuals for whom information on prior use of PrEP was available increased from 9.3% in 2018, to 24.8% in 2019, to 32.2% in 2020, to 52.8% in the first half of 2021.

Of the 442 individuals for whom information on prior use of PrEP was available, 60 (13.6%) were men who reported prior use of PrEP.

- 52/60 (86.7%) reported that their most likely route of HIV acquisition was through sexual contact with other men.
- 31/60 (51.7%) obtained PrEP through a healthcare provider in the Netherlands, 11 (18.3%) through a buyers club / internet / store outside of the Netherlands, six (10.0%) through a healthcare provider outside of the Netherlands, and two (3.3%) from a friend living with HIV who donated some of his own medication. For 10 men no information was available.
- Regular periodic medical check-ups while using PrEP were performed in 31/60 (51.7%) of the cases, no check-ups were done in eight (13.3%), and for 21 (35.0%) men no information was available.
- For 37/60 (61.7%), it was reported that they had used PrEP after the last negative HIV test performed while using PrEP.

For 38 (63.3%) of the men who reported using PrEP when first entering HIV care, a genotypic resistance test was done. Resistance-associated mutations (M184V/I), possibly associated with the use of the antiretroviral agents that had been used as PrEP, were detected in seven of these 38 men (18.4%). Six of these seven men obtained their PrEP through a Dutch healthcare provider, and all seven men reported that they had continued to use PrEP after their last negative HIV test performed while using PrEP. All of these seven men started cART containing an integrase inhibitor, and six of them achieved full viral suppression. These data underscore the importance of (continued) access to formal PrEP services, including regular monitoring while on PrEP, for all those who need it. SHM will continue to work with the HIV treatment centres to collect information on prior use of PrEP in all individuals newly entering care.

COVID-19 in people living with HIV in the Netherlands

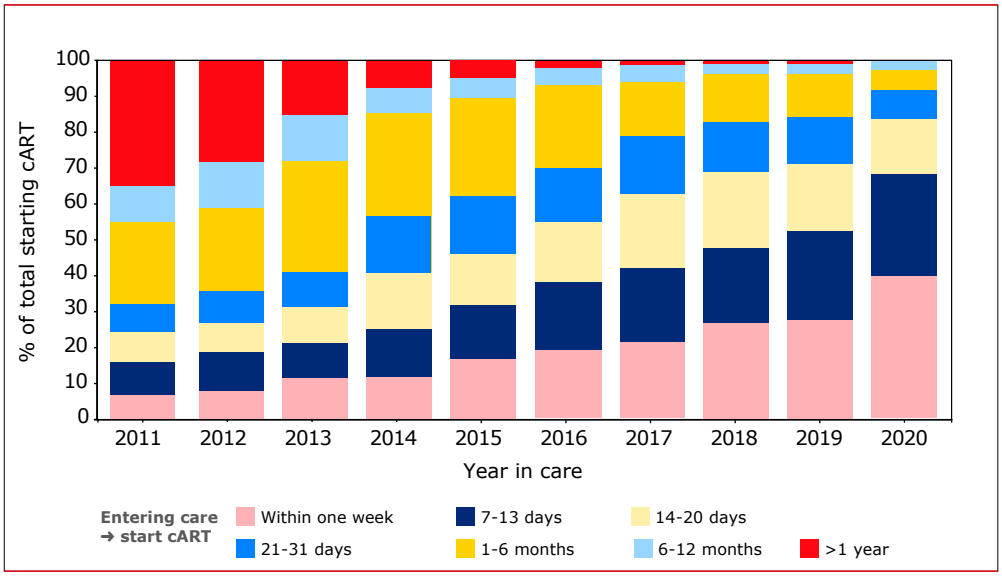
We recorded 1,308 COVID-19 events in people living with HIV in the Netherlands in the period prior to 6 September 2021. In total, 109 (8.3%) individuals were hospitalised, with 18/109 (1.4%) requiring ICU admission. Independent risk factors for hospitalisation for COVID-19 among people living with HIV were higher age, migrant status (with higher risk in individuals originating from sub-Saharan Africa or, to a lesser extent, from Latin America), obesity (BMI over 30 kg/m^2), having a current CD4 cell count below 500 cells/mm^3 (the risk was even higher when the CD4 cell count was below 200 cells/mm^3), and having had a prior AIDS-defining Illness.

In total, 19 (1.4%) of the 1,308 people living with HIV diagnosed with SARS-CoV-2 were reported to have died as a direct result of COVID-19. The observed mortality rates in people living with HIV diagnosed with COVID-19 were very low in those aged below 50 years. In the older age strata, the mortality rates quickly increased. In those hospitalised for COVID-19, the observed mortality rate was 11.0%, in those admitted to the ICU, it was 27.8%. However, in all age groups, mortality strongly clustered in individuals who either had multiple general risk factors (i.e., comorbidities), or those with poorer responses on ART (i.e., a low current or nadir CD4 cell count, a prior AIDS-defining condition, or a plasma HIV-1 viral load above 200 cps/ml). Furthermore, migrants born in sub-Saharan Africa or Latin America (including the Caribbean) appeared to be at increased risk of hospitalisation and death independent of age, comorbidities and HIV-related parameters.

Combination antiretroviral therapy (cART) in adults

The period between people being diagnosed with HIV and entering care, and starting combination antiretroviral therapy (cART), continues to decline. In 2020, 92% of people started cART within one month of entry into care, and 98% did so within six months of entry into care. Importantly, this was the case, irrespective of their CD4 cell count at entry into care.

Figure 4: Time between entry into care and starting combination antiretroviral therapy (cART) for those starting cART in 2011–2020.



Legend: cART=combination antiretroviral therapy.

Most common cART regimens in 2020

Initial regimen

Of the people who started cART in 2020, 84% received a regimen containing an integrase inhibitor; the most frequently prescribed were tenofovir alafenamide/emtricitabine/bictegravir and tenofovir disoproxil/emtricitabine/dolutegravir.

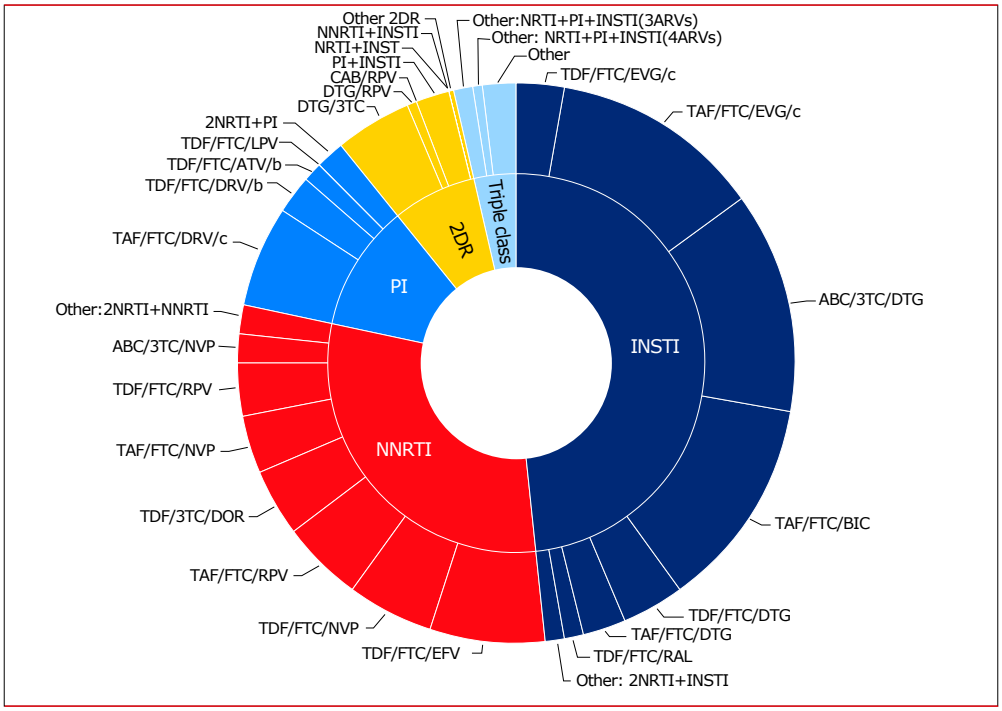
Compared to the first decade of the cART era, discontinuation of the initial regimen has become less common over time. In the past decade, the discontinuation rate has remained stable. However, the reasons for switching have continued to change, with virological failure a very rare event nowadays. In recent years, many switches were driven by the wish for regimen simplification and pre-emptive modifications because of the availability of new regimens that are perceived to have better long-term safety profiles.

The use of integrase inhibitor–based cART has been rising among all individuals living with HIV

Integrase inhibitor-based cART continues to be further implemented on a large scale in the Netherlands: in 2020, 58% of all adults in care and on cART received an integrase inhibitor, compared to 39% in 2017, 46% in 2018, and 50% in 2019. Thirty-one percent of the population on cART in 2020 received a backbone containing tenofovir disoproxil; new fixed-dose combinations have also led to an increase in the use of tenofovir alafenamide (44%), while the use of abacavir (17%) has decreased.

Among all individuals living with HIV in care and on treatment in 2020, the majority (89.4%) received a cART regimen based on two nucleoside analogue reverse transcriptase inhibitors (NRTIs), combined with an integrase inhibitor (48.4%), a non-NRTI (NNRTI, 30.0%), or a protease inhibitor (PI, 10.9%) (*Figure 5*). The most commonly-prescribed regimens in 2020 were abacavir (ABC)/lamivudine (3TC)/dolutegravir (DTG) (12.7%), tenofovir alafenamide (TAF)/FTC/bictegravir (BIC) (12.3%), tenofovir alafenamide (TAF)/FTC/elvitegravir (EVG)/cobicistat (12.3%), tenofovir disoproxil fumarate (TDF)/emtricitabine (FTC)/efavirenz (EFV) (6.8%), and tenofovir alafenamide (TAF)/emtricitabine (FTC)/darunavir (DRV)/cobicistat (5.9%). Dual regimens mostly consisting of one Integrase strand transfer inhibitors (INSTI), plus either one PI, one INSTI or one NNRTI, were used by 7.3% of all individuals living with HIV in care and on treatment in 2020.

Figure 5: Combination antiretroviral therapy (cART) use in 2020.



Legend: *3TC=lamivudine; b=boosted (cobicistat or ritonavir); /r=ritonavir-boosted; /c=cobicistat-boosted; ABC=abacavir; ATV=atazanavir; ARVs=antiretroviral drugs; BIC=bictegravir; cART=combination antiretroviral therapy; DOR=doravirine; DRV=darunavir; DTG=dolutegravir; EFV=efavirenz; EVG=elvitegravir; FTC=emtricitabine; LPV=lopinavir; NVP=nevirapine; PI=protease inhibitor; RAL=raltegravir; RPV=rilpivirine; TAF=tenofovir alafenamide; TDF=tenofovir disoproxil fumarate; NRTI=nucleoside analogue reverse transcriptase inhibitor; NNRTI=non-nucleoside reverse transcriptase inhibitor; INSTI=integrase inhibitor.*

Virological response was excellent, including in long-term survivors

Both short-term and long-term viral suppression rates remain high and continue to improve. Of all adults receiving cART for at least 12 months and in care in 2020, 98% had achieved viral suppression (viral load below 200 copies/ml).

Changing cART landscape

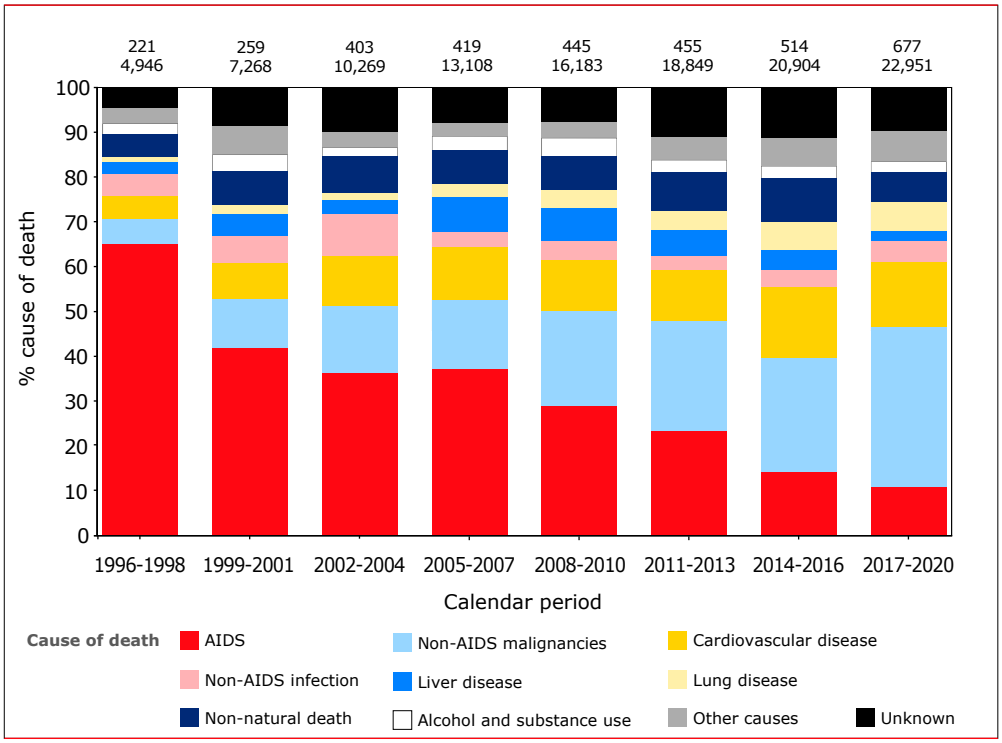
Following revised HIV treatment guidelines, prompt cART initiation continued to become more common in 2020. In recent years, the introduction of new, integrase inhibitor-based, once-daily, fixed-dose combinations has changed the landscape of cART use in the Netherlands. All currently-recommended regimens are durable.

Morbidity and mortality

The downward trend in AIDS-related deaths continued in 2020

Since cART became available in the Netherlands in 1996, there has been a sustained decline in the risk of death from AIDS. Death is now increasingly likely to be caused by non-AIDS comorbidities, including non-AIDS-defining malignancies (NADM), cardiovascular disease (CVD), and chronic liver disease (*Figure 6*).

Figure 6: *Relative changes in cause of death in different calendar periods since the introduction of combination antiretroviral therapy (cART) in the Netherlands. Numbers above each bar represent the number of people at risk during that calendar period.*



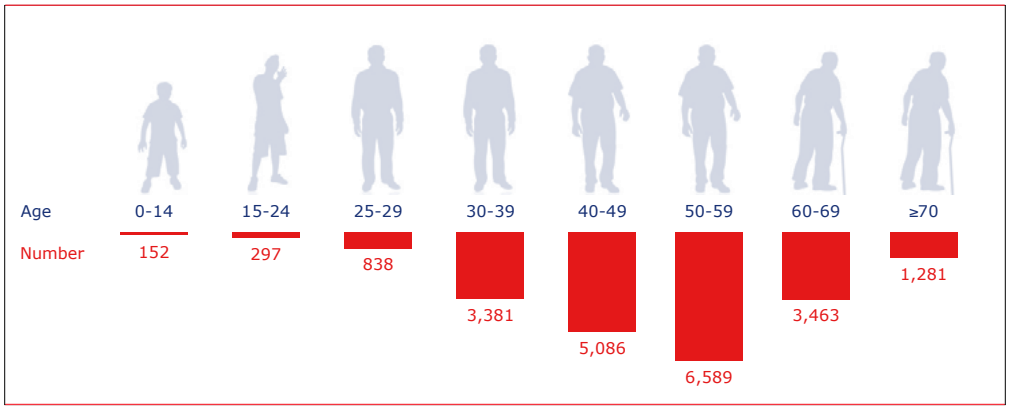
Legend: *cART=combination antiretroviral therapy.*

Ageing and comorbidities

The reported number of AIDS-related deaths remained relatively stable at around 20 cases per year between 2016 and 2020. Those that did occur, were largely driven by late entry into care. This once again stresses the importance of identifying and linking individuals to care earlier in the course of their infection. Otherwise, achieving the national HIV target of zero AIDS-related deaths by 2022 is unlikely to be achieved.

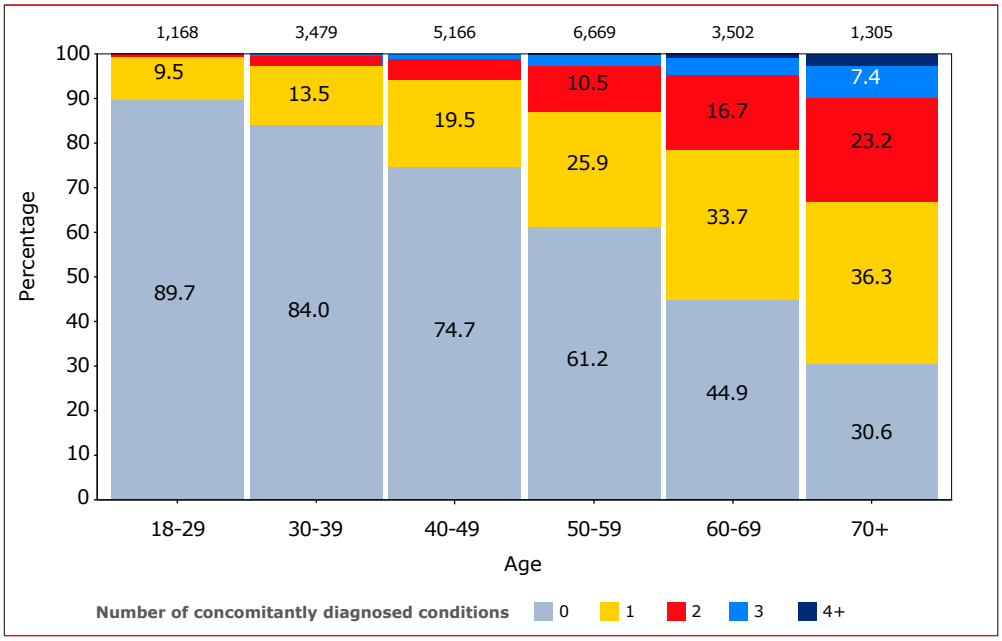
A substantial proportion of the people who were newly diagnosed with HIV and entered HIV care in 2020, were older individuals; 26% were 50 years or older. The overall population of people with HIV in care in the Netherlands also continues to age, with 54% older than 50 years on 31 December 2020 (*Figure 7*).

Figure 7: *Age distribution of people living with HIV and in care in the Netherlands in 2020.*



As in the general population, older age was an important risk factor for comorbidities such as cardiovascular disease and non-AIDS malignancies. Of particular concern was the rising proportion of individuals with multiple comorbidities, the risk of which is known to be greater in those with HIV (*Figure 8*).

Figure 8: Prevalence of non-HIV/AIDS multimorbidity in adults in HIV care in 2020. Numbers on top of the bars represent the number of individuals contributing data to that age category.



The data showed only a slight increase in cardiovascular risk

As a result of the increasing average age of the population living with HIV, the proportion at high cardiovascular risk continued to slowly increase in 2000-20. However, age-standardised incidence rates of cardiovascular diseases have continued to decline over the years. This suggests that cardiovascular risk management has improved over time. Nonetheless, there remains significant room for further improvement, given the suboptimal use of statin therapy, antihypertensive therapy, and low-dose acetylsalicylic acid use as secondary prevention following a myocardial infarction or ischaemic stroke, as well as the low, albeit slowly improving, uptake of these medications in the prevention of primary cardiovascular disease.

Non-AIDS malignancies remained stable

The most common non-AIDS malignancies are lung, haematological, gastro-intestinal, anal, prostate, and head and neck cancers. Non-AIDS malignancies are now the most important cause of death in people living with HIV. The crude incidence rate of non-AIDS malignancies in the Netherlands is slowly increasing

over time. However, when the increasing age of the population living with HIV is taken into account, we observed a decline in the age-adjusted risk of new non-AIDS malignancies in men, including anal cancer. This may be the result of a reduction in risk factors such as smoking, as well as expanded screening and treatment for early stages of anal cancer, together with a higher proportion of individuals living with higher CD4 cell counts in more recent years. Individuals who initiated ART within 12 months of their last HIV-negative test, had a lower risk of being diagnosed with a non-AIDS-defining malignancy, independent of their current CD4 cell count and other risk factors, suggesting an additional health benefit of early initiation of ART.

Improved awareness of risk factors may reduce comorbidity
Resilient ageing in people living with HIV, and a lower comorbidity burden, can be achieved by increasing awareness of the role of modifiable, lifestyle-related risk factors among both physicians and people living with HIV. This is particularly relevant for older individuals and those at increased risk of comorbidity.

Viral hepatitis co-infections

Hepatitis B and C virus screening is now universal

Hepatitis C (HCV) and hepatitis B (HBV) co-infections are far more prevalent in individuals living with HIV than in the general population, due to shared routes of transmission. Screening for HCV and HBV co-infection is part of the standard of HIV care in the Netherlands, and the presence or absence of these co-infections is now documented for almost all individuals living with HIV.

Approximately 11% of all individuals monitored by SHM had evidence of ever having been exposed to HCV, with 5% having documented evidence of chronic infection, and 3% having evidence of acute HCV infection at the time of their first diagnosis. Most individuals with HCV infection were male and from the Netherlands or other European countries.

The prevalence of chronic HBV infection has decreased over time as a result of increased HBV vaccination rates, together with the HBV-prophylactic effect of tenofovir and tenofovir alafenamide for the treatment of HIV. Six percent of individuals ever in care were found to have, or have had, chronic HBV infection.

Hepatitis D virus screening in individuals with hepatitis B virus is low
Guidelines from the European Association for the Study of the Liver recommend that any individual with chronic HBV infection should be screened for hepatitis D virus (HDV). Despite these recommendations, only 13% of individuals with HBV infection had been tested for HDV infection by 2020. Attempts should be made to identify individuals with HDV, considering that more effective medication to treat this infection is increasingly available.

HBV vaccination remains a priority
An estimated 42% of individuals living with HIV in the Netherlands had not been exposed to HBV and had not been successfully vaccinated by the end of 2020. Of these, 18% were not taking a cART regimen including tenofovir or tenofovir alafenamide and thus remained at risk of acquiring HBV. Efforts to increase successful HBV vaccination rates, particularly in those who are not receiving tenofovir-containing cART, are essential for protecting individuals from HBV infection, as stated in the 2022 national HIV targets.

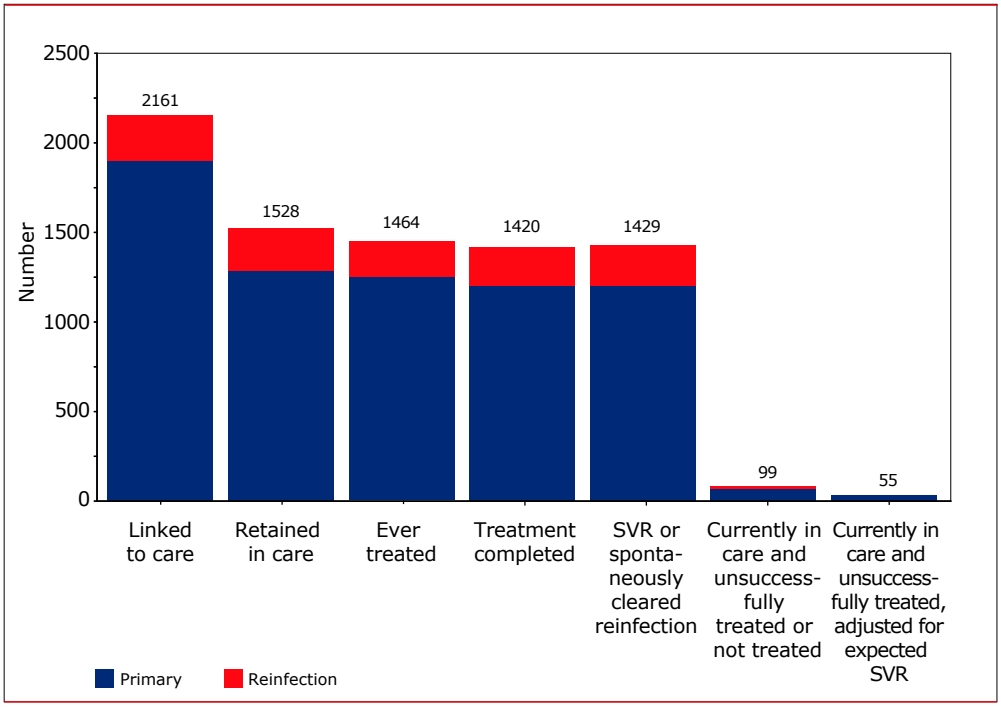
Risk of dying from HCV or HBV co-infection continued to decrease

Overall, individuals living with HIV and a chronic HCV or HBV co-infection, remain at increased risk of liver-related morbidity and mortality. However, since 2010, the risk of people diagnosed with chronic HCV or HBV dying a liver-related death has steadily decreased. For those with chronic HBV infection, this is likely a result of increasingly effective HBV treatment, through the use of tenofovir-containing cART that became more widespread in 2002.

Successful HCV treatment with direct-acting antivirals has progressed further

Our data clearly show that the large majority of individuals living with HIV with HCV co-infection have now received effective treatment for HCV. By 31 December 2020, over 1,100 individuals had received, or were receiving treatment with novel, direct-acting antiviral agents (DAAs). Of all people treated with DAAs, 97% achieved a sustained virological response and no longer had evidence of an active HCV infection. When retreatment was taken into account, the sustained virological response after the last course of treatment was 99%. These developments have resulted in a low number of HCV co-infected individuals in need of treatment (*Figure 9*).

Figure 9: Hepatitis C virus continuum of care in people with HIV/HCV co-infection.



Legend: SVR=sustained virological response.

Successful HCV treatment prevents HCV transmission

Successful treatment of HCV may also prevent onward HCV transmission, as suggested by the lower incidence of acute HCV infections observed in the recent years, together with the rapid decline in the prevalence of active HCV infections. In MSM, the prevalence of active HCV infections decreased to 0.29% in 2020. Although there has been a drop in the HCV re-infection rate in most recent years, re-infection following successful treatment continues to be reported, indicating that HCV transmission has not completely ceased.

Regular HCV screening among sexually-active MSM is recommended
Effective HCV treatment will limit the impact of HCV co-infection on long-term, liver-related morbidity and mortality; however, this effect should be monitored. To further reduce new HCV infections among the key affected population of sexually-active MSM, regular screening for HCV among successfully-treated individuals is recommended for early detection of HCV re-infections, in combination with interventions to reduce HCV risk behaviours. Such measures are key if we are to achieve the 2022 national HIV target of optimally protecting individuals at risk of being infected with HCV.

Hepatitis A virus testing and immunity

Fifty-six percent of individuals living with HIV ever registered in the SHM database have been screened for HAV (hepatitis A). Of those screened, 67% had a positive anti-HAV antibody test result (i.e., protected against HAV through vaccination or from prior infection), and this percentage was comparable across transmission groups. Of note, among MSM living with HIV under the age of 40, 43% of those who had been screened did not have anti-HAV antibodies. Given the European-wide outbreak of HAV among sexually-active MSM in 2017, these individuals should be prioritised for HAV vaccination.

Pregnancies among women living with HIV in the Netherlands

In total, 562 pregnancies were documented in 429 women receiving HIV care in the Netherlands in 2016-20. Of these women, 72% were born outside the Netherlands, mainly in sub-Saharan Africa (63%). The most common mode of HIV acquisition was heterosexual contact (90%).

Pregnant women may fail to have undetectable HIV RNA at the time of delivery

All women were treated with antiretroviral therapy during pregnancy. As a result, maternal HIV RNA levels were below 50 copies/ml (i.e., undetectable) in 96% of the deliveries, and between 50-500 copies/ml in a further 3% of deliveries. However, a number of women had detectable HIV RNA levels around the time of delivery. Almost half of them were only newly diagnosed with HIV during the course of their pregnancy, and therefore started treatment later during their pregnancy. This reinforces the importance of close monitoring of women newly diagnosed with HIV during pregnancy.

Perinatal transmission of HIV is now very rare in the Netherlands

Due to the high rates of successful treatment in women living with HIV, perinatal transmission of HIV was rare in the Netherlands between 2016 and 2020. In the Netherlands, in women who receive treatment, the rate of vertical transmission was 0.27%.

Viral suppression rates during the post-partum period were suboptimal

Following changes to treatment guidelines in 2015, it is now recommended that all pregnant women continue cART after delivery. Nonetheless, of the women who continued using antiretroviral therapy after delivery between 2016-20, 11% had at least one detectable HIV RNA measurement in the year following delivery. Of these women, 34% had more than one detectable HIV RNA measurement. This may reflect poorer treatment compliance during the post-partum period.

Additonal support

To achieve viral suppression during delivery, and maintain treatment compliance in the post-partum period, women living with HIV who start cART during pregnancy require additional support, not only during pregnancy, but also post-partum.

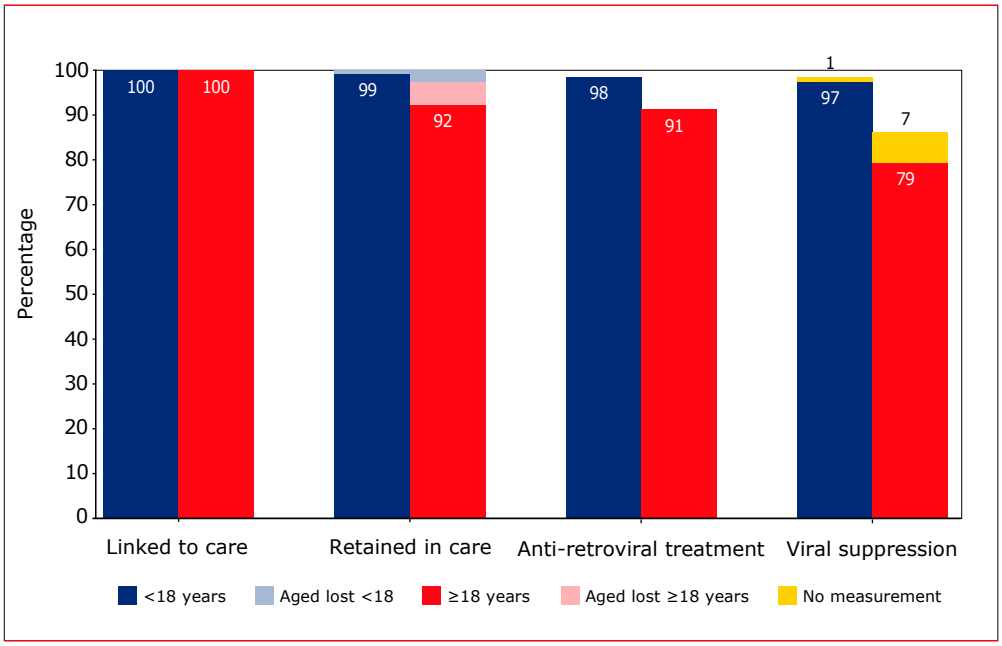
Children living with HIV

Of 393 children who were diagnosed with HIV below the age of 15 years, and who entered care in the Netherlands before they were 18 years, 338 (86%) remained in care and 178 were under the age of 18 by the end of 2020. Of the children who were in care and under 18 years of age, 136 (76%) were born outside the Netherlands and had been adopted by Dutch parents.

Outcomes for children living with HIV were generally favourable

There was a high retention-in-care rate among children under the age of 18 years. Outcomes for children who were receiving cART were generally favourable and resulted in a low mortality rate and good long-term immunological responses (*Figure 10*).

Figure 10: Continuum of care by age, as of 31 December 2020. The numbers in and above the bars indicate the proportion of individuals.



Poorer viral suppression rates were seen around the time of transition to adult care

Of the individuals who were originally registered as a child, 86% were still in care in 2020, and 41% of these were over the age of 18 years by 31 December 2020. Of the children who transitioned from paediatric to adult care, 20% had an HIV RNA level above 200 copies/ml at the time of transition, suggesting challenges for these adolescents with respect to treatment adherence.

Optimisation of long-term care for adolescents and young adults

The large proportion of adolescents with inadequately-suppressed viraemia around the time of transitioning to adult care, illustrates that long-term care for this particularly vulnerable group of young individuals can be further optimised.

Quality of care

Retention in care has been improving

For many centres, short-term retention has been high for individuals entering care. Overall retention has also witnessed a median increase of 12% over the past five years, even in 2020, when the COVID-19 pandemic began. Nevertheless, the overall retention rate for non-Dutch MSW and non-Dutch women in 2020, was considerably lower than other groups after adjusting for age. The reasons for this finding are unclear.

Earlier start of cART and high rates of viral suppression

Across most centres, people started cART sooner after entering into care, confirming that most centres are following the guideline to offer cART to everyone with newly-diagnosed HIV, regardless of their CD4 count. In fact, a median of 97% and 98% of all patients who entered care in 2018 and 2019, respectively, and who were retained in care in 2020, had initiated cART, while across all centres, more than 95% of patients in care in 2020 were on cART.

Viral suppression rates in the first six months on cART, as well as during longer-term use of treatment, were high across all centres, regardless of the number of people receiving care there.

Comparing indicators to the national average

The quality of care provided in Dutch adult HIV treatment centres was explored using indicators based on the national guidelines issued by the Dutch Association of HIV-Treating Physicians (*Nederlandse Vereniging van HIV Behandelaren*, NVHB). We also compared each centre's indicator to the national average, in a manner that took into account the diverse mix of patient geographical origins and modes of HIV transmission found across centres.

In all centres, the proportion of patients in care in 2020, who had initiated cART and had viral suppression, were high and within the expected range of the national average.

Impact of the COVID-19 pandemic

The COVID-19 pandemic did not appear to substantially affect continuing care across centres in the Netherlands. No centre saw a decrease in overall retention of more than 2% between 2020 and 2019, even though centres were more commonly opting for consultations via telephone or email than for physical consultations. Nevertheless, among individuals in care in 2020, there was a decrease of more than 5% in plasma HIV RNA testing in two centres and a decrease of more than 5% in CD4 cell count testing in 11 centres.

Amsterdam Cohort Studies

The Amsterdam Cohort Studies (ACS) on HIV infection and AIDS were initiated in 1984, shortly after the first cases of AIDS were diagnosed in the Netherlands. By enrolling men who have sex with men (MSM) in a prospective cohort study, the ACS aimed to investigate the prevalence and incidence of HIV-1 infection and AIDS, the associated risk factors, the natural history and pathogenesis of HIV-1 infection, and the effects of interventions. A second cohort involving people who use drugs (PWUD) was initiated in 1985. Follow up of PWUD ended in 2016.

By 31 December 2020, 2,901 MSM had been included in the ACS, of whom 607 were HIV-positive when they entered the study, and 263 seroconverted during follow up. In 2020, 699 HIV-negative and 53 MSM living with HIV remained in active follow up at the *Gemeentelijke Gezondheidsdienst Amsterdam* (GGD Amsterdam). In 2020, two new HIV-negative MSM, who were 28.7 and 48.4 years of age at inclusion, were recruited. The median age of the total group of MSM in active follow up was 44.5 (interquartile range [IQR] 34.0-55.9) years at their last cohort visit. The majority were born in the Netherlands and were residents of Amsterdam (83.4% and 88.8%, respectively). In total, 77.2% of the participants had a college degree or higher. In 2020, none of the MSM participating in the ACS seroconverted for HIV; consequently, the observed HIV incidence was 0 per 100 person years.

HIV in Curaçao in 2020

Over the years, an increasing proportion of individuals with HIV in care at the Curaçao Medical Center in Willemstad (Curaçao) have managed to achieve a suppressed viral load. However, although early start of treatment appears to be possible, data also suggest that long-term retention in care needs to be improved to optimise the sustained effect of treatment. In addition, the proportion of people entering care with late-stage HIV infection remained high.