



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Sexually transmitted *infections*

in the Netherlands in 2017



Sexually transmitted infections in the Netherlands in 2017

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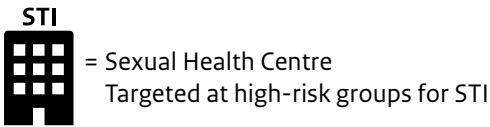
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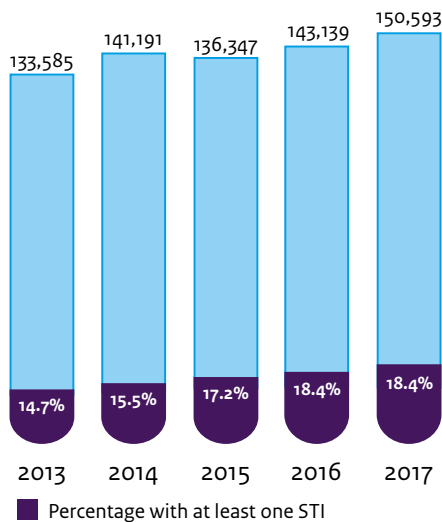
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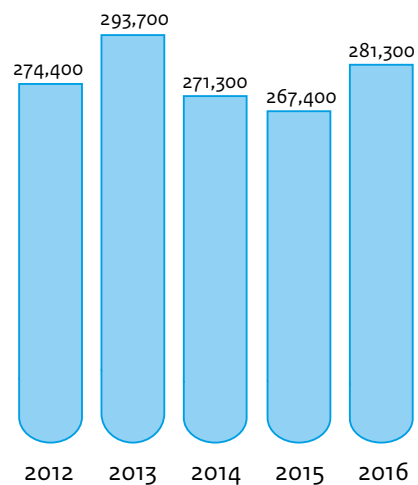
STI registration in the Netherlands 2017



Number of SHC consultations

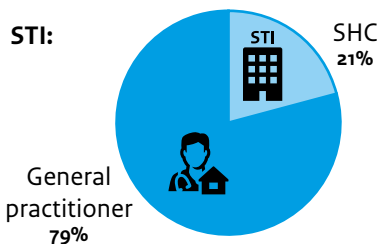


Number of GP consultations

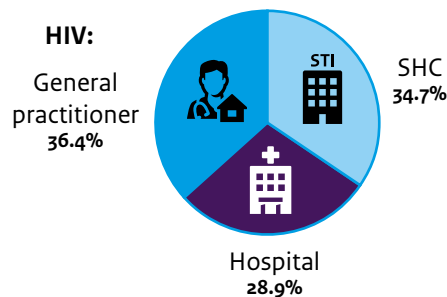


Where are STIs and HIV diagnosed?

STI:

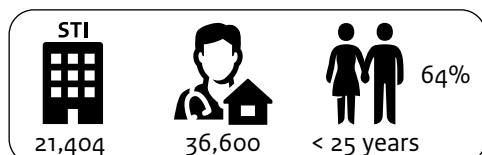


HIV:



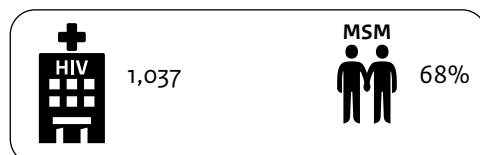
Chlamydia

Number of diagnoses Risk group



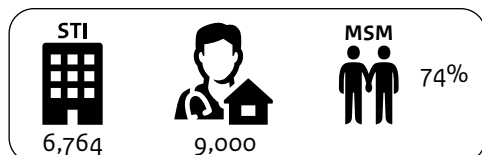
HIV

Patients new in care Risk group



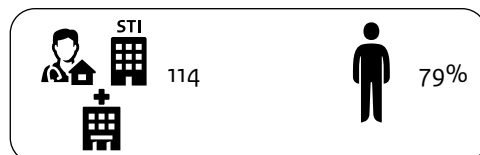
Gonorrhoea

Number of diagnoses Risk group



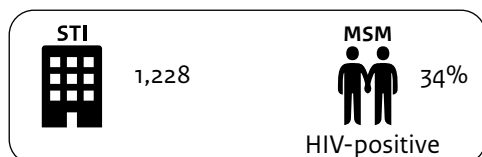
Hepatitis B (acute)

Number of diagnoses Risk group



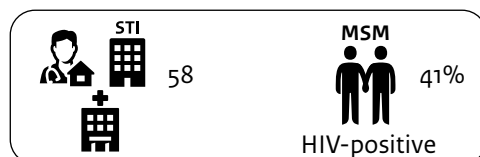
Syphilis

Number of diagnoses Risk group



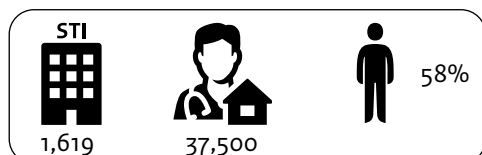
Hepatitis C (acute)

Number of diagnoses Risk group



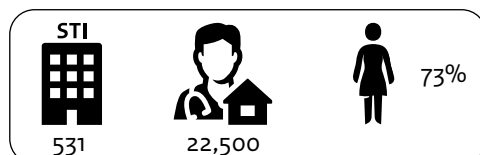
Genital warts

Number of diagnoses Risk group



Herpes

Number of diagnoses Risk group



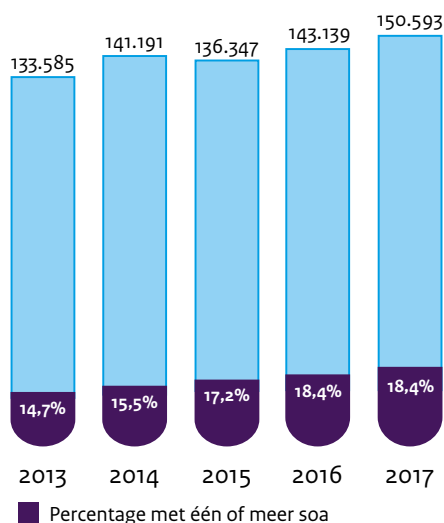
Soa registratie Nederland 2017



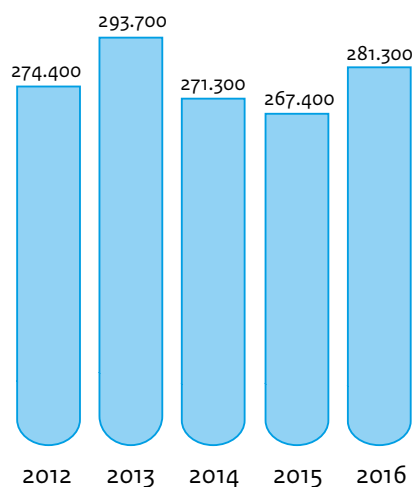
= Centra voor Seksuele Gezondheid
Bedoeld voor groepen die een
hoog risico lopen op soa.



Aantal CSG consulten

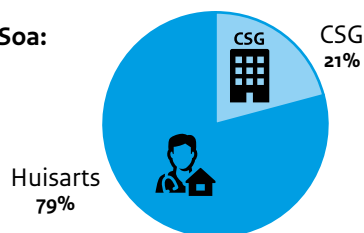


Aantal huisarts consulten

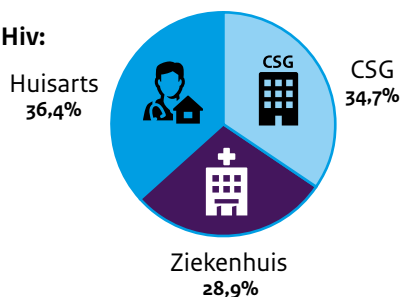


Waar wordt de diagnose gesteld?

Soa:



Hiv:



Chlamydia

Aantal diagnoses

Risicogroep

CSG



21.404



36.600



< 25 jaar

64%

Hiv

Aantal nieuw in zorg

Risicogroep



1.037

MSM



68%

Gonorroë

Aantal diagnoses

Risicogroep

CSG



6.764



9.000

MSM



74%

Hepatitis B (acuut)

Aantal diagnoses

Risicogroep

CSG



114

CSG



79%

Syfilis

Aantal diagnoses

Risicogroep

CSG



1.228

MSM



34%

hiv-positief

Hepatitis C (acuut)

Aantal diagnoses

Risicogroep

CSG



58

MSM



41%

hiv-positief

Genitale watten

Aantal diagnoses

Risicogroep

CSG



1.619



37.500



58%

Herpes

Aantal diagnoses

Risicogroep

CSG



531



22.500



73%

Synopsis

Sexually transmitted infections in the Netherlands in 2017

The number of people who had a test at a Sexual Health Centre (SHC) for a sexually transmitted infection (STI) went up in 2017. The percentage that actually had an STI remained the same. Chlamydia remained the most common STI among heterosexuals. Among men who have sex with men (MSM), gonorrhoea was the infection diagnosed most frequently. The number of STI-related consultations with general practitioners also increased, mainly among people older than 25 years.

The SHC offer high-risk groups the opportunity to be tested for STIs free of charge. A total of 150,593 consultations at SHC were recorded in 2017, an increase of 5 percent compared to 2016. The percentage of STIs detected was 18.4 percent, the same as in 2016. Infections were most often found in people who had been notified for STI, followed by people with HIV. The percentage of STIs found in people with HIV was lower in 2017 than in previous years. In addition to the SHC figures, this report is based on information about STIs from 350 general practices, on the basis of which estimates have been made for the Dutch population as a whole.

Chlamydia

In 2017, 14.3 percent of SHC visitors had a chlamydia infection (21,404 diagnoses, an increase of 3 percent compared to 2016). The percentage of women with chlamydia remained stable compared to 2016, after a steady increase over previous years. There was a slight increase in cases among heterosexual men. For MSM, the percentage has been around 10 percent for years. The number of diagnoses made by general practitioners also remained stable in 2016 compared to 2015.

Gonorrhoea

The number of diagnoses of gonorrhoea made at SHC increased by 11 percent in the past year to 6,764 infections. The percentage of people infected was stable compared to previous years: low among women (1.6 percent) and heterosexual men (1.9 percent), and higher among MSM (11.0 percent). The estimated number of infections diagnosed by general practitioners increased from 7,900 in 2015 to 9,000 in 2016. This increase was mainly among those over the age of 25 years. None of those infected showed resistance to the current 'first-choice' antibiotic, ceftriaxone. Resistance to azithromycin, on the other hand, continued to increase to 15 percent in 2017.

Syphilis

In 2017, the number of syphilis diagnoses at SHC remained almost the same as in 2016 (1,228 versus 1,223). 95 percent of these infections were diagnosed in MSM. The percentage of MSM with the infection dropped slightly from 2.9 percent in 2016 to 2.6 percent in 2017 – after many years of increasing. This change was mainly due to a lower percentage of syphilis found among MSM with HIV. The number of diagnoses among women and heterosexual men remained very low in 2017, with 0.09 and 0.16 percent, respectively, being infected.

HIV

The number of new diagnoses of HIV made at the SHC was almost identical to that in 2016 and 2015 (286, 285 and 288 respectively). Eighty-nine percent of these were among MSM. The number of diagnoses among women and heterosexual men remained very low. The number of people with HIV who came for treatment at one of the Dutch HIV treatment centres ('in care') for the first time in 2017 was 1,037. In total, 19,677 people with HIV were registered in care in 2017.

Key words: STI, chlamydia, gonorrhoea, syphilis, HIV, AIDS, antibiotic resistance, young people, MSM, monitoring, sexual health centre.

Publiekssamenvatting

Seksueel overdraagbare aandoeningen in Nederland in 2017

Het aantal mensen dat zich bij een Centrum voor Seksuele Gezondheid (CSG) heeft laten testen op seksueel overdraagbare aandoeningen (soa) is in 2017 gestegen. Het percentage dat daadwerkelijk een soa had bleef gelijk. Chlamydia bleef de meest voorkomende soa onder heteroseksuelen. Bij mannen die seks hebben met mannen (MSM) werd gonorroe het vaakst gediagnosticeerd. Ook bij huisartspraktijken nam het aantal soa-consulten toe, voornamelijk onder personen ouder dan 25 jaar.

De CSG's bieden hoog-risicogroepen de mogelijkheid om zich gratis te laten testen op soa's. In totaal zijn er in 2017 150.593 consulten geregistreerd bij de CSG's, een stijging van 5 procent ten opzichte van 2016. Het percentage gevonden soa's was met 18,4 procent hetzelfde als in 2016. Infecties werden het vaakst gevonden bij mensen die waren gewaarschuwd voor een soa, gevolgd door mensen met hiv. Het percentage gevonden soa bij personen met hiv lag in 2017 wel lager dan in voorgaande jaren. Naast de CSG-cijfers worden voor dit rapport gegevens over soa gebruikt van 350 huisartspraktijken, op basis waarvan schattingen zijn gemaakt voor de hele Nederlandse bevolking.

Chlamydia

In 2017 had 14,3 procent van de CSG-bezoekers een chlamydia-infectie (21.404 diagnoses; een toename van 3 procent ten opzichte van 2016). Het percentage vrouwen met chlamydia bleef stabiel ten opzichte van 2016, na een aanhoudende stijging in de voorgaande jaren. Bij heteroseksuele mannen was nog een lichte stijging zichtbaar. Voor MSM ligt het percentage al jaren rond de 10 procent. Ook het aantal geschatte diagnoses die huisartsen stelden was in 2016 stabiel ten opzichte van 2015.

Gonorroe

Het aantal gonorroe-diagnoses bij de CSG is het afgelopen jaar met 11 procent toegenomen tot 6.764 infecties. De percentages mensen die het bleken te hebben bleven stabiel ten opzichte van vorige jaren; laag onder vrouwen (1,6 procent) en heteroseksuele mannen (1,9 procent), en hoger onder MSM (11,0 procent). Het geschatte aantal infecties dat door huisartsen werd gediagnosticeerd nam toe van 7.900 in 2015 naar 9.000 in 2016. Deze toename was vooral onder personen ouder dan 25 jaar. Geen enkele geïnfecteerde bleek resistent tegen het huidige 'eerstekeus' antibioticum ceftriaxon. Resistentie tegen azitromycine bleef daarentegen toenemen, tot 15 procent in 2017.

Syfilis

In 2017 was het aantal syfilis-diagnoses bij de CSG bijna gelijk aan dat in 2016 (1.228 versus 1.223). Van deze infecties werd 95 procent bij MSM vastgesteld. Het percentage MSM dat de infectie had, daalde licht van 2,9 procent in 2016 naar 2,6 procent in 2017 – na een jarenlange stijging. Deze verandering kwam voornamelijk door een lager percentage aangetroffen syfilis onder MSM met hiv. Het aantal diagnoses onder vrouwen en heteroseksuele mannen bleef in 2017 zeer laag. Respectievelijk 0,09 en 0,16 procent had de infectie.

Hiv

Het aantal nieuwe diagnoses van hiv gesteld bij de CSG's was vrijwel identiek als in 2016 en 2015 (respectievelijk 286, 285 en 288). Negenentachtig procent hiervan was MSM. De percentages onder vrouwen en heteroseksuele mannen bleven zeer laag. Het aantal mensen met hiv dat in 2017 voor het eerst voor behandeling bij een van de Nederlandse hiv-behandelcentra kwam ('in zorg') was 1.037. In totaal zijn in 2017 19.677 mensen met hiv geregistreerd in zorg.

Kernwoorden: soa, chlamydia, gonorroe, syfilis, hiv, aids, antibioticaresistentie, jongeren, MSM, monitoring, centrum seksuele gezondheid.

Preface

This annual report provides an overview of the epidemiology of sexually transmitted infections (STI), including HIV, in the Netherlands in 2017. Data presented are derived from the national STI surveillance database in addition to other data sources registering STI and HIV in the Netherlands, such as the general practitioner, the antenatal screening programme, HIV treatment centres, and notification data.

We present a summary of recent trends ('key points') for each STI, followed by tabulations and figures relating to STI analysed in relation to a range of relevant characteristics. Finally, an overview of the major conclusions and recommendations is given.

We trust that this report will contribute to further awareness of the distribution and causes of STI, including HIV, in the Netherlands, supporting the development and targeting of (preventive) interventions, and enabling assessment of the effectiveness of control activities on STI transmission. The information aims to support policy makers and researchers in the field of STI and related subjects, as well as others interested in STI trends in the Netherlands. More information on STI and HIV trends in the Netherlands is available at www.soahiv.nl and www.hiv-monitoring.nl. A copy of this report can also be downloaded in PDF format from www.rivm.nl/soa.

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Comments

Please send any comments or suggestions to soahiv@rivm.nl.

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Summary

In 2017, a total of 150,593 consultations were registered at the Dutch Sexual Health Centres (SHC), an increase of 5% compared to 2016. This increase was highest among MSM (+12.9%), and less strong among women (+2.6%) and heterosexual men (+0.5%). Of all SHC visitors, 46% was female (69,375 consultations), 23% heterosexual male (35,242 consultations) and 30% MSM (45,553 consultations). In 416 consultations (0.3%), the client was transgender. Similar to 2016, 16% of SHC visitors had two or more registered visits in 2017. This percentage was highest among MSM (35%) and lower among heterosexual men (9%) and women (11%).

The percentage of people with a positive STI test (chlamydia, gonorrhoea, infectious syphilis, HIV or infectious hepatitis B) was 18.4% in both 2016 and 2017. The positivity rate among heterosexual men increased from 13.9% in 2013 to 19.6% in 2017 (19.2% in 2016). Among women, the positivity rate increased from 13.2% in 2013 to 16.3% in 2017, but remained stable compared with 2016 (16.2%). The positivity rate among MSM varied between 19.2% and 21.7% over time (20.5% in 2017). Positivity rates were highest among visitors who were notified for STI (33.0%) and among HIV-positive visitors (32.5%), though the positivity rates among HIV-positive people were lower compared to previous years. Positivity rates were also high among those who reported STI symptoms (26.1%) and people who had an STI in the past year (25.1%). Overall positivity rates varied between 14.7 and 21.7% in the SHC regions.

The total number of STI-related episodes recorded at general practices (GP) (based on a selection of 350 GPs in the Netherlands and extrapolated to the total Dutch population) is almost twice the number reported at SHC, with an estimated 281,300 episodes (STI infections and 'fear of STI') in 2016. This is an increase from the 267,400 episodes recorded in 2015. The reporting rate of STI-related episodes at the GP increased mainly among people aged 25 years or older (from 15.9/1,000 population to 16.9/1,000 population).

Bacterial STI

In 2017, chlamydia was diagnosed 21,404 times at the SHC, an increase of 3% compared to 2016. Most chlamydia infections were diagnosed in people younger than 25 years of age (64%). There is an increasing trend in the chlamydia positivity rate among heterosexual men: from 10.6% in 2008 to 18.3% in 2017 (18.0% in 2016). Among women, the positivity rate also increased in the same period, but remained stable in 2017 (15.4%) compared to 2016 (15.3%). The positivity rate among MSM has fluctuated around 10.0% in recent years (9.5% in 2017). Among HIV-positive MSM, a decrease in positivity rate was seen from 17.6% in 2014 to 14.6% in 2017. The number of lymphogranuloma venereum (LGV, an infection caused by an invasive strain of chlamydia) diagnoses increased again in 2017, but the positivity rate remained stable. Of those with LGV, 55% were known to be HIV-positive. The number of estimated chlamydia episodes reported in general practice (36,500) was fairly stable compared to the previous year, but slightly increased among people aged 25 and older. Reporting rates of chlamydia episodes per 1,000 population were the same in both 2016 and 2015.

The number of gonorrhoea diagnoses at the SHC increased by 11% to 6,764 diagnoses in 2017 compared to 2016. Positivity rates among heterosexual men and women remained low in 2017, 1.9% and 1.6% respectively. The positivity rate among MSM has increased over time, but remained stable in 2017 (11.0%) compared to 2016 (11.3%). From 2015, gonorrhoea has been the most frequently reported STI among MSM. In general practice, the number of estimated gonorrhoea-episodes increased among women from 2,500 in 2015 to 2,900 in 2016, and among men from 5,400 to 6,100. This was mainly due to increases recorded in people aged 25 and older. Antibiotic resistance to ceftriaxone, the first-choice antibiotic for gonorrhoea treatment, has not been reported among SHC visitors. Resistance levels to cefotaxime remained low at 1.5%, while resistance to azithromycin continued to increase from 5.8% in 2012 to 15.0% in 2017 (13.8 in 2016).

In 2017, 1,228 syphilis infections were diagnosed at the SHC, almost the same as in 2016 (1,223 infections). Of all cases, 95% were among MSM. The syphilis positivity rate among MSM increased between 2011 and 2016, but was slightly lower in 2017 (2.6%) compared to 2016 (2.9%). This was mainly due to a decrease in positivity rate among known HIV-positive MSM (from 8.4% in 2016 to 7.2% in 2017). Syphilis positivity rates among HIV-negative MSM remained stable (2.0% in 2016 and 1.9% in 2017). Positivity rates among heterosexual men and women remained very low (0.16 and 0.09%, respectively).

Viral STI

There were 1,037 newly registered HIV-patients in care at the HIV treatment centres of the HIV Monitoring Foundation in 2017 (1,047 in 2016). Of those, 615 were diagnosed in 2017 (778 in 2016), though this number can still increase due to reporting delay. In line with previous years, 68% of newly diagnosed HIV infections were found in MSM. Overall, 45% of newly diagnosed patients presented late for care (CD4 <350/mm³ or AIDS). This proportion was lower for MSM (38%) than for women (53%) or for heterosexual men (63%). In 2016, an estimated 89% of those infected with HIV in the Netherlands were diagnosed and linked to care. Of these, 92% started therapy and 95% had a suppressed viral load. At the SHC, 286 new HIV-infections were diagnosed in 2017, almost the same as in 2016 (285) and 2015 (288). Of these diagnoses, 89% were among MSM. The HIV positivity rate among MSM at the SHC continued to decline to 0.7% in 2017 (from 0.8 in 2016). HIV positivity rates among women and heterosexual men remained very low (0.04 and 0.10%). Of all heterosexual men and women diagnosed with HIV at the SHC (n=30), 83% had a migration background from an STI/HIV endemic country.

For genital warts and genital herpes, most cases are registered with the GP. In 2016, an estimated 37,500 diagnoses of genital warts, and 22,500 diagnoses of genital herpes were made. GPs reported genital warts more often in men than in women (58% of all cases), while genital herpes was more often diagnosed in women (73% of all cases). The number of diagnoses of genital warts and genital herpes at the SHC in 2017 was 1,619 and 531 respectively, with highest positivity rates among heterosexual men.

The number of reported acute hepatitis B cases in the notification data was similar in both years (114 in 2017 versus 111 in 2016). Sexual contact was the most reported transmission route (69%). The number of reported acute hepatitis C cases has fluctuated around 60 cases from 2011 onwards (58 in 2017). The main reported transmission route for acute hepatitis C was sexual contact between men.

In conclusion, the number of STI tests continues to increase both at SHC and the GP. However, in contrast with increases in the previous years, positivity rates remained fairly stable in 2017 compared to 2016. It is important to maintain an integrated surveillance of STIs and STI risks among high-risk groups that visit SHC. Keeping track of lower risk groups/the general population, who test mainly through other care providers or self-testing, is also important. As in previous years, SHC data show that groups at high risk for STI, as reflected in high positivity rates, were people notified for STI by their (ex) partner, people who reported STI symptoms, were HIV-positive, and those who had an STI in the past year. Although high-risk groups are more strongly prioritised in SHC, this suggests that further efforts, such as promotion of condom use, repeat testing, and more effective (timely and complete) partner notification are needed to ensure that people in high-risk groups are effectively targeted. Testing and treatment strategies need to be optimised to maximize the effect of control efforts and to reach those most in need of care.

Samenvatting

In 2017 zijn in totaal 150.593 consulten geregistreerd bij de Centra Seksuele Gezondheid (CSG), een toename van 5 procent ten opzichte van 2016. De toename was het grootst onder MSM (+12,9%), en minder sterk onder vrouwen (+2,6%) en heteroseksuele mannen (+0,5%). Van alle CSG-bezoekers was 46% vrouw (69.375 consulten), 23% heteroseksuele man (35.242 consulten) en 30% MSM (45.553 consulten). Er waren 416 soa-consulten (0,3%) bij transgenders. Vergelijkbaar met 2016 had 16% van de CSG-bezoekers twee of meer consulten in 2017. Dit percentage was het hoogste onder MSM (35%), en lager onder heteroseksuele mannen (9%) en vrouwen (11%).

Het percentage personen met een positieve soa-test (chlamydia, gonorroe, infectieuze syfilis, hiv of infectieuze hepatitis B) was 18,4% in zowel 2016 als 2017. Het soa-vindpercentage steeg bij heteroseksuele mannen van 13,9% in 2013 naar 19,6% in 2017. Bij vrouwen nam het soa-vindpercentage toe van 13,2% in 2013 naar 16,2% in 2016, maar was in 2017 (16,3%) vergelijkbaar met 2016. Het percentage MSM met één of meerdere soa varieert tussen 19,2% en 21,7% over de jaren (2017: 20,5%). De hoogste vindpercentages werden gezien bij personen die gewaarschuwd waren voor soa (33,0%) en onder hiv-positieve personen (32,5%), hoewel de vindpercentages onder hiv-positieve personen wel lager waren vergeleken met het vorige jaar. Vindpercentages waren ook hoog onder personen die klachten rapporteerden (26,1%) en personen die in het afgelopen jaar een soa hadden (25,1%). Het totale vindpercentage varieerde tussen de CSG regio's: van 14,7% tot 21,7%.

Het totale aantal soa-gerelateerde episodes dat bij de huisarts werd geregistreerd (gebaseerd op een selectie van 350 huisartsenpraktijken en geëxtrapoleerd naar de Nederlandse populatie) is bijna het dubbele van het aantal bij de CSG's, met naar schatting 281.300 episodes (infecties en 'angst voor soa') in 2016. Dit is een toename ten opzichte van 2015 (267.400 episodes). Ook het aantal soa-gerelateerde episodes per 1.000 inwoners steeg in 2016 vergeleken met 2015, voornamelijk onder personen ouder dan 25 jaar (15,9 naar 16,9).

Bacteriële soa

In 2017 zijn er 21.404 chlamydia-diagnoses gesteld bij de CSG's, een toename van 3% ten opzichte van 2016. De meeste infecties werden gezien bij personen jonger dan 25 jaar oud (64%). Er is een stijgende trend van het chlamydia-vindpercentage bij heteroseksuele mannen: van 10,6% in 2008 naar 18,3% in 2017 (18,0% in 2016). Bij vrouwen steeg het chlamydia-vindpercentage de afgelopen jaren ook, maar was in 2017 (15,4%) gelijk aan het vindpercentage in 2016 (15,3%). Het percentage MSM met een chlamydia-infectie ligt al jaren rond de 10% (2017: 9,5%). Onder hiv-positieve MSM nam het vindpercentage af van 17,6% in 2014 naar 14,6% in 2017. Het aantal lymfogranuloma venereum (LGV, een infectie met een invasieve chlamydia variant) diagnoses nam opnieuw toe in 2017, maar het vindpercentage bleef stabiel. Van alle personen met LGV was 55% bekend hiv positief. Het geschatte aantal chlamydia episodes gerapporteerd door huisartsen (36.500) was voornamelijk stabiel ten opzichte van het vorige jaar, maar nam licht toe onder personen ouder dan 25 jaar. Het aantal chlamydia episodes per 1.000 inwoners was hetzelfde in 2016 als in 2015.

Het aantal gonorroe diagnoses bij de CSG is met 11% toegenomen tot 6.764 diagnoses in 2017 vergeleken met 2016. Het gonorroe-vindpercentage bleef laag onder heteroseksuele mannen en vrouwen (1,9% en 1,6% respectievelijk). Het gonorroe-vindpercentage nam de afgelopen jaren toe bij MSM, maar was in 2017 (11,0%) vergelijkbaar met 2016 (11,3%). Sinds 2015 is gonorroe in plaats van chlamydia de meest gerapporteerde soa onder MSM. Het aantal geschatte gonorroe-episodes bij de huisarts nam toe bij vrouwen van 2.500 in 2015 tot 2.900 in 2016 en bij mannen van 5.400 naar 6.100. De grootste toenames werden gezien onder personen ouder dan 25 jaar. Antibioticaresistentie tegen ceftriaxon, het huidige eerste keus antibioticum voor de behandeling van gonorroe, is nog niet gerapporteerd bij CSG-bezoekers. Resistentie tegen cefotaxim bleef laag, op 1,5%, maar resistentie tegen azitromycine bleef toenemen tot 15,0% in 2017 (13,8% in 2016).

In 2017 werden er 1.228 syfilis infecties gediagnosticeerd bij de CSG, nagenoeg hetzelfde aantal als in 2016 (1.223 infecties). Hiervan werd 95% vastgesteld onder MSM. Tussen 2011 en 2016 nam het syfilis-vindpercentage onder MSM steeds toe, maar in 2017 was er een afname van 2,9% naar 2,6%. Dit kwam voornamelijk door een afnemend vindpercentage onder bekend hiv positieve MSM (van 8,4% in 2016 naar 7,2% in 2017) en bij MSM met een nieuwe hiv infectie (9,8% naar 7,8%). Het syfilis-vindpercentage onder hiv negatieve MSM bleef stabiel (2,0% in 2016 en 1,9% in 2017). Onder heteroseksuele mannen en vrouwen bleef het vindpercentage zeer laag (0,16% en 0,09%, respectievelijk).

Virale soa

In 2017 zijn 1.037 nieuwe hiv patiënten aangemeld in zorg bij Stichting HIV Monitoring (SHM) (1.047 in 2016). Van hen waren 615 personen ook gediagnosticeerd in 2017 (dit was 778 in 2016), maar dit aantal kan nog oplopen door rapportagevertraging. Vergelijkbaar met voorgaande jaren werd 68% van de nieuw gediagnosticeerde hiv infecties vastgesteld bij MSM. Van de nieuw gediagnosticeerde patiënten kwam 45% laat in zorg ($CD4 < 350/mm^3$ of aids). Dit percentage was lager voor MSM (38%) dan voor vrouwen (53%) en heteroseksuele mannen (63%). Geschat wordt dat in 2016 89% van alle personen met hiv in Nederland gediagnosticeerd en in zorg was. Van hen was 92% ook gestart met behandeling, en daarvan had 95% een onderdrukte virale lading. Bij de CSG werden 286 nieuwe hiv infecties gevonden in 2017, vrijwel evenveel als in 2016 (285) en 2015 (288). Negenentachtig procent van alle hiv diagnoses bij de CSG werd bij MSM vastgesteld. Het hiv-vindpercentage onder MSM bij de CSG bleef dalen tot 0,7% in 2017 (0,8% in 2016). Vindpercentages onder vrouwen en heteroseksuele mannen bleven zeer laag. Van alle vrouwen en heteroseksuele mannen die gediagnosticeerd werden met hiv bij een CSG (n=30) had 83% een migratieachtergrond uit een soa/hiv endemisch land.

Voor genitale wratten en genitale herpes wordt veruit het grootste deel van de diagnoses gesteld bij de huisarts. In 2016 waren er naar schatting 37.500 diagnoses van genitale wratten en 22.500 diagnoses van genitale herpes. Huisartsen rapporteerden genitale wratten vaker bij mannen dan bij vrouwen (58%), terwijl genitale herpes vaker bij vrouwen werd gezien (73%). Het aantal diagnoses van genitale wratten en genitale herpes bij de CSG lag veel lager met 1.619 en 531 diagnoses, respectievelijk.

Het aantal acute hepatitis B infecties in de aangiftecijfers was vergelijkbaar met het voorgaande jaar (114 in 2017 versus 111 in 2016). Seksueel contact was de meest gerapporteerde transmissieroute (69%). Het aantal acute hepatitis C gevallen fluctueert sinds 2011 rond de 60 gevallen per jaar (58 in 2017). De belangrijkste transmissieroute van acute hepatitis C was seksueel contact tussen mannen.

Concluderend, het aantal soa-consulten is opnieuw gestegen, zowel bij de CSG's als bij huisartsen. Echter, vindpercentages waren overwegend stabiel in 2017 ten opzichte van 2016, in tegenstelling tot de stijging van de laatste jaren. Surveillance van soa en risico op soa onder hoog-risico groepen die de CSG's bezoeken is belangrijk, maar voor een geïntegreerde soa surveillance is het ook noodzakelijk om zicht te houden op de laag-risico groepen/algemene populatie, welke zich meer via andere zorgaanbieders of met een zelf-test laat testen. Net als in voorgaande jaren waren de groepen met hoog risico op soa, gereflecteerd in hoge vindpercentages, personen die waren gewaarschuwd door een (ex-)partner, personen die soa klachten rapporteerden, hiv positieve personen, en personen die in het afgelopen jaar een soa hadden gehad. Hoewel hoog-risico groepen geprioriteerd worden bij CSG's, suggereert dit dat verdere inspanningen, zoals promotie van condoomgebruik, herhaald testen, en effectievere (tijdige en complete) partnerwaarschuwing nodig zijn om te zorgen dat hoog-risico groepen effectief bereikt worden. Test- en behandelstrategieën moeten geoptimaliseerd worden om het effect van deze strategieën te maximaliseren en om degenen die zorg het meeste nodig hebben goed te kunnen bereiken.

Introduction

This report summarises current trends in the epidemiology of STI, including HIV, in the Netherlands. It was prepared by the Centre for Infectious Disease Control (CIb) at the National Institute for Public Health and the Environment (RIVM). The CIb collaborated with various partners in the field of STI to collect data for surveillance and to generate insights into trends and determinants: The Sexual Health Centres (SHC), the HIV Monitoring Foundation (SHM), public health laboratories, general practitioners participating in the NIVEL Primary Care Database, and other health care providers.

The data that are systematically collected among high-risk groups by the nationwide network of SHC under the responsibility of the Public Health Services are the backbone of the Dutch STI surveillance and STI trends and risk factors. Other available STI data from surveys, screening programmes, national registries, cohort studies, and other surveillance systems are included where possible. Together they provide an overview of the status of STI/HIV in the Netherlands. Preliminary data have been presented in the Thermometer Seksuele Gezondheid (April 2018).

Outline of the report

Chapter 1 describes the methodology of each data source used for STI surveillance in the Netherlands. In chapter 2, the characteristics of the SHC attendees and data from sexual health consultations among young people (Sense) in 2017 are presented. Data from general practitioners are shown for 2016. Chapters 3-5 present data on bacterial STIs (chlamydia, gonorrhoea and syphilis) and chapters 6-10 focus on viral STIs (HIV, genital warts, genital herpes, hepatitis B and hepatitis C). Conclusions and recommendations are captured in chapter 11.

1 Methodology of STI and HIV surveillance

The tables and figures in this report are based on a variety of data sources and present an up-to-date overview of the STI/HIV epidemic in the Netherlands. The basis of this overview is the systematic surveillance among high-risk groups embodied in the nationwide system of Sexual Health Centres (SHC). Data from general practitioners, who perform the bulk of STI consultations, are extrapolated from the NIVEL Primary Care Database. We included data from the HIV treatment centres (HIV Monitoring Foundation) to gain insights into trends among HIV patients in care. Other additional data sources include the national Lifestyle Monitor, weekly virological laboratory reports, the Gonococcal Resistance to Antimicrobials Surveillance (GRAS) programme, the antenatal screening, the data on hepatitis B and C notifications, the hepatitis B vaccination programme for risk groups, and the blood donor registry.

1.1 National surveillance at Sexual Health Centres

From 1995 onwards, STI diagnoses have been registered in an STI database at the RIVM in the Netherlands. In 2003, an STI sentinel surveillance system was implemented, achieving national coverage in 2004. Since 2006, reporting to the national STI surveillance system has been organised in eight regions. One of the SHC in each region is responsible for the coordination of STI surveillance (Figure 1.1). In total, 24 SHC, mostly within the Public Health Services, provide low threshold, free-of-charge STI/HIV testing and care, targeting high-risk groups. Inclusion criteria are: (1) reporting STI-related symptoms, (2) notified for STI, (3) MSM, (4) originating from an HIV/STI endemic area, (5) reporting a partner from an HIV/STI endemic area or MSM, (6) aged under 25, (7) commercial sex worker (CSW), or (8) victim of sexual violence. Since 2015, the SHC have more strongly prioritised populations at highest risk of STI, e.g. clients who are notified or report symptoms related to STI, because of changes in financial restrictions. This change should be taken into account when interpreting trends, as it can lead to higher STI positivity rates.

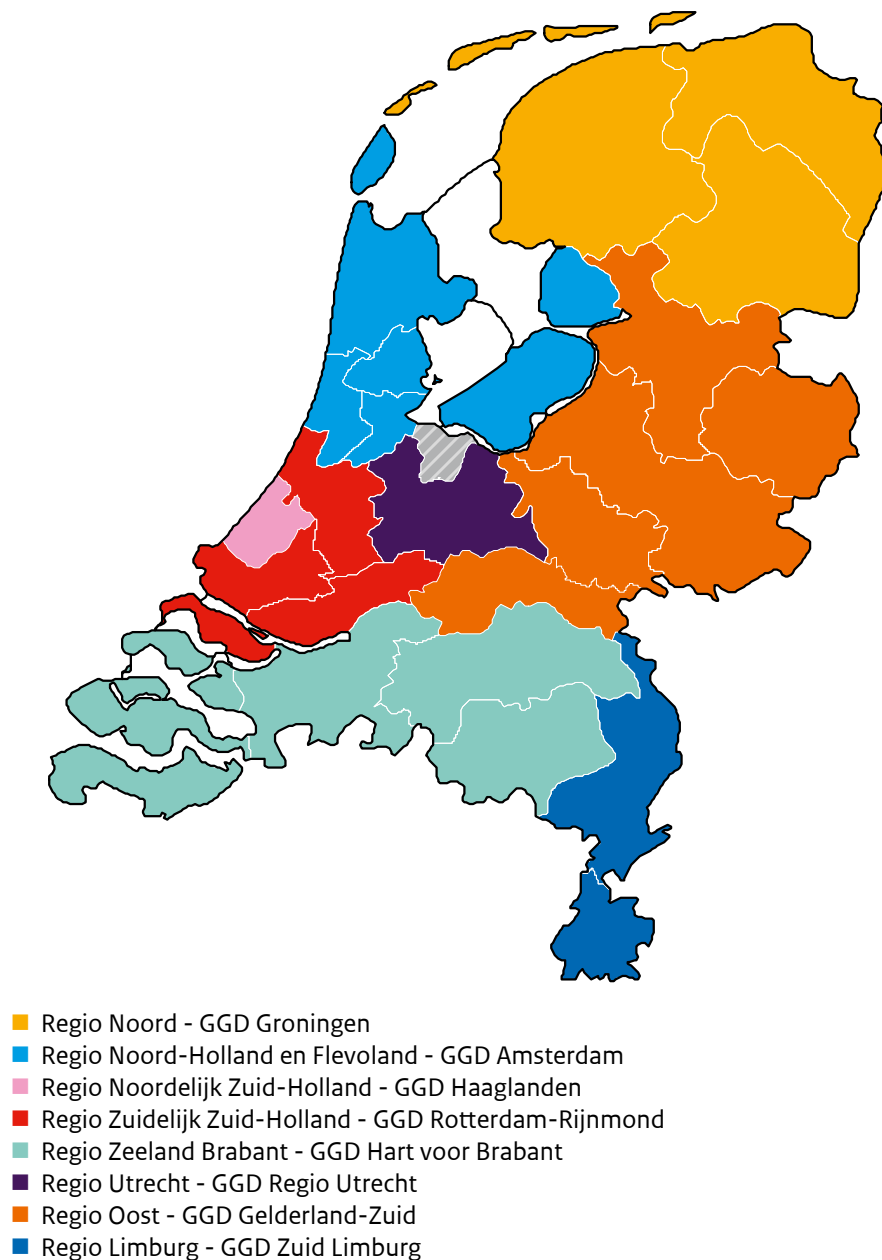
Until 2011, attendees were routinely tested for chlamydia, gonorrhoea and syphilis, with an opt-out policy for HIV testing. Between 2012 and 2014, attendees aged under 25 with no other indication criteria were tested for chlamydia only. If the chlamydia test result was positive, further testing for gonorrhoea, syphilis and HIV took place. From 2015, attendees aged under 25 were tested for chlamydia and gonorrhoea, and additionally for syphilis, HIV and/or HBV if indicated. Briefly, the indication criteria for additional STI testing are: (1) notified for syphilis, HIV, LGV, HBV or HCV, (2) symptoms related to syphilis or HIV, (3) CSW, (4) clients of CSW, (5) MSM, (6) first generation immigrants from STI/HIV endemic areas, (7) a partner from STI/HIV endemic areas or MSM (8) victims of sexual violence. The testing policy for attendees aged over 25 did not change: routine testing for chlamydia, gonorrhoea and syphilis, and an opt-out

policy for HIV testing¹. The changes in testing policy need to be taken into account when interpreting trend data, as they may cause a break in the trends over time. Hepatitis B and C, genital herpes, trichomonas and LGV are tested on indication only. Since 1 January 2011, the migration background has been based on the client's country of birth and the client's parents (foreign background when at least one parent was born abroad), as opposed to the self-reported migration background used earlier. First generation migrants are born abroad themselves as well; second generation migrants are born in the Netherlands, but one or both parent(s) were born abroad (following CBS² definitions). All consultations and corresponding diagnoses are reported online to the RIVM for surveillance purposes, a process that is facilitated by a web-based application (SOAP). The unit of analysis is 'new STI consultation' and anonymised reports contain epidemiological, behavioural, clinical and microbiological data on a wide range of STI. In 2014, an identification number was added to the data collection, which allows identification of clients who tested repeatedly at the same clinic. We discuss the number of repeated visits and the STI positivity by number of consultation in Chapter 2. In this report, the results of SHC national surveillance are presented with respect to the number and nature of new consultations and diagnoses. Trends in positivity rate by risk profile (based on demographic and behavioural indicators) are based on data from SHC which were under national surveillance from 2008 to 2017. Where data were not complete for a specific period or SHC, this is indicated. We focus on the major bacterial and viral STI, including HIV infection.

¹ See Draaiboek: http://www.rivm.nl/Documenten_en_publicaties/Professioneel_Praktisch/Draaiboeken/Infectieziekten/LCI_draaiboeken/Draaiboek_consult_seksuele_gezondheid

² Definition of Migration background, see Definitions Statistics Netherlands ('Begrippen CBS'): <https://www.cbs.nl/en-gb/our-services/methods/definitions?tab=m#id=migration-background>

Figure 1.1 Eight regions with coordinating SHC indicated



Footnote: GGD Gooi en Vechtstreek (grey striped region) does not have an SHC. Hence, no STI data were available for this region.

1.2 Sense

To strengthen primary prevention and to promote sexual health among young adults (<25 years), a nationwide network of consultation centres (Sense) was established under the coordination of the same Public Health Services (PHSs) that coordinate the SHC. Young adults can anonymously contact these Sense locations free-of-charge for information and personal consultations on a broad range of subjects relating to sexual health, including (problems with) sexual intercourse, unwanted pregnancy, birth control, STI, homosexuality, sexual violence, or lover-boys. Data on the number and the demographics of visitors of the Sense consultations are presented. From 2014 onwards, demographic information and the subject of Sense consultations are reported in the national STI/HIV surveillance system.

1.3 Sexual health in lifestyle monitor

From 2013, data on different lifestyle aspects in a representative sample of the Dutch population have been collected in the 'LeefStijl Monitor' (LSM), i.e. smoking, drinking habits, drug use, healthy lifestyle (sports, diet) and sexual health. For each of these topics, a standard set of indicators is collected annually³. The 2016 sexual health data were collected for a total of 3,323 men and 3,820 women aged between 16 and 85. We present a selection of the 2016 results in this report, with the aim of describing the characteristics related to sexual health and STI healthcare of the Dutch general population.

1.4 STI surveillance in general practice

Data on the incidence of STI in general practice are obtained through the primary care surveillance network maintained at the Netherlands Institute for Health Services Research (NIVEL), which is based on electronic health records in a network of general practices (GPs), NIVEL Primary Care Database (NIVEL-PCD)^{4,5}. The network uses routinely collected data from health care providers to monitor health and utilisation of health services in a representative sample of the Dutch population. All complaints and illnesses are recorded using the International Classification of Primary Care (ICPC-1) codes⁶. From 2010 onwards, the network of GPs gradually expanded from 120 practices to a larger network including over 500 practices. Data on the incidence of STI episodes in the population covered by this network from 2009 to 2016 are included in this annual report. This is restricted to data from practices with good quality morbidity data, which comprised 356 practices in 2013, 372 in 2014, 416 in 2015 and 350 in 2016. Incidence rates were calculated based on the number of reported episodes per

³ Gezondheidsenquête/Leefstijlmonitor, CBS i.s.m. Rutgers, Soa Aids Nederland en RIVM, 2016.

⁴ See website: <https://www.nivel.nl/NZR/zorgregistraties-eerstelijin>

⁵ Verheij RA, Koppes LJ. Over NIVEL Zorgregistraties. Uit: NIVEL Zorgregistraties eerste lijn [internet]. 2017 [Last edited 03-10-2016; accessed 06-04-2017]. URL: www.nivel.nl/node/4282

⁶ Lamberts H, Wood MR. ICPC: International Classification of Primary Care. Oxford: Oxford University Press, 1987.

1,000 population⁷. Annual estimates of the total number of episodes seen at GPs in the Netherlands were made by extrapolating the reporting rates in these practices to the total number of Dutch residents, as obtained from Statistics Netherlands (CBS), reported by gender and age group (<25 years and ≥25 years). For syphilis and HIV, the number of incident cases reported was too small for reliable estimates of the incidence. For HIV, we report prevalence rates based on estimates from NIVEL-PCD. HIV is defined as a ‘chronic, non-reversible morbidity’, which remains prevalent as long as the patient is registered in the network. For chlamydia, which does not have a main ICPC code, we used the ‘chlamydia-related’ ICPC codes in combination with prescription- and laboratory data. The chlamydia-related ICPC codes include vaginitis (X84), cervicitis (X85) and Pelvic Inflammatory Disease (PID) (X74) in women, and orchitis/epididymitis (Y74) and other genital diseases (Y99) in men (see also⁸).

For each chlamydia-related ICPC main code, the percentage of chlamydia episodes was estimated. The chlamydia incidence rate was computed by combining these percentages with the incidence rates of the separate chlamydia-related ICPC codes. The percentage of chlamydia episodes per ICPC were based on the proportion of the chlamydia-related ICPC code with:

- an appropriate chlamydia-related prescription, i.e. azithromycin or doxycycline, among practices with good quality morbidity and prescription data (331 practices in 2016)
- or: a positive chlamydia laboratory result. Because only a part of the practices have sufficient laboratory reports (274 practices in 2016), the number of chlamydia infections based on a positive laboratory result was extrapolated to all practices with good quality morbidity and prescription data.

Furthermore, more detailed data on STI consultations at the GP are reported from a subgroup of practices within NIVEL-PCD, which participate in more intensive data collection for surveillance (NIVEL sentinel practices). Since 2008, the 45 GP practices participating in this specific sentinel network have completed a questionnaire for each new consultation concerning STI/HIV issues. The questionnaire addresses STI testing, diagnoses and background information on the patient characteristics, with reference to migration background, sexual preference and sexual behaviour⁹. We report the main results on patients’ profiles, testing rates and positivity, as well as trends from 2013 to 2017. In 2015, the questionnaire format changed from paper forms to electronic registration. Some questions were slightly altered (from multiple choice to single choice), which may have had an impact on the results.

⁷ Nielen MMJ, Davids R, Gommer M, Poos R, Verheij RA. Berekening morbiditeitscijfers op basis van NIVEL Zorgregistraties eerste lijn. Uit: NIVEL Zorgregistraties eerste lijn [internet]. 2018 [last edited 03-08-2017; accessed 26-03-2018]. URL: www.nivel.nl/node/4296

⁸ Van den Broek IVF, Verheij RA, van Dijk CE, Koedijk FDH, van der Sande MAB, van Bergen JEAM. Trends in sexually transmitted infections in the Netherlands, combining surveillance data from general practices and sexually transmitted infection centres. *BMC Family Practice*, 2010, 11:39.

⁹ Trienekens SCM, van den Broek IVF, Donker GA, et al. Consultations for sexually transmitted infections in the general practice in the Netherlands: an opportunity to improve STI/HIV testing. *BMJ Open* 2013;3:e003687. doi: 10.1136/bmjopen-2013-003687

1.5 Laboratory surveillance

National laboratory surveillance data are not available for STI, except for data from the weekly virological reports, which include the total number of *Chlamydia trachomatis* positive tests from 21 participating laboratories. The coverage of these laboratories and representativeness for the Dutch population is not precisely known, but the laboratories are spread over the whole country and the coverage is sufficient to provide accurate and timely trends for (virological) infections and chlamydia¹⁰. There is an overlap between the laboratories reporting in this system and the laboratories connected to the SHC.

1.6 Antimicrobial resistance of gonococci

Concern for increasing resistance to quinolones at (inter)national level led to an RIVM laboratory survey of the resistance of gonococci in 2002¹¹. Because the results demonstrated the need for systematic nationwide surveillance of gonococcal antimicrobial resistance, in 2006 the Gonococcal Resistance to Antimicrobials Surveillance (GRAS) was implemented in the Netherlands. This surveillance consists of the systematic collection of data on gonorrhoea and resistance patterns, linked with epidemiological data. 18 of 24 SHC participate, who together performed 90% of all gonorrhoea diagnoses. Gonorrhoea is diagnosed by culture or PCR on patients' materials. Susceptibility testing of isolates is performed by E-tests, and the initial panel consisted of penicillin, tetracycline, ciprofloxacin and cefotaxime. In 2011, ceftriaxone, azithromycin and spectinomycin were added to the panel and testing for penicillin and tetracycline became optional. In 2014, testing for spectinomycin became optional. Resistance levels are calculated using the EUCAST breakpoints for resistance¹².

1.7 Antenatal screening

Each year, around 175,000 pregnant women are screened for syphilis, HBV and HIV in the Netherlands. The blood sample is collected during the first midwife appointment (<13th week of the pregnancy) according to the opting-out principle, whereby pregnant women undergo the test after being provided with information, unless they explicitly state that they do not wish to participate. Almost all pregnant women in the Netherlands participate in this infectious disease screening programme (0.07% refused HIV-tests in 2014)¹³. The screening programme is coordinated by the Centre for Population Screening (CvB) at the RIVM.

¹⁰ See website: http://www.rivm.nl/Onderwerpen/S/Surveillance_van_infectieziekten/Virologische_weekstaten

¹¹ Van Loo IH, Spaargaren J, van de Laar MJW. Resistance of Gonococci in the Netherlands; Results of a survey of Medical Microbiology Laboratories. Ned Tijdschr Geneesk. 2005;149(22):1217-1222. [Dutch].

¹² The European Committee on Antimicrobial Susceptibility Testing. Breakpoint tables for interpretation of MICs and zone diameters. Version 8.0, 2018. http://www.eucast.org/clinical_breakpoints/

¹³ Van der Ploeg CPB, Schönbeck Y, Oomen P, Vos K. PSIE Procesmonitor 2015. Belangrijkste resultaten Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE) over 2015. TNO/RIVM 2017.

1.8 Congenital syphilis

The RIVM-IDS (Centre for Infectious Diseases Research, Diagnostics and Screening) offers Immunoglobulin M (IgM) diagnostics for neonates and young infants (<1 year) who may have been exposed to syphilis. We present national results from 2008-2017 in this report.

1.9 National registration of patients registered at HIV treatment centres

In January 2002, an HIV reporting system for patients entering care was implemented in the Netherlands. Pseudonymised longitudinal data of almost all newly registered HIV-positive individuals are collected by the HIV Monitoring Foundation (SHM). The goal of SHM is to monitor HIV-positive individuals registered at the 26 recognised HIV treatment centres and four children's HIV centres in the Netherlands, in order to study changes in the epidemic, the effects of treatment, and the quality of care. All HIV-positive individuals registered in this national cohort are followed prospectively from the time of reporting in care. HIV-positive individuals in care diagnosed prior to the start of SHM were included in the cohort retrospectively. HIV cases diagnosed before 1996 mainly include people who survived up to the start of the ATHENA clinical cohort in 1996, the predecessor of SHM. The epidemiological data on newly reported HIV infections as well as trends in new AIDS diagnoses after 2000 are reported in collaboration with the Clb at the RIVM¹⁴. The number of people living with HIV in the Netherlands in 2016 was estimated by using the European Centre for Disease Prevention and Control (ECDC) HIV Modelling Tool¹⁵.

1.10 HIV incidence data

HIV incidence data are obtained from the Amsterdam Cohort Studies (ACS) on HIV/AIDS, blood donations, and the surveillance of recent HIV infections at SHC (Recent Infections Testing Algorithm, RITA surveillance^{16,17}). In 1984, the Amsterdam Cohort Studies on HIV and AIDS started registering men who have sex with men (MSM). The original aims were to investigate the epidemiology, psychosocial determinants, natural history, and pathogenesis of HIV-1 infection and AIDS, as well as to evaluate the effect of interventions in HIV-negative and HIV-positive MSM. In the past decade, the focus has broadened to also include the

¹⁴ van Sighem AI, Boender TS, Wit FWNM, Smit C, Matser A, Reiss P. HIV Monitoring Report 2017, Human Immunodeficiency Virus (HIV) Infection in the Netherlands. Amsterdam: Stichting HIV Monitoring, 2017. Available online at www.hiv-monitoring.nl

¹⁵ ECDC HIV modelling tool [software application]. Version 1.2.2 Stockholm: European Centre for Disease Prevention and Control; 2016. Available from: <http://ecdc.europa.eu/en/healthtopics/aids/Pages/hiv-modelling-tool.aspx>

¹⁶ Op de Coul E, Hogema BM, Sane J, Heijman T, Fennema JS, Murphy G, Koot, M. Evaluation of the 4th generation Avidity Assay for recent HIV infections among MSM in Amsterdam. J Med Microbiol 2014; Aug 21;63(Pt 8):1116-7. Epub 2014 May 21.

¹⁷ Sane J, Heijman T, Hogema B, Koot M, van Veen M, Götz H, Fennema J, Op de Coul E. Identifying recently acquired HIV infections among newly diagnosed men who have sex with men attending STI clinics in The Netherlands. Sex Transm Infect 2014, doi:10.1136/sextrans-2013-051420).

epidemiology and natural history of blood-borne and sexually transmitted infections other than HIV. The collaborating institutes within the ACS framework are Sanquin Blood Supply Foundation, the Public Health Service of Amsterdam (GGD Amsterdam), the Academic Medical Center of the University of Amsterdam, the Jan van Goyen Medical Centre, the HIV Focus Centre (DC clinics) in Amsterdam, and the HIV Monitoring Foundation (SHM).

1.11 Notification of hepatitis B and C

The mandatory notification includes epidemiological data on newly diagnosed acute hepatitis B virus (HBV) infections (since 1976), and on chronic HBV infections and acute hepatitis C virus (HCV) infections (both since April 1999). Since 2002, all Public Health Services have notified HBV and acute HCV infections using the web-based application OSIRIS. Since chronic HBV infections are already reported in the annual report of the National Immunisation Programme in the Netherlands¹⁸, only data on acute HBV and acute HCV infections are included in this report.

1.12 Hepatitis B vaccination programme for risk groups

Being a low-endemic country, the Netherlands adopted a vaccination programme targeted at behavioural high-risk groups. The programme offers free vaccination to MSM and CSW. Heterosexuals with an STI indication were also considered a risk group until October 2007, and drug users until January 2012. Public Health Services and SHC offer complimentary vaccination according to the six-month schedule. Participants are tested serologically for markers of previous or current HBV infection during their consultation for a first vaccination. Data are collected from the registration system specifically developed for the vaccination programme. Although universal childhood vaccination was adopted in 2011, the current targeted risk group vaccination programme will need to be continued in coming years.

1.13 Blood donors

From 1985 onwards, blood donated by (new and regular) blood donors has been screened for HIV, hepatitis B and C, and syphilis. Volunteers are screened according to quality and safety guidelines, and people who report specific risk factors for blood-transmitted infections are not accepted as donors. Records are kept in the national donor registry of Sanquin, which provides good information on the prevalence and incidence of these infections in a low-risk population. Data from 2007-2015 are reported.

¹⁸ The National Immunisation Programme in the Netherlands, Surveillance and developments in 2016-2017. RIVM report 2016-0143. Available from: https://www.rivm.nl/Documenten_en_publicaties/Wetenschappelijk/Rapporten/2017/november/The_National_Immunisation_Programme_in_the_Netherlands_Surveillance_and_developments_in_2016_2017

2 Sexual health, STI and Sense consultations

2.1 Key points

2.1.1 Sexual Health Centres

- In 2017, 150,593 new consultations were registered by SHC under national surveillance; an increase of 5% compared to 2016. This increase was highest among MSM (+12.9%) compared to the number of consultations among heterosexual men (+0.5%) and women (+2.6%). The number of young individuals visiting the SHC (<25 years) also increased (+4.4%).
- Key characteristics of attendees were: young age (51.8% <25 years), Dutch origin (68.1%), female (46.1%), ≥3 sexual partners in the previous 6 months (58.5%), previously tested for HIV (49.6%), STI/HIV-related symptoms (26.4%), and no condom use at last casual sex contact (65.3%).
- The percentage of clients with at least one STI increased from 13.7% in 2010 to 18.4% in 2016, and remained stable in 2017 (18.4%) compared to 2016. STI positivity has decreased among MSM, from 21.2% in 2016 to 20.5% in 2017, while it slightly increased among heterosexual men (19.2% in 2016 and 19.6% in 2017) and women (16.2% in 2016 and 16.3% in 2017).
- The STI positivity was highest in persons notified (33.0%) or with STI/HIV-related symptoms (26.1%), and in clients with a previous HIV diagnosis (32.5%) or previous STI diagnosis (25.1%).
- The STI positivity rate depended on education level; 21.9% of low/medium educated clients tested positive versus 16.8% of higher educated clients.
- The percentage of SHC attendees who reported being notified by a partner decreased from 21.7% in 2016 to 19.6% in 2017. Similar to previous years, this percentage was highest among heterosexual men (27.2%, versus 19.3% in MSM and 16.0% in women).
- Among heterosexual men diagnosed with an STI, 44.3% were detected through partner notification. This proportion has increased over time (31.7% in 2010). A similar increase was observed in MSM and women, although the proportions of STI detected through partner notification were lower in 2017 compared to 2016: 30.8% in MSM and 33.4% in women. Among MSM, one third of all newly diagnosed HIV infections were attributable to clients who were notified for STI exposure.
- Of all unique MSM who tested at the SHC in 2016, 34.6% had multiple consultations (32.3% in 2016). Among heterosexual men and women, this was 8.8 and 11.4% respectively.
- In 2017, 11,942 clients were tested for chlamydia/gonorrhoea using a home sampling kit provided by the SHC (8.0% of all tests), and 7,849 clients were tested for STI/HIV via 'Man tot Man' (5.2% of all tests).
- In 2017, 8,777 Sense consultations were registered, of which 76% were among women. The most common topic was sexuality among men and birth control among women.

2.1.2 General practice

- In 2016, the number of STI-related episodes at GPs (based on ICPC codes for episodes of fear of STI and STI diagnoses registered in NIVEL Primary Care Database (NIVEL-PCD)) was estimated at 281,300 in the Netherlands, an increase compared to 2015. This increase was mainly among people older than 25.

2.1.3 Lifestyle monitor

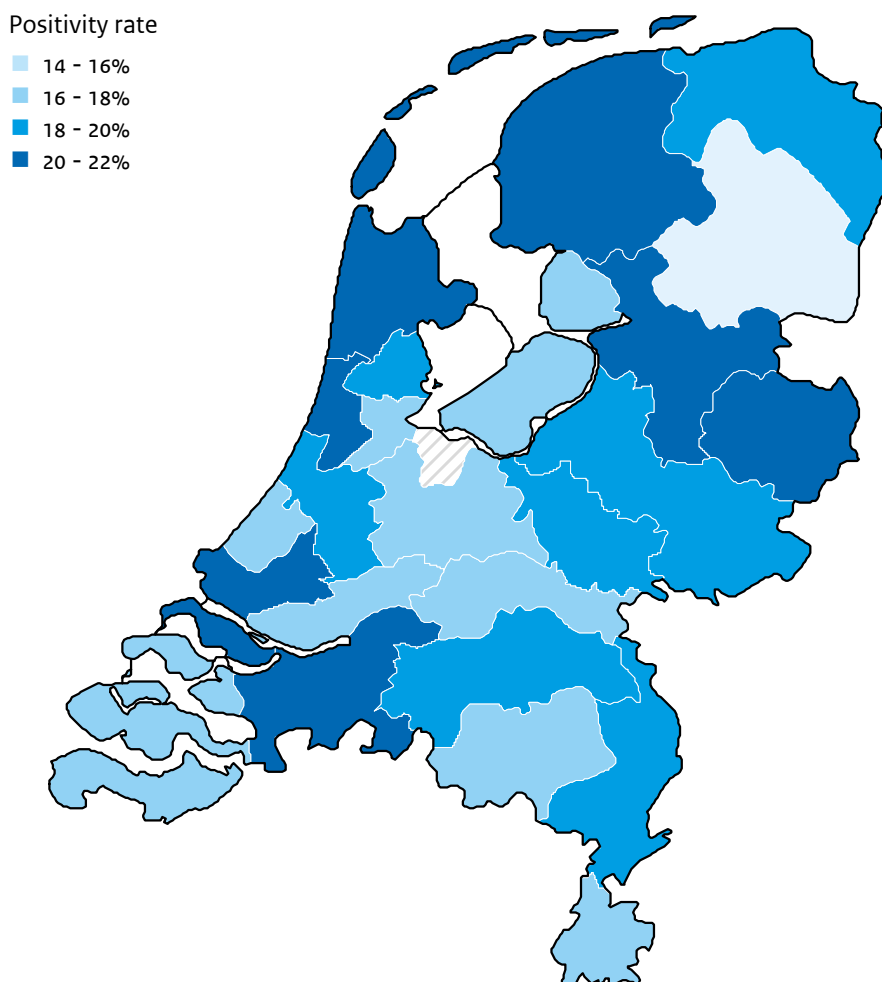
- In the 16-29 age group, 13.3% of women reported having been tested for an STI in the previous year, and 8.1% of women for HIV. For heterosexual men the percentages were lower; 6.3 for STI and 6.1 for HIV. Higher proportions were seen among men attracted to men, with 29.6% tested for STI and for HIV in the past year. Proportions declined with increasing age.

2.1.4 Regional surveillance

- In 2017, the number of STI consultations per 1,000 inhabitants of 15-65 years of age was by far the highest in Amsterdam (47.0 consultations per 1,000); an increase of 5% compared to 2016 (44.8 consultations per 1,000). For other regions, this number ranged from 2.8 consultations in Drenthe to 14.7 consultations in Gelderland-Zuid.
- STI positivity rates ranged between 14.1 and 22.3% in 2017, similar to 2016 (between 14.6 and 22.1%). Among heterosexuals, positivity rates were highest in the region of Zuid-Holland Zuid (20.0% in women and 22.3% in heterosexual men), while the percentage of positive STI tests among MSM was highest in the region of Noord-Holland/Flevoland (21.4%).
- The differing positivity rates by region could be explained by differences in SHC attendee characteristics. Variability between the regions was seen in percentage of attendees with low/medium education level, in age distribution, and the percentage of attendees who were notified or reported STI-related symptoms. The distribution of notified and/or consultations with symptoms of all SHC consultations among heterosexuals ≥ 25 years in 2017 was similar to 2016, except for the region Noord-Holland/Flevoland, where the percentage of attendees who were notified and/or reported symptoms decreased from 71.5% in 2016 to 48.0% in 2017.

2.2 Consultations and characteristics of Sexual Health Centre attendees

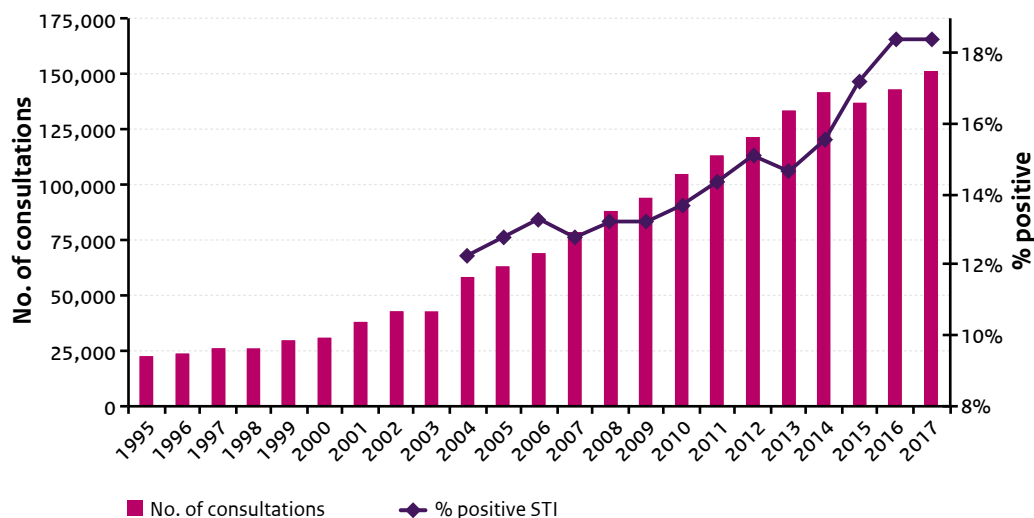
Figure 2.1 Positivity rates of STI by region, the Netherlands, 2017



Footnote 1: STI includes: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Footnote 2: GGD Gooi en Vechtstreek (grey striped region) does not have an SHC. Hence, no STI data were available for this region.

Figure 2.2 Number of consultations and percentage of positive STI tests in the national STI surveillance in the Netherlands, 1995-2017



Footnote 1: 1995-2002: STI registration; 2000: SHC Erasmus Medical Centre Rotterdam was included; 2003: Implementation of STI sentinel surveillance network; 2004-2017: National STI surveillance network.

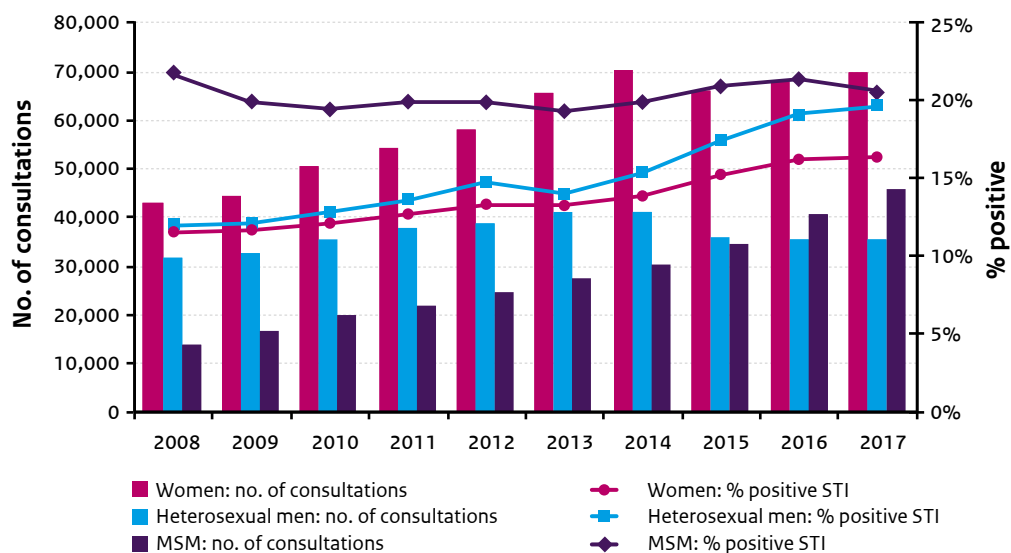
Footnote 2: STI include: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Table 2.1 Number of consultations by gender and type of sexual contact, 2013-2017

Gender and type of sexual contact	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)
Women	65,104 (48.7)	70,219 (49.7)	65,991 (48.4)	67,600 (47.2)	69,375 (46.1)
Heterosexual men	40,872 (30.6)	40,856 (28.9)	35,719 (26.2)	35,065 (24.5)	35,242 (23.4)
MSM	27,497 (20.6)	29,939 (21.2)	34,442 (25.3)	40,340 (28.2)	45,553 (30.2)
Transgender*	54 (0.04)	59 (0.04)	50 (0.04)	56 (0.04)	416 (0.3)
Unknown*	58 (0.04)	118 (0.08)	145 (0.11)	78 (0.05)	7 (0.0)
Total	133,585	141,191	136,347	143,139	150,593

* Categories 'transgender' and 'unknown' are disregarded in the rest of the tables.

Figure 2.3 Number of consultations and percentage of positive STI tests by gender and type of sexual contact, 2008-2017

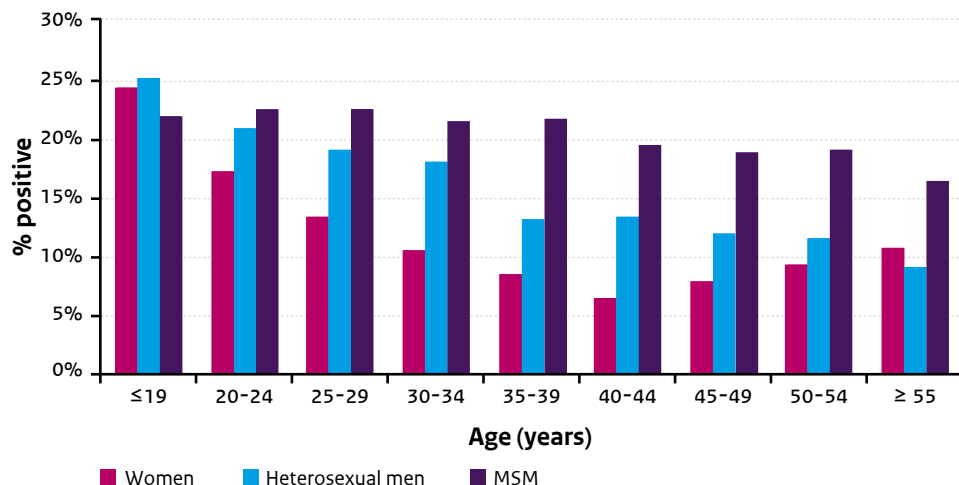


Footnote: STI include: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Table 2.2 Number of consultations by age, gender and type of sexual contact, 2017

Age (years)	Women n (%)	Heterosexual men n (%)	MSM n (%)
≤ 19	8,592 (12.4)	2,372 (6.7)	1,063 (2.3)
20-24	40,503 (58.4)	18,730 (53.1)	6,560 (14.4)
25-29	11,453 (16.5)	8,073 (22.9)	8,320 (18.3)
30-34	3,457 (5.0)	2,864 (8.1)	6,278 (13.8)
35-39	1,790 (2.6)	1,239 (3.5)	5,333 (11.7)
40-44	1,069 (1.5)	672 (1.9)	4,304 (9.4)
45-49	1,147 (1.7)	544 (1.5)	4,415 (9.7)
50-54	776 (1.1)	324 (0.9)	4,036 (8.9)
≥ 55	588 (0.8)	424 (1.2)	5,243 (11.5)
Unknown	0 (0.0)	0 (0.0)	1 (0.0)
Total	69,375	35,242	45,553

Figure 2.4 Percentage of positive STI tests by age, gender and type of sexual contact, 2017



Footnote: STI include: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Table 2.3 Number of consultations by migration background, generation, gender and type of sexual contact, 2017

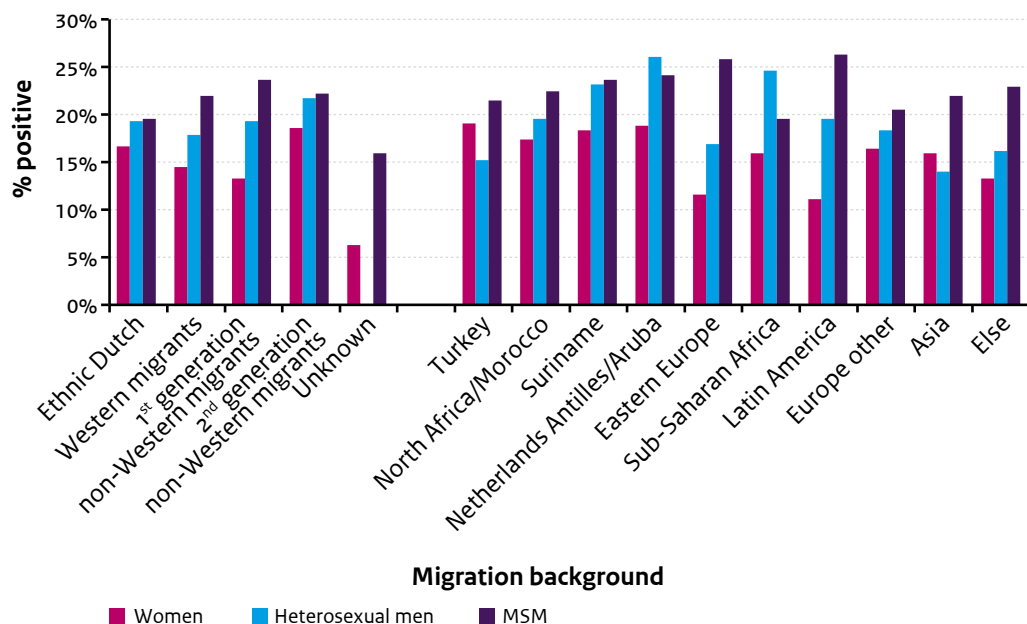
Migration background	Women n (%)	Heterosexual men n (%)	MSM n (%)
The Netherlands	49,702 (71.6)	21,594 (61.3)	30,947 (67.9)
Turkey	717 (1.0)	1,087 (3.1)	708 (1.6)
First generation migrants	87 (12.1)	214 (19.7)	238 (33.6)
Second generation migrants	630 (87.9)	873 (80.3)	470 (66.4)
North Africa/Morocco	1,128 (1.6)	1,613 (4.6)	689 (1.5)
First generation migrants	127 (11.3)	283 (17.5)	282 (40.9)
Second generation migrants	999 (88.6)	1,329 (82.4)	406 (58.9)
Suriname	3,255 (4.7)	2,815 (8.0)	1,466 (3.2)
First generation migrants	646 (19.8)	755 (26.8)	625 (42.6)
Second generation migrants	2,608 (80.1)	2,058 (73.1)	839 (57.2)
Netherlands Antilles/Aruba	1,687 (2.4)	1,400 (4.0)	1,000 (2.2)
First generation migrants	692 (41.0)	742 (53.0)	742 (74.2)
Second generation migrants	995 (59.0)	658 (47.0)	256 (25.6)

Table 2.3 (continued) Number of consultations by migration background, generation, gender and type of sexual contact, 2017

Migration background	Women n (%)	Heterosexual men n (%)	MSM n (%)
Eastern Europe	2,588 (3.7)	583 (1.7)	1,114 (2.4)
First generation migrants	2,221 (85.8)	416 (71.4)	999 (89.7)
Second generation migrants	366 (14.1)	167 (28.6)	113 (10.1)
Sub-Saharan Africa	1,524 (2.2)	1,511 (4.3)	535 (1.2)
First generation migrants	640 (42.0)	696 (46.1)	352 (65.8)
Second generation migrants	884 (58.0)	814 (53.9)	182 (34.0)
Latin America	1,703 (2.5)	628 (1.8)	1,549 (3.4)
First generation migrants	1,165 (68.4)	347 (55.3)	1,347 (87.0)
Second generation migrants	538 (31.6)	281 (44.7)	200 (12.9)
Europe other	3,552 (5.1)	1,873 (5.3)	3,756 (8.2)
First generation migrants	1,550 (43.6)	978 (52.2)	2,853 (76.0)
Second generation migrants	2,002 (56.4)	895 (47.8)	897 (23.9)
Asia	2,812 (4.1)	1,783 (5.1)	3,072 (6.7)
First generation migrants	1,020 (36.3)	928 (52.0)	1,829 (59.5)
Second generation migrants	1,789 (63.6)	853 (47.8)	1,239 (40.3)
Else	681 (1.0)	345 (1.0)	683 (1.5)
First generation migrants	244 (35.8)	163 (47.2)	587 (85.9)
Second generation migrants	437 (64.2)	182 (52.8)	93 (13.6)
Unknown	26 (0.0)	10 (0.0)	34 (0.1)
Total	69,375	35,242	45,553

Footnote: The number of first and second generation migrants do not always add up to 100%. The generation of the remaining group is unknown.

Figure 2.5 Percentage of positive STI tests by migration background (left side: aggregated data; right side: region of origin of migrants from an STI/HIV endemic area), gender and type of sexual contact, 2017



Footnote: STI includes: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

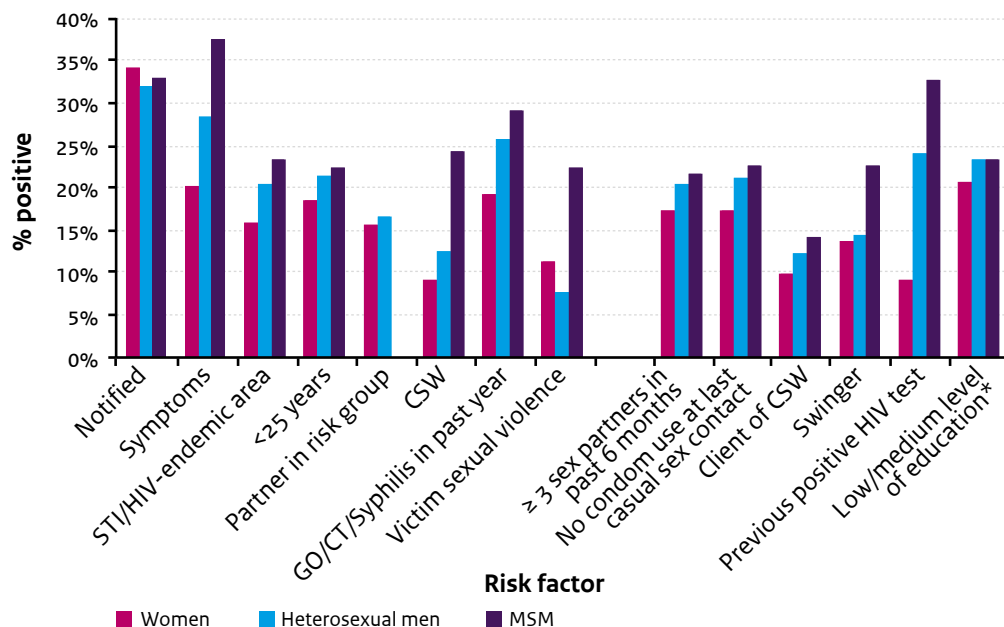
Table 2.4 Reported triage indication by gender and type of sexual contact, 2017

	Women n (%)	Heterosexual men n (%)	MSM n (%)
Notified			
No	57,962 (83.5)	25,558 (72.5)	36,743 (80.7)
Yes	11,113 (16.0)	9,571 (27.2)	8,779 (19.3)
Unknown	300 (0.4)	113 (0.3)	31 (0.1)
Symptoms			
No	49,289 (71.0)	23,769 (67.4)	37,017 (81.3)
Yes	19,768 (28.5)	11,359 (32.2)	8,467 (18.6)
Unknown	318 (0.5)	114 (0.3)	69 (0.2)

Table 2.4 (continued) Reported triage indication by gender and type of sexual contact, 2017

	Women n (%)	Heterosexual men n (%)	MSM n (%)
STI/HIV-endemic area			
No	53,961 (77.8)	23,822 (67.6)	35,420 (77.8)
Yes	15,414 (22.2)	11,420 (32.4)	10,133 (22.2)
<25 years			
No	20,280 (29.2)	14,140 (40.1)	37,930 (83.3)
Yes	49,095 (70.8)	21,102 (59.9)	7,623 (16.7)
Partner in risk group			
No	48,243 (69.5)	24,119 (68.4)	
Yes	19,995 (28.8)	9,940 (28.2)	
Unknown	1,137 (1.6)	1,183 (3.4)	
CSW			
No	62,720 (90.4)	34,645 (98.3)	44,402 (97.5)
Yes, in past 6 months	5,986 (8.6)	154 (0.4)	866 (1.9)
Unknown	669 (1.0)	443 (1.3)	285 (0.6)
Gonorrhoea/chlamydia/syphilis in past year			
Not tested	43,145 (62.2)	26,059 (73.9)	14,545 (31.9)
Tested, negative	17,375 (25.0)	5,740 (16.3)	16,843 (37.0)
Tested, positive	8,088 (11.7)	3,177 (9.0)	11,614 (25.5)
Tested, unknown	140 (0.2)	40 (0.1)	301 (0.7)
Unknown	627 (0.9)	226 (0.6)	2,250 (4.9)
Victim sexual violence			
No	67,378 (97.1)	34,812 (98.8)	40,092 (88.0)
Yes	1,016 (1.5)	39 (0.1)	135 (0.3)
Unknown	669 (1.0)	231 (0.7)	5,019 (11.0)
At least one indication (including MSM)			
No	2,603 (3.8)	1,474 (4.2)	0 (0.0)
Yes	66,772 (96.2)	33,768 (95.8)	45,553 (100.0)

Figure 2.6 Percentage of positive STI tests by risk factor, gender and type of sexual contact, 2017



*Low/medium level of education: no education, elementary school, lbo, mavo, vmbo, mbo.

Footnote: STI includes: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Table 2.5 Number of consultations by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women n (%)	Heterosexual men n (%)	MSM n (%)
Socioeconomic status			
High	19,549 (28.2)	9,217 (26.2)	14,005 (30.7)
Medium	17,350 (25.0)	8,391 (23.8)	10,318 (22.7)
Low	28,547 (41.1)	16,561 (47.0)	19,512 (42.8)
Unknown	3,929 (5.7)	1,073 (3.0)	1,718 (3.8)
Educational level #			
High	43,840 (63.2)	21,188 (60.1)	29,662 (65.1)
Low/medium	21,426 (30.9)	12,453 (35.3)	12,497 (27.4)
Unknown	4,109 (5.9)	1,601 (4.5)	3,394 (7.5)
Number of partners in past 6 months			
0 partners	405 (0.6)	210 (0.6)	254 (0.6)
1 partner	18,429 (26.6)	6,285 (17.8)	3,556 (7.8)
2 partners	18,032 (26.0)	7,201 (20.4)	4,621 (10.1)

Table 2.5 (continued) Number of consultations by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women n (%)	Heterosexual men n (%)	MSM n (%)
3 or more partners	30,219 (43.6)	21,327 (60.5)	36,271 (79.6)
Unknown	2,290 (3.3)	219 (0.6)	851 (1.9)
Condom use if last sexual contact was steady*			
No	22,083 (82.1)	9,873 (77.8)	10,971 (75.8)
Yes	4,404 (16.4)	2,628 (20.7)	3,103 (21.4)
Unknown	410 (1.5)	183 (1.4)	395 (2.7)
Condom use if last sexual contact was casual*			
No	29,498 (70.9)	15,705 (71.0)	16,319 (53.5)
Yes	11,253 (27.0)	5,953 (26.9)	13,198 (43.2)
Unknown	873 (2.1)	462 (2.1)	1,005 (3.3)
Anal sex, in past 6 months			
No	48,697 (81.0)		3,713 (8.9)
Yes, insertive	0 (0.0)		8,469 (20.4)
Yes, receptive	11,401 (19.0)		5,134 (12.4)
Yes, insertive and receptive			24,253 (58.3)
Receptive oral sex with a man, in past 6 months			
No	9,133 (13.2)		1,386 (3.0)
Yes	49,114 (70.8)		43,228 (94.9)
Unknown	11,128 (16.0)		939 (2.1)
Client of CSW			
No	68,421 (98.6)	32,072 (91.0)	44,019 (96.6)
Yes, in past 6 months	223 (0.3)	2,751 (7.8)	1,257 (2.8)
Unknown	731 (1.1)	419 (1.2)	277 (0.6)
Swinger**			
No	34,295 (81.4)	18,388 (85.1)	25,502 (72.0)
Yes	1,292 (3.1)	393 (1.8)	2,684 (7.6)
Unknown	6,570 (15.6)	2,830 (13.1)	7,227 (20.4)
Previous HIV test			
No	45,232 (65.2)	22,827 (64.8)	5,143 (11.3)
Yes, positive	33 (0.0)	25 (0.1)	5,564 (12.2)
Yes, negative	22,495 (32.4)	11,611 (32.9)	34,576 (75.9)
Yes, result unknown	106 (0.2)	44 (0.1)	46 (0.1)
Unknown	1,509 (2.2)	735 (2.1)	224 (0.5)

Low/medium level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

* Type of sexual contact was missing for 1% (n=1,854).

** Voluntary question, answered by 55% (n=82,554).

Table 2.6 Number of consultations and percentage of positive tests by age, level of education, gender and type of sexual contact, 2017

Age group (years)	Women		Heterosexual men		MSM	
	Low / medium level of education* n (%)	High level of education** n (%)	Low/ medium level of education* n (%)	High level of education** n (%)	Low/ medium level of education* n (%)	High level of education** n (%)
≤ 19	4,195 (29.2)	4,167 (19.4)	1,350 (27.5)	946 (22.2)	495 (22.6)	524 (21.4)
20-24	10,871 (21.7)	28,674 (15.4)	6,150 (25.3)	12,117 (18.5)	1,969 (27.1)	4,284 (20.0)
25-34	4,209 (14.5)	9,307 (12.1)	3,712 (22.1)	6,668 (16.6)	3,643 (24.9)	9,928 (20.7)
≥35	2,151 (9.5)	1,692 (8.6)	1,241 (11.2)	1,457 (13.0)	6,390 (21.0)	14,925 (18.0)
Total	21,426 (20.5)	43,840 (14.8)	12,453 (23.2)	21,188 (17.7)	12,497 (23.2)	29,662 (19.2)

* Low/medium level of education: no education, elementary school, lbo, mavo, vmbo, mbo.

** High level of education: havo, vwo, university of applied sciences, university.

Footnote: level of education, gender and type of sexual contact was missing for 6% (n=9,105).

Table 2.7a Number of 'big five' STI diagnoses and percentage of positive tests by gender and type of sexual contact, 2017

Diagnosis	Women n (%)	Heterosexual men n (%)	MSM n (%)
Chlamydia	10,653 (15.4)	6,454 (18.3)	4,297 (9.5)
Gonorrhoea	1,101 (1.6)	658 (1.9)	5,005 (11.0)
Syphilis, infectious*	28 (0.1)	30 (0.2)	1170 (2.6)
HIV	12 (0.0)	18 (0.1)	256 (0.6)
Hepatitis B, infectious	22 (0.3)	40 (0.7)	31 (0.3)

* Infectious syphilis includes primary infection, secondary infection and latens recens

Footnote: big five STI includes chlamydia, gonorrhoea, syphilis, HIV and hepatitis B.

Table 2.7b Number of other STI diagnoses and percentage of positive tests (in case of laboratory-confirmed diagnoses) by gender and type of sexual contact, 2017

Laboratory-confirmed diagnoses	Women	Heterosexual men	MSM
Syphilis, non-infectious or not specified			
latens tarda	20 (0.1)	17 (0.1)	130 (0.3)
not specified	8 (0.0)	9 (0.0)	103 (0.2)
Hepatitis B, recovered	243 (3.0)	232 (4.1)	470 (4.7)
Hepatitis C	1 (3.3)	0 (0.0)	49 (1.6)
<i>Lymphogranuloma venereum</i>			271 (9.3)
Other syndromes/clinical diagnoses			
Trichomoniasis*	63	15	4
Genital herpes			
primary: HSV1**	118	51	69
primary: HSV2**	96	91	50
primary: HSV unknown	20	16	4
recurrent	8	8	4
Genital warts	546	755	318
Non-specified urethritis	0	932	735
Proctitis	1	2	166
Candidiasis	468	85	46
Bacterial vaginosis	1,211	0	0
Scabies	3	29	37
Pubic Lice	0	0	14
Ulcus e.c.i.	3	7	30

* Trichomoniasis tests are usually performed on clinical indication (e.g. women with bacterial vaginosis), and in persons notified for trichomoniasis.

** Laboratory-confirmed.

2.3 Repeated testing at the Sexual Health Centres

Table 2.8 Number and percentage of unique clients visiting the SHC repeatedly and the percentage of positive STI tests at each visit by gender and type of sexual contact, 2017

No. of consultation	Women		Heterosexual men		MSM	
	n (%)	% STI	n (%)	% STI	n (%)	% STI
1 st	60,973 (100.0)	16.5	32,045 (100.0)	19.4	29,694 (100.0)	19.6
2 nd	6,972 (11.4)	16.2	2,820 (8.8)	22.7	10,268 (34.6)	21.0
3 rd	1,113 (1.8)	12.3	326 (1.0)	16.3	3,522 (11.9)	24.4
4 th	236 (0.4)	10.6	41 (0.1)	19.5	1,390 (4.7)	24.0

Footnote: Number of visits reach up to 11 in MSM, to 8 in women and to 6 in heterosexual men. 5th–11th consultation not shown because of low numbers.

Table 2.9 Characteristics of unique clients at each consultation by, gender and type of sexual contact, 2017

	Women n (%)	Heterosexual men n (%)	MSM n (%)
Notified for STI/HIV			
1 st	9,790 (16.1)	8,617 (26.9)	5,480 (18.5)
2 nd	1,187 (17.0)	849 (30.1)	2,016 (19.6)
3 rd	115 (10.3)	95 (29.1)	795 (22.6)
STI-related symptoms			
1 st	17,148 (28.1)	10,071 (31.4)	5,451 (18.4)
2 nd	2,271 (32.6)	1,119 (39.7)	1,922 (18.7)
3 rd	294 (26.4)	144 (44.2)	678 (19.3)
STI/HIV-endemic area			
1 st	12,817 (21.0)	10,050 (31.4)	6,472 (21.8)
2 nd	1,991 (28.6)	1,169 (41.5)	2,295 (22.4)
3 rd	455 (40.9)	170 (52.1)	863 (24.5)
Age <25 years			
1 st	43,958 (72.1)	19,185 (59.9)	5,473 (18.4)
2 nd	4,526 (64.9)	1,693 (60.0)	1,523 (14.8)
3 rd	514 (46.2)	193 (59.2)	431 (12.2)

Table 2.9 (continued) Characteristics of unique clients at each consultation by gender and type of sexual contact, 2017

	Women n (%)	Heterosexual men n (%)	MSM n (%)
Partner in risk group			
1 st	16,547 (27.1)	8,912 (27.8)	
2 nd	2,663 (38.2)	889 (31.5)	
3 rd	590 (53.0)	117 (35.9)	
CSW			
1 st	3,841 (6.3)	116 (0.4)	509 (1.7)
2 nd	1,379 (19.8)	33 (1.2)	193 (1.9)
3 rd	526 (47.3)	5 (1.5)	94 (2.7)
Gonorrhoea/chlamydia/syphilis in past year			
1 st	5,458 (9.0)	2,061 (6.4)	4,849 (16.3)
2 nd	2,072 (29.7)	922 (32.7)	3,526 (34.3)
3 rd	434 (39.0)	162 (49.7)	1,832 (52.0)
≥3 sexual contacts in the past 6 months			
1 st	25,926 (42.5)	19,052 (59.5)	22,733 (76.6)
2 nd	3,457 (49.6)	1,997 (70.8)	8,550 (83.3)
3 rd	631 (56.7)	239 (73.3)	3,108 (88.2)
Client of CSW			
1 st	162 (0.3)	2,506 (7.8)	940 (3.2)
2 nd	45 (0.6)	221 (7.8)	216 (2.1)
3 rd	11 (1.0)	19 (5.8)	59 (1.7)
Known HIV positive			
1 st	26 (0.0)	21 (0.1)	2,979 (10.0)
2 nd	3 (0.0)	4 (0.1)	1,410 (13.7)
3 rd	4 (0.4)	0 (0.0)	712 (20.2)
Low/medium level of education*			
1 st	18,246 (29.9)	11,184 (34.9)	8,224 (27.7)
2 nd	2,588 (37.1)	1,094 (38.8)	2,873 (28.0)
3 rd	459 (41.2)	144 (44.2)	950 (27.0)

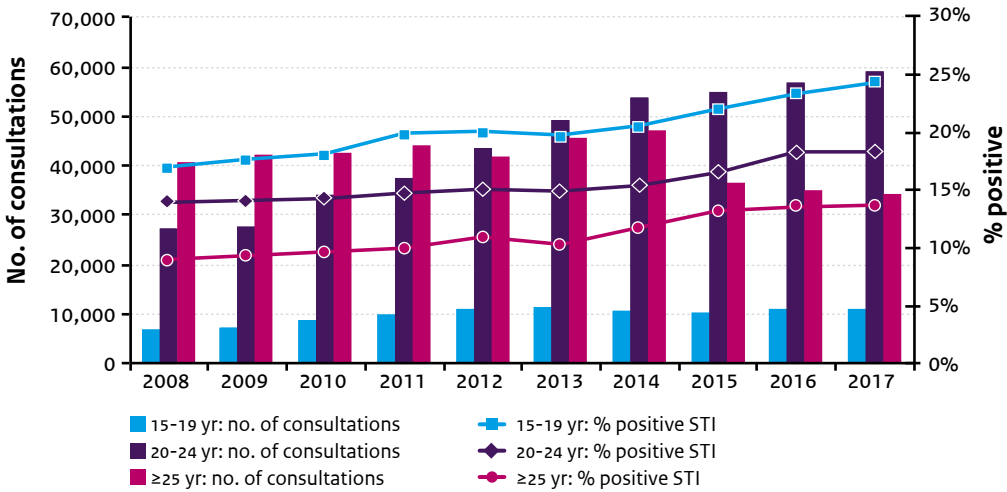
Footnote: Number of visits reach up to 11 in MSM, to 8 in women and to 6 in heterosexual men. 4th-11th consultation not shown because of low numbers.

* Low/medium level of education: no education, elementary school, lbo, mavo, vmbo, mbo.

2.4 Trends in Sexual Health Centre consultations

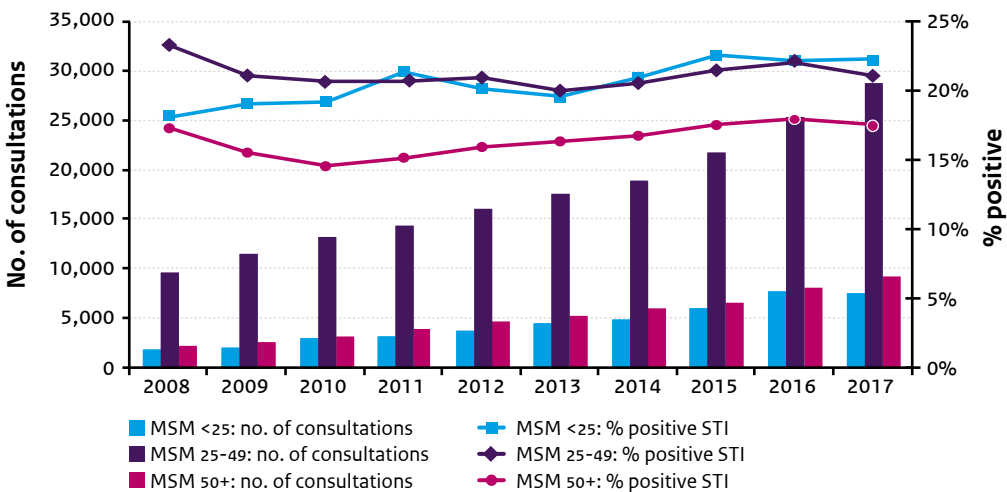
2.4.1 Trends in specific risk groups

Figure 2.7 Number of consultations and percentage of positive STI tests among women and heterosexual men by age group, 2008-2017



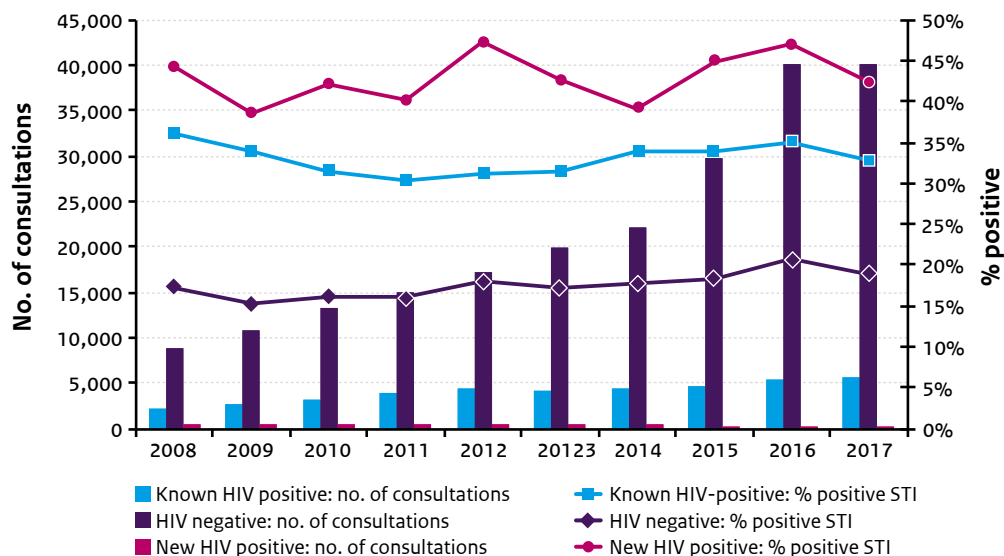
Footnote: STI includes: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Figure 2.8 Number of consultations and percentage of positive STI tests among MSM by age group, 2008-2017



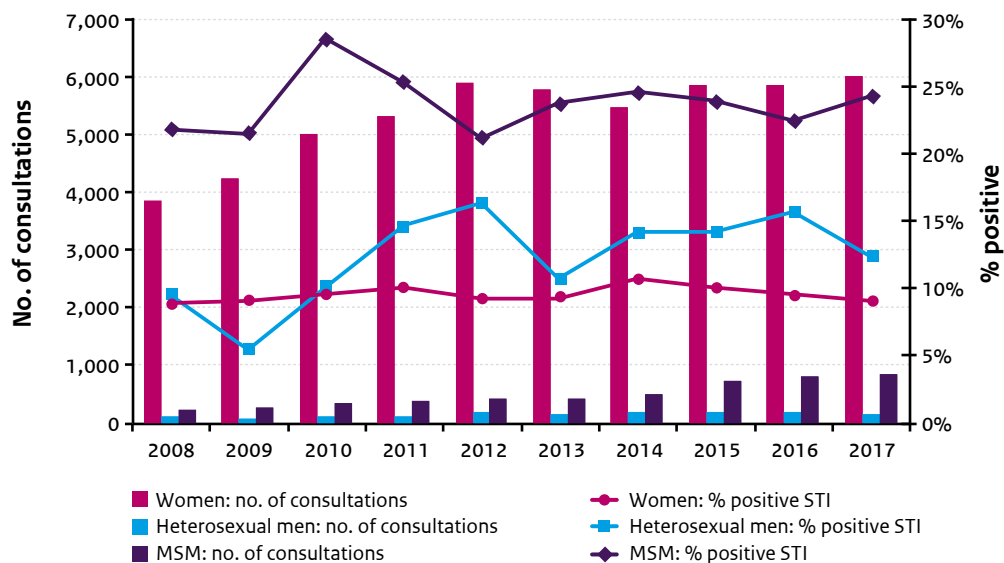
Footnote: STI includes: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Figure 2.9 Number of consultations and percentage of positive STI tests among MSM by HIV status, 2008-2017



Footnote: STI includes: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

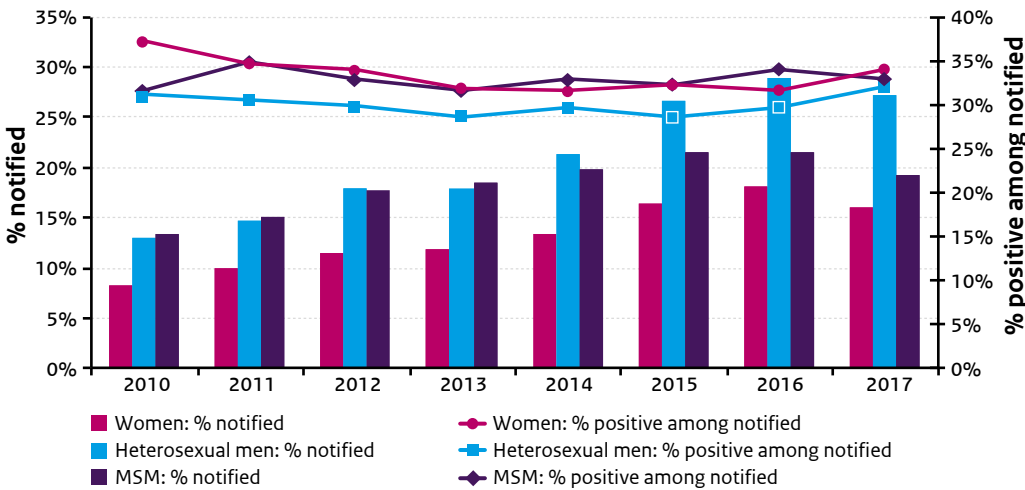
Figure 2.10 Number of consultations and percentage of positive STI tests among commercial sex workers by gender and type of sexual contact, 2008-2017



Footnote: STI includes: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

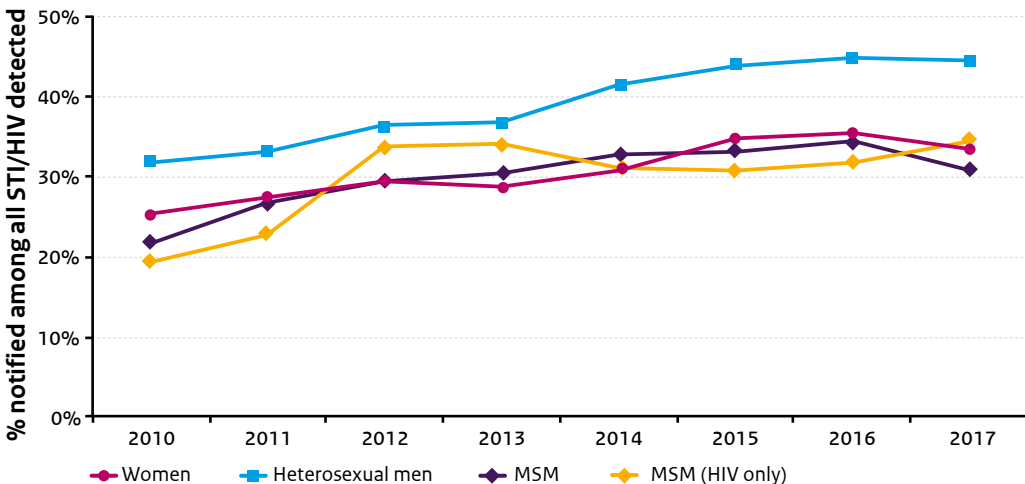
2.4.2 Partner notification trends

Figure 2.11 Percentage of SHC clients who reported being notified for potential risk of exposure to STI and the STI positivity rate among notified clients by gender and type of sexual contact, 2010-2017



Footnote: STI includes chlamydia, gonorrhoea, infectious syphilis, HIV, and infectious hepatitis B.

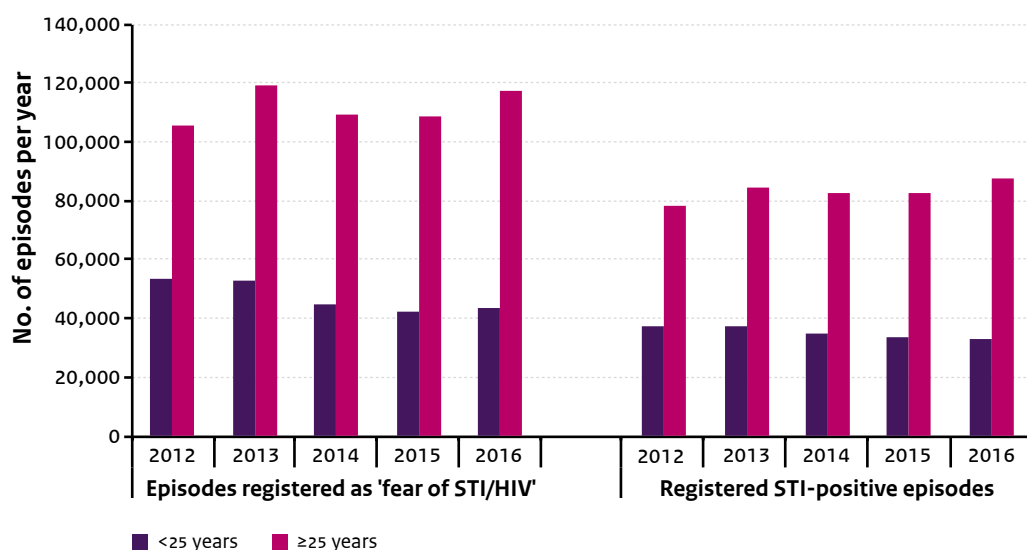
Figure 2.12 Percentage of STI detected through partner notification among heterosexual men, MSM and women, and the percentage of HIV detected through partner notification among MSM, 2010-2017



Footnote: STI includes chlamydia, gonorrhoea, infectious syphilis, HIV, and infectious hepatitis B.

2.5 General practice

Figure 2.13 Estimated annual number of reported episodes of fear of STI/HIV and positive STI diagnoses at GPs by age group, based on extrapolation from GP practices in NIVEL-PCD, 2012-2016



Footnote 1: Diagnoses included are chlamydia, gonorrhoea, syphilis, HIV, trichomonas, genital herpes, genital warts, non-specific urethritis.

Footnote 2: About 70% of the total Dutch population consists of persons aged ≥25 years and about 30% consists of persons aged <25 years.

Table 2.10 Annual reporting rate (number of STI-related episodes per 1,000 population) of STI-diagnoses and fear of STI/HIV at GPs in the Netherlands by gender and age group, based on GP practices in NIVEL-PCD, 2012-2016

	Women n/1,000			Men n/1,000			Total n/1,000		
	All	<25	≥25	All	<25	≥25	All	<25	≥25
2012	17.9	24.3	15.4	14.7	12.6	15.7	16.3	18.5	15.6
2013	18.7	23.9	16.5	16.3	13.1	17.8	17.5	18.5	17.2
2014	16.9	20.8	15.4	15.2	12.0	16.7	16.1	16.4	16.1
2015	16.1	19.6	15.0	15.3	11.7	16.9	15.7	15.7	15.9
2016	16.9	19.8	15.9	16.2	11.8	18.0	16.5	15.8	16.9

Footnote: Diagnoses included are chlamydia, gonorrhoea, syphilis, HIV, trichomonas, genital herpes, genital warts, non-specific urethritis.

Table 2.11 Characteristics of STI-patients seen in primary care surveillance (based on STI-consultation questionnaires in 40-45 sentinel practices of NIVEL-PCD), from 2013-2017

	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)
Gender and sexual preference					
Women	328 (61)	324 (55)	268 (57)	232 (53)	307 (56)
Heterosexual men	197 (36)	210 (35)	151 (32)	156 (36)	177 (32)
MSM	14 (3)	33 (6)	21 (4)	31 (7)	33 (6)
Men, unknown preference	1 (0)	22 (4)	30 (6)	18 (4)	29 (5)
Migration background					
Dutch	430 (80)	498 (84)	390 (83)	374 (86)	465 (85)
Non-Dutch non-Western	84 (16)	78 (13)	64 (14)	43 (10)	62 (11)
Non-Dutch Western	4 (1)	4 (1)	10 (2)	10 (2)	6 (1)
Unknown	22 (4)	12 (2)	6 (1)	10 (2)	13 (2)
Age group					
< 25 years	210 (39)	198 (33)	169 (36)	149 (34)	167 (31)
≥ 25 years	330 (61)	393 (66)	301 (64)	288 (66)	379 (69)
Recent sexual contacts*					
Steady partner	246 (46)	247 (42)	197 (42)	171 (39)	242 (44)
Casual partner(s)	214 (40)	231 (39)	186 (40)	161 (37)	206 (38)
Paid sex contacts	4 (1)	10 (2)	6 (1)	1 (0)	8 (1)
Unknown	76 (14)	104 (18)	81 (17)	104 (24)	108 (20)
Reason for STI-consultation*					
STI-related complaints	280 (52)	368 (62)	248 (53)	331 (76)	311 (57)
Notified	70 (13)	76 (13)	3 (1)	4 (1)	107 (20)
Check-up	80 (15)	41 (7)	20 (4)	26 (6)	36 (7)
Recent risk	58 (11)	47 (8)	33 (7)	31 (7)	38 (7)
Fear for STI	10 (2)	14 (2)	3 (1)	3 (1)	4 (1)
Other/unknown	42 (8)	46 (8)	163 (35)	42 (10)	50 (9)
Total	540	592	470	437	546

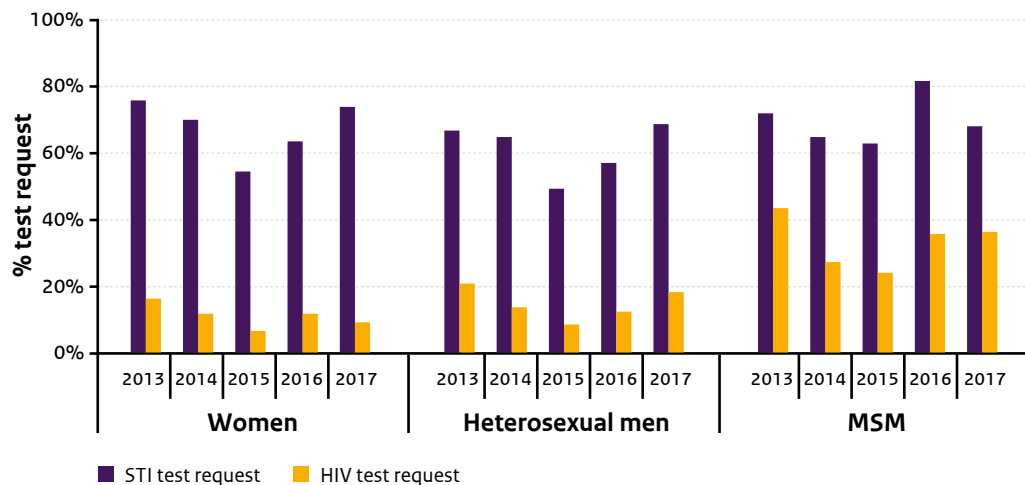
* Some patients in 2013, 2014 and 2017 are included in more than one category.

Table 2.12 Testing rate and positivity rate for STI (chlamydia, gonorrhoea, syphilis, hepatitis B) and HIV in the primary care surveillance network (sentinel practices), 2017

	STI test		HIV test#
	n tests (% tested)	n pos (% pos)	n tests (% tested)
Gender and sexual preference			
Women	223 (73)	108 (48)	28 (9)
Heterosexual men	120 (68)	68 (57)	32 (18)
MSM	22 (67)	16 (73)	12 (36)
Men, unknown preference	16 (55)	10 (63)	2 (7)
Migration background			
Dutch	326 (70)	173 (53)	55 (12)
Non-Dutch non-Western	42 (68)	24 (57)	17 (27)
Non-Dutch Western	4 (67)	1 (25)	1 (17)
Unknown	9 (69)	4 (44)	1 (8)
Age group			
< 25 years	130 (78)	72 (55)	21 (13)
≥ 25 years	251 (66)	130 (52)	53 (14)
Recent sexual contacts			
Steady partner	160 (66)	85 (53)	17 (7)
Casual partner(s)	174 (85)	85 (49)	47 (23)
Paid sex contacts	6 (75)	3 (50)	4 (50)
Unknown	52 (48)	35 (67)	8 (7)
Reason for STI-consultation			
STI-related complaints	188 (61)	99 (53)	38 (12)
Notified	83 (78)	63 (76)	15 (14)
Check-up	34 (94)	12 (35)	8 (22)
Recent risk	37 (97)	10 (27)	6 (16)
Fear for STI	4 (100)	0 (0)	2 (50)
Other/unknown	35 (70)	18 (51)	5 (10)
Total	381 (70)	202 (53)	74 (14)

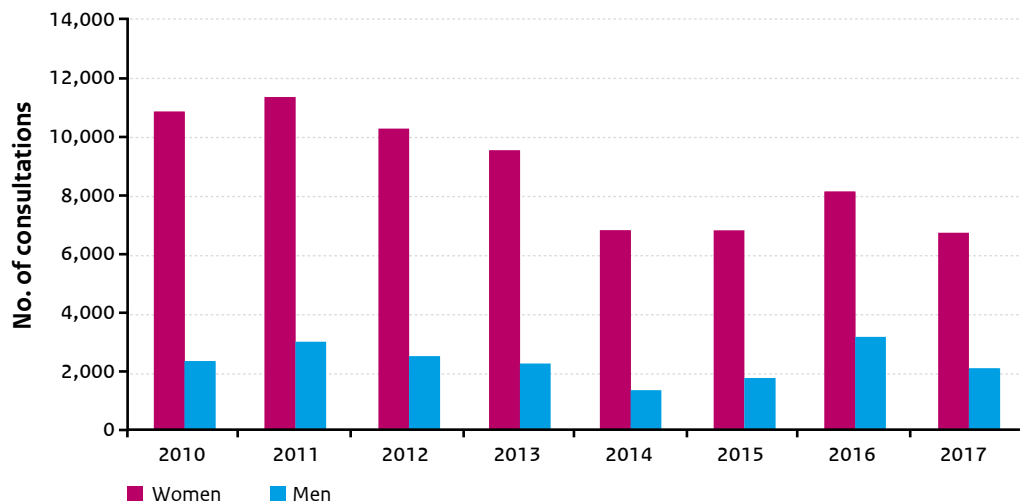
No HIV-tests were positive.

Figure 2.14 Testing rate for STI (chlamydia, gonorrhoea, syphilis, HepB) and HIV during STI-related consultations in the Sentinel Practices of NIVEL-PCD, 2013-2017



2.6 Sense

Figure 2.15 Number of Sense consultations by gender, 2010-2017



Footnote: Twenty-one transgenders were excluded from the analyses.

Table 2.13 Number of Sense consultations by age and gender, 2017

Age (years)	Women n (%)	Men n (%)
≤ 14	476 (7.1)	57 (2.8)
15-19	3,658 (54.5)	836 (40.4)
20-24	2,153 (32.1)	758 (36.7)
≥ 25	422 (6.3)	417 (20.2)
Total	6,709	2,068

Footnote: Twenty-one transgenders were excluded from the analyses.

Table 2.14 Number of Sense consultations by country of birth and gender, 2017

Country of birth	Women n (%)	Men n (%)
The Netherlands	4,281 (63.8)	1,292 (62.5)
Netherlands Antilles	244 (3.6)	59 (2.9)
Suriname	386 (5.8)	123 (5.9)
Noth Africa/Morocco	149 (2.2)	76 (3.7)
Turkey	114 (1.7)	70 (3.4)
Eastern Europe	299 (4.5)	43 (2.1)
Sub-Saharan Africa	255 (3.8)	65 (3.1)
Latin America	171 (2.5)	58 (2.8)
Asia	297 (4.4)	133 (6.4)
Else	513 (7.6)	149 (7.2)
Total	6,709	2,068

Footnote: Twenty-one transgenders were excluded from the analyses.

Table 2.15 Subjects discussed during Sense consultations by gender, 2017

Subjects	Women n (%)	Men n (%)
STI	758 (10.1)	372 (16.7)
Sexuality	1,904 (25.2)	1,241 (55.9)
Birth control	3,053 (40.5)	31 (1.4)
Unwanted sexual behaviour/sexual violence	518 (6.9)	70 (3.2)
Unintended pregnancy	665 (8.8)	15 (0.7)
Else	643 (8.5)	493 (22.2)
Total	7,541	2,222

Footnote: Twenty-one transgenders were excluded from analyses. Numbers do not add up to total number of consultations, as for some consultations multiple topics were registered.

Table 2.16 Sexuality topics discussed during Sense consultations by gender, 2017

Questions/problems related to:	Women n (%)	Men n (%)
Human body	190 (9.6)	100 (7.9)
Sexual dysfunction	933 (47.3)	464 (36.4)
Sexual orientation	24 (1.2)	74 (5.8)
Gender identity	0 (0.0)	6 (0.5)
Sexual behaviour/sex techniques	446 (22.6)	332 (26.1)
Unknown/other	378 (19.2)	297 (23.3)
Total	1,971	1,273

Footnote: Numbers do not add up to total number of sexuality topics in Table 2.15, as for some consultations multiple sexuality topics were registered.

2.7 Sexual Health in the Lifestyle monitor

Table 2.17 Characteristics of respondents to the national Lifestyle monitor ('Leefstijlmonitor') questionnaire 2016, by gender and sexual orientation

	Women	Heterosexual men	Men attracted to men*
	n %	n %	n %
Age group			
16-29 years	751 (19.7)	603 (18.8)	27 (21.8)
30-44 years	795 (20.8)	732 (22.9)	28 (22.6)
45-59 years	981 (25.7)	858 (26.8)	40 (32.3)
60 years and older	1,293 (33.8)	1,006 (31.4)	29 (23.4)
Migration background			
Dutch	3,130 (81.9)	2,723 (85.1)	93 (75.0)
Non-Dutch Western	383 (10.0)	257 (8.0)	18 (14.5)
Non-Dutch non-Western	307 (8.0)	219 (6.8)	13 (10.5)
Urbanisation			
(Highly) urbanized areas	1,966 (51.5)	1,561 (48.8)	78 (62.9)
Moderately urbanized area	667 (17.5)	601 (18.8)	19 (15.3)
Less/non-urbanized areas	1,187 (31.1)	1,037 (32.4)	27 (21.8)

* The questionnaire scored respondents' sexual attraction as own sex, opposite sex or both; we included men attracted to men or men attracted to both sexes in the category 'Men attracted to men'.

Source: CBS in cooperation with Rutgers/SANL/RIVM

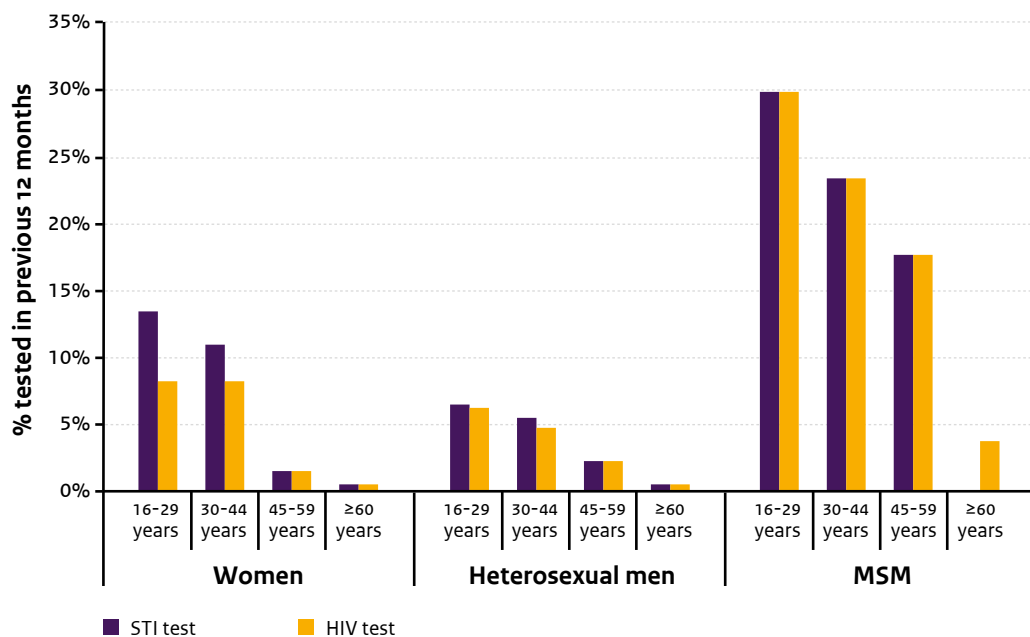
Table 2.18 Sexual behavioural characteristics of respondents to the national Lifestyle Monitor ('Leefstijlmonitor') questionnaire 2016, by age, gender and sexual orientation

	Women	Heterosexual men	Men attracted to men*
	n %	n %	n %
Two or more sex partners in the past 12 months			
16-29 years	99 (14.1)	98 (17.6)	9 (37.5)
30-44 years	31 (4.4)	69 (10.1)	7 (25.9)
45-59 years	14 (1.7)	33 (4.2)	10 (30.3)
60 years and older	4 (0.4)	15 (1.8)	2 (8.7)
Last sexual contact with a casual partner			
16-29 years	74 (9.9)	91 (15.1)	7 (25.9)
30-44 years	28 (3.5)	54 (7.4)	4 (14.3)
45-59 years	17 (1.7)	34 (4.0)	5 (12.5)
60 years and older	4 (0.3)	20 (2.0)	1 (3.4)
Last sexual contact with a steady partner			
16-29 years	435 (57.9)	274 (45.4)	10 (37.0)
30-44 years	622 (78.2)	584 (79.8)	20 (71.4)
45-59 years	655 (66.8)	650 (75.8)	19 (47.5)
60 years and older	436 (33.7)	494 (49.1)	14 (48.3)
Condom use at last sexual contact if contact was casual			
16-29 years	35 (47.3)	52 (57.1)	5 (71.4)
30-44 years	17 (60.7)	42 (77.8)	3 (75.0)
45-59 years	7 (41.2)	19 (55.9)	4 (80.0)
60 years and older	1 (25.0)	10 (50.0)	1 (100.0)

* The questionnaire scored respondents' sexual attraction as own sex, opposite sex or both; we included men attracted to men or men attracted to both sexes in the category 'Men attracted to men'.

Source: CBS in cooperation with Rutgers/SANL/RIVM

Figure 2.16 Percentage tested for STI and HIV in the previous year in the national Lifestyle Monitor ('Leefstijlmonitor') questionnaire 2016, by age group, gender and sexual preference



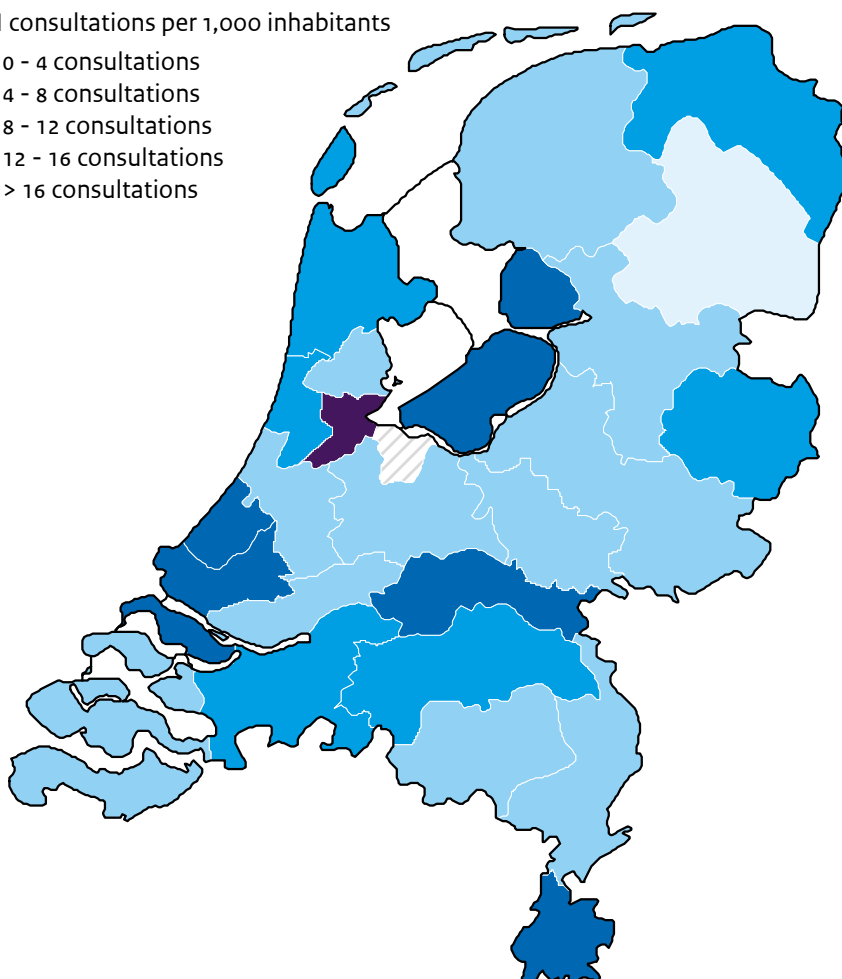
Source: LSM 2016 (CBS in cooperation with Rutgers/SANL/RIVM)

2.8 Consultations and characteristics of Sexual Health Centre attendees by region

Figure 2.17 Number of persons with at least one SHC consultation per 1,000 inhabitants of 15-65 years of age by region, 2017

STI consultations per 1,000 inhabitants

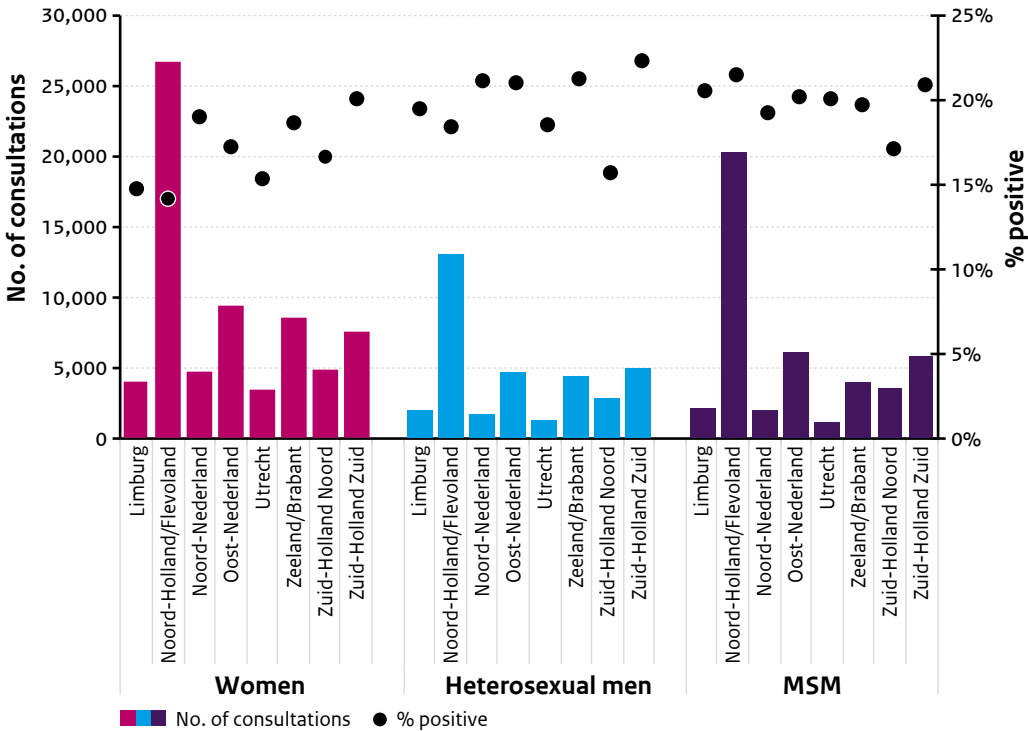
- 0 - 4 consultations
- 4 - 8 consultations
- 8 - 12 consultations
- 12 - 16 consultations
- > 16 consultations



Footnote 1: GGD Amsterdam = 47 per 1,000 inhabitants.

Footnote 2: GGD Gooi en Vechtstreek (grey striped region) does not have an SHC. Hence, no STI data were available for this region.

Figure 2.18 Number of consultations and percentage of positive STI tests by region, gender and type of sexual contact, 2017



Footnote: STI include: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Figure 2.19 Distribution of age and type of sexual contact of all SHC consultations by region, 2017

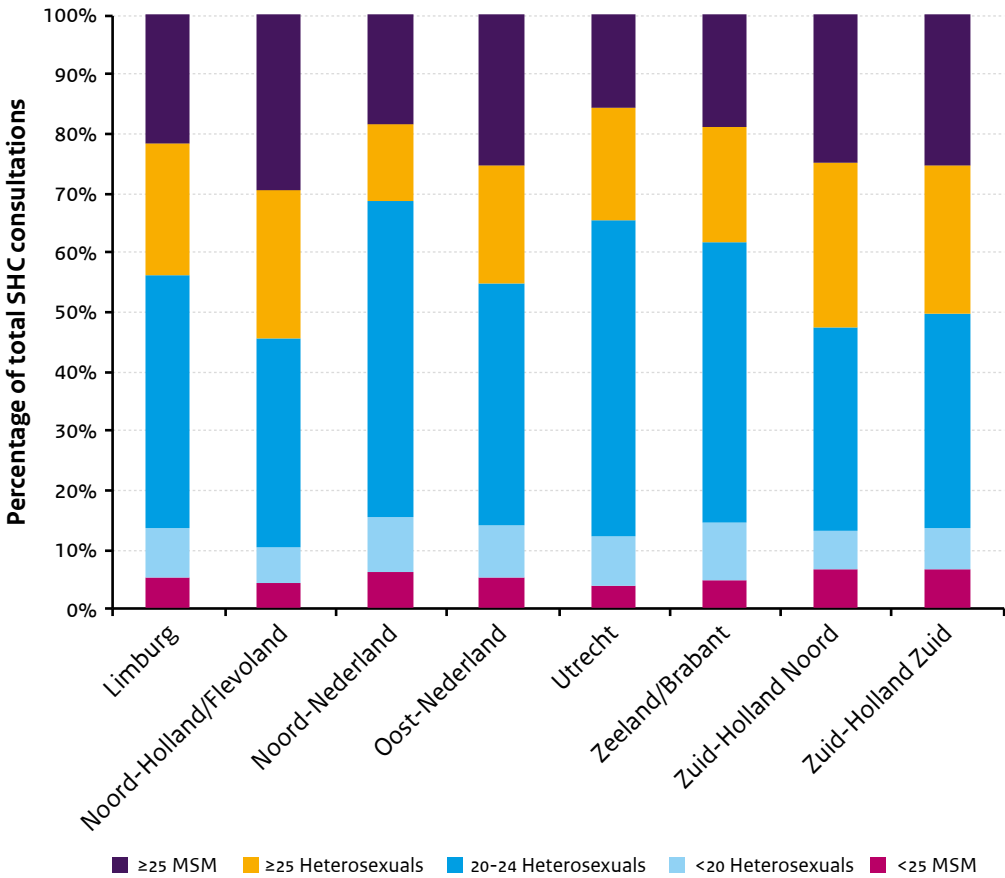


Figure 2.20 Distribution of notified consultations and/or consultations with symptoms of all SHC consultations among heterosexuals ≥ 25 years by region, 2017

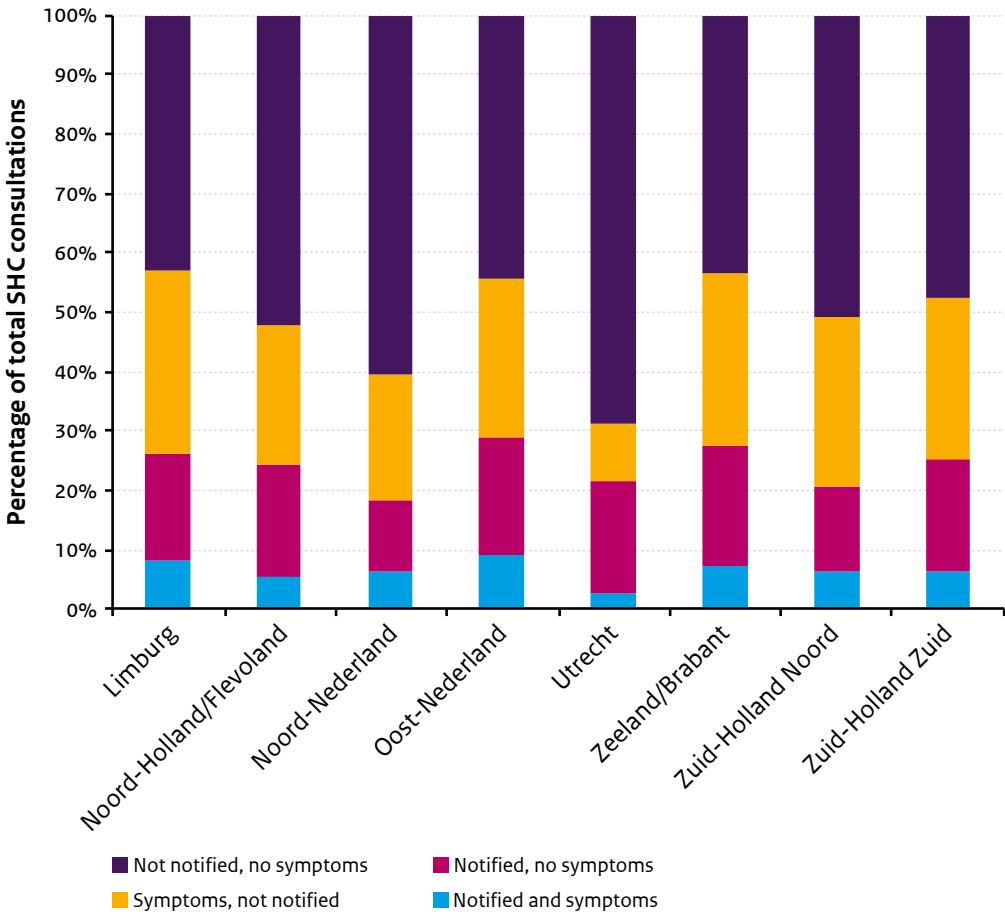
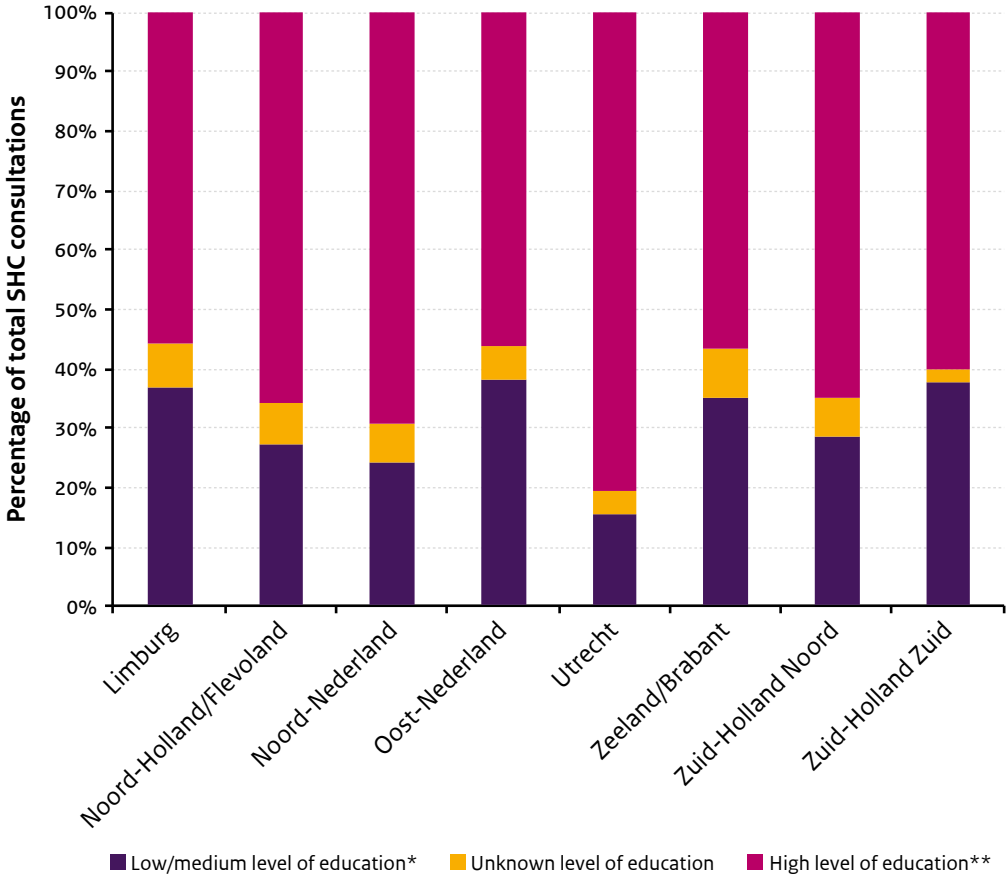


Figure 2.21 Distribution of level of education of all SHC consultations by region, 2017



* No education, elementary school, lbo, mavo, vmbo, mbo.

** Havo, VWO, university of applied sciences, university.

BACTERIAL STI

• Gonorrhoea
• Chlamydia
• Syphilis
• Bacterial vaginosis

• Bacterial vaginosis
• Bacterial vaginosis
• Bacterial vaginosis

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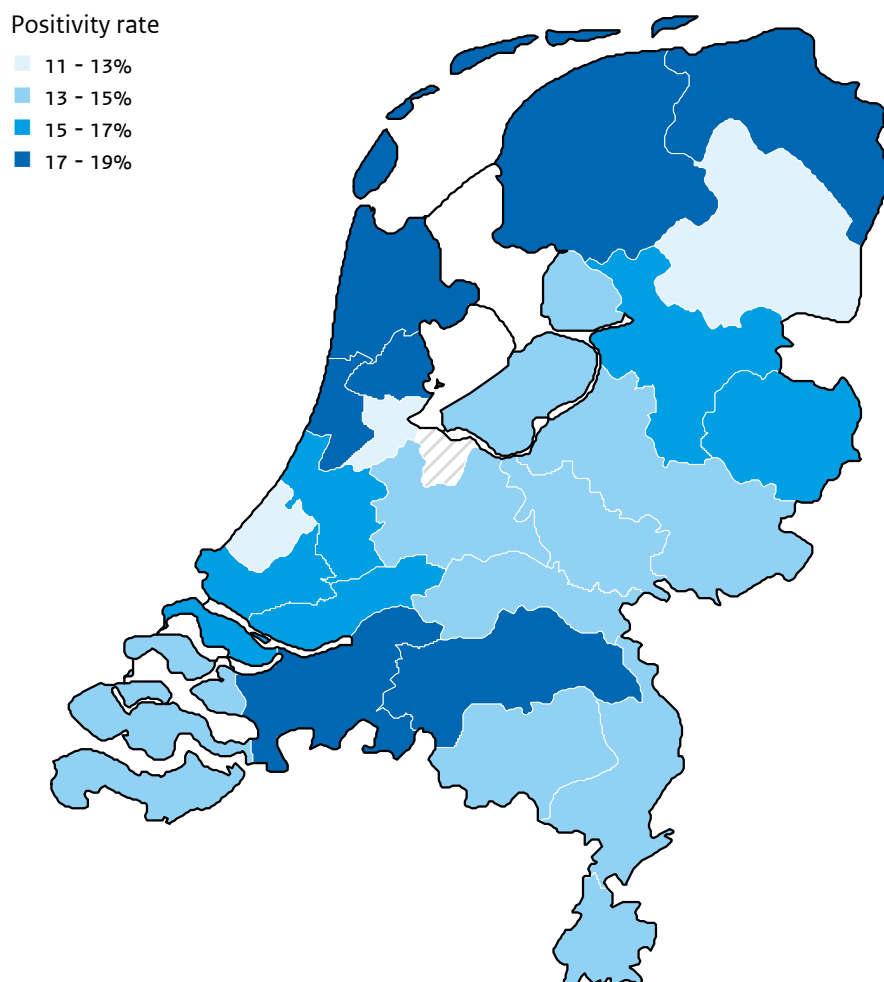
3 Chlamydia, including lymphogranuloma venereum

3.1 Key points

- In total, 21,404 chlamydia infections were diagnosed at SHC in 2017, 3% more than in 2016. An estimated 36,600 were diagnosed in general practice in 2016.
- Among SHC visitors, the chlamydia positivity rate remained stable among all sexual preferences compared to the previous year; for women this was 15.4% in 2017 and 15.3% in 2016, for heterosexual men this was 18.3% in 2017 and 18.0% in 2016, and for MSM this was 9.5% in 2017 and 10.0% in 2016.
- The highest positivity rates were found in people notified for chlamydia (35.7% in women, 34.0% in heterosexual men, and 20.8% in MSM).
- High positivity rates were also seen among adolescents (23.3% among girls and 23.5% among boys aged 15-19 years), heterosexual men from Dutch Antillean/Aruban origin (22.9%), women originating from Turkey (17.5%), heterosexual men with symptoms (25.5%) or an STI diagnosis in the past year (23.9%), and lower-educated women and heterosexual men (19.0% and 20.9%, respectively).
- Almost 23% of MSM with chlamydia was co-infected with gonorrhoea, 4.2% with syphilis and 1.3% was newly diagnosed with HIV.
- At general practices, the number of chlamydia episodes, estimated from data from NIVEL-PCD, is rather stable in men (around 15,600 episodes in 2016) and remained around 21,000 in women in 2014 to 2016. The annual reporting rate in women was higher in young women under 25 years of age (4.0 per 1,000) than in women 25 years and older (1.8 per 1,000), while in men, rates are similar in the two groups (1.9 and 1.8 per 1,000).
- The number of LGV cases increased again from 242 in 2016 to 271 in 2017. Also the number of tests increased with 10.0% (2,904). The positivity rate remained stable; 9.2% in 2016 and 9.3% in 2017. Of the LGV positives, 54.6% was HIV positive.

3.2 Sexual Health Centres: characteristics, risk groups and trends

Figure 3.1 Positivity rates of chlamydia by region, the Netherlands, 2017



Footnote: GGD Gooi en Vechtstreek (grey striped region) does not have an SHC. Hence, no STI data were available for this region.

Figure 3.2 Number of chlamydia tests and percentage of chlamydia positives by region, gender and type of sexual contact, 2017

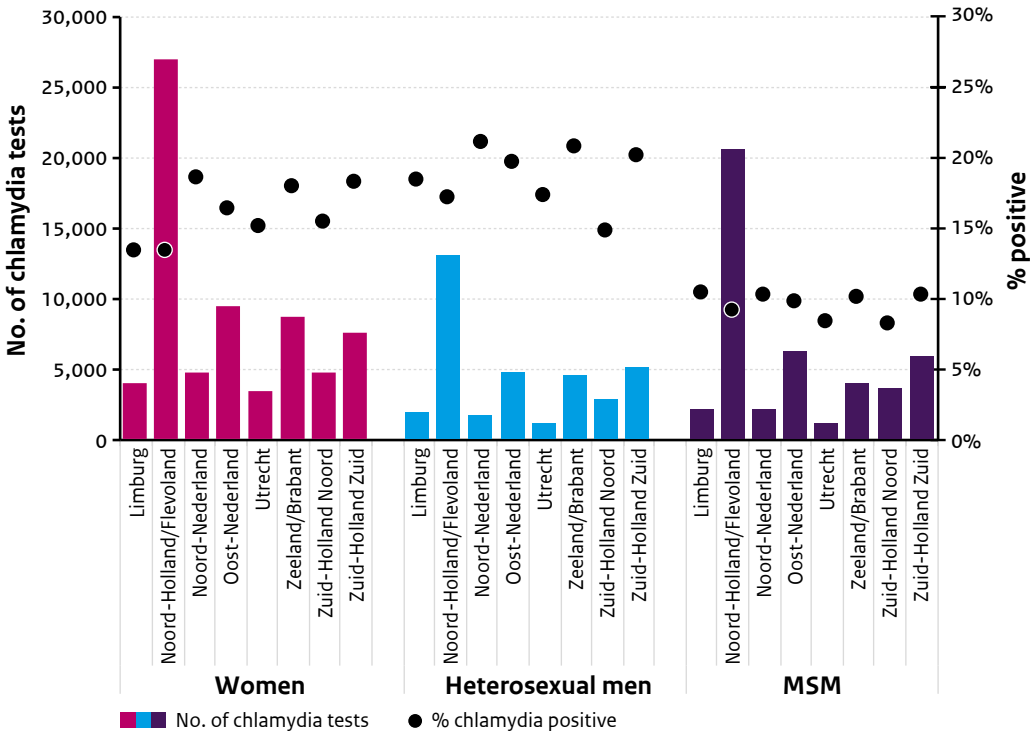


Figure 3.3 Total number of tests and positivity rate of chlamydia by gender and type of sexual contact, 2008-2017

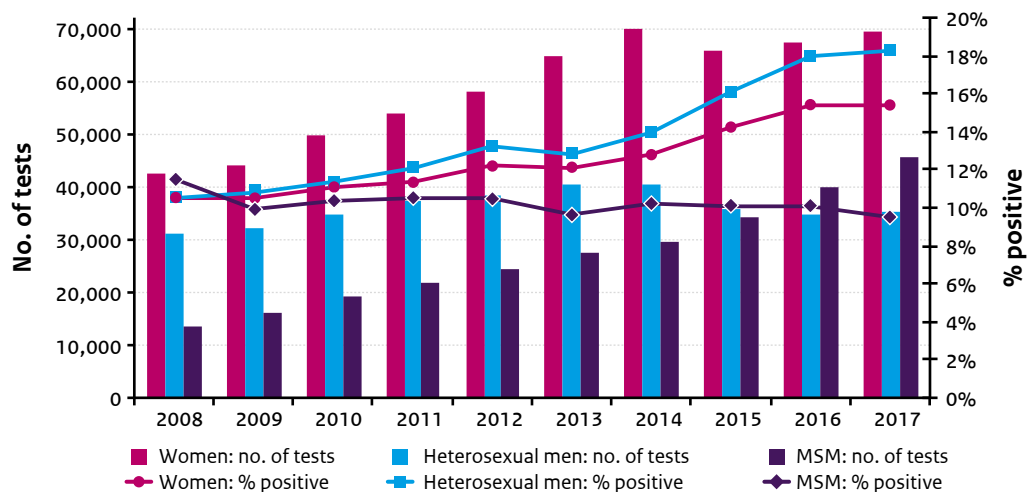


Figure 3.4 Trends in positivity rate for chlamydia in MSM by HIV-status, 2008-2017

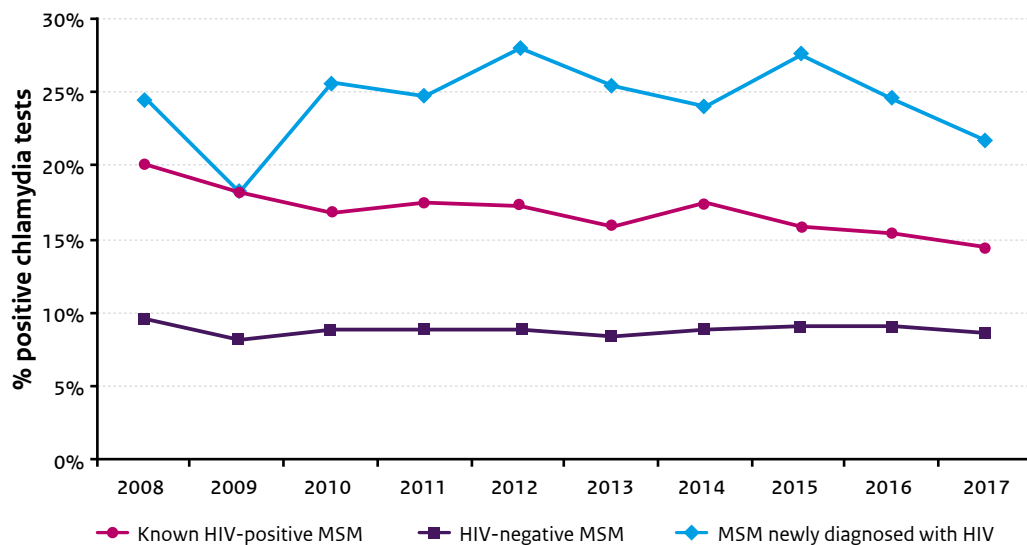


Table 3.1 Number of positive tests and persons tested for chlamydia by age, gender and type of sexual contact, 2017

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	1,999/8,580	23.3	556/2,369	23.5	115/1,062	10.8
20-24	6,673/40,470	16.5	3,739/18,709	20.0	660/6,541	10.1
25-29	1,383/11,441	12.1	1,423/8,064	17.6	827/8,294	10.0
30-34	295/3,449	8.6	444/2,860	15.5	604/6,267	9.6
35-39	112/1,779	6.3	132/1,235	10.7	511/5,323	9.6
40-44	43/1,061	4.1	67/670	10.0	372/4,296	8.7
45-49	62/1,143	5.4	48/542	8.9	405/4,407	9.2
50-54	42/775	5.4	24/322	7.5	352/4,032	8.7
≥ 55	44/586	7.5	21/422	5.0	451/5,231	8.6
Unknown	0/0	0.0	0/0	0.0	0/1	0.0
Total	10,653/69,284	15.4	6,454/35,193	18.3	4,297/45,454	9.5

Figure 3.5 Trends in positivity rate for chlamydia in women and heterosexual men by age group, 2008-2017

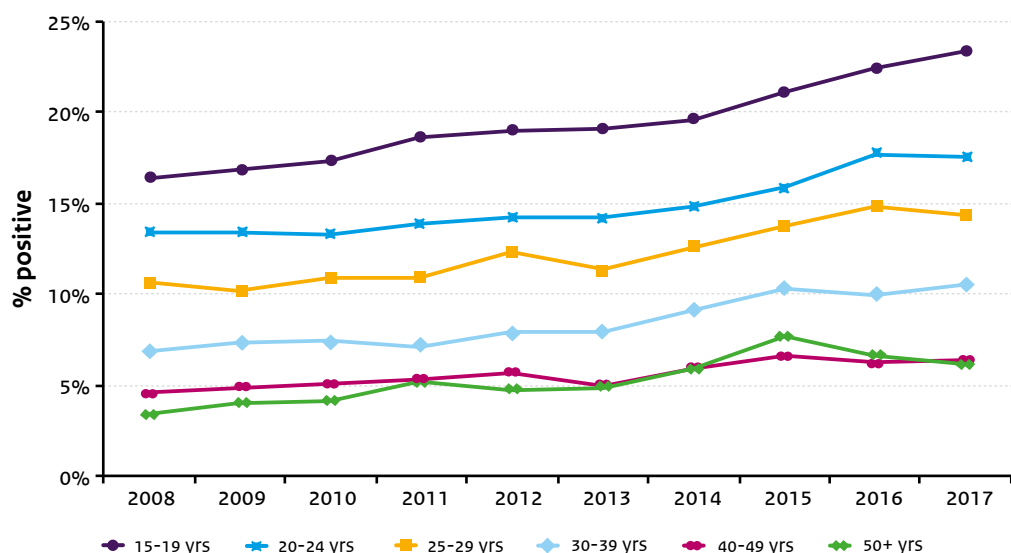


Table 3.2a Number of positive tests and persons tested for chlamydia by migration background, gender and type of sexual contact, 2017

Migration background	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	7,866/49,650	15.8	4,063/21,568	18.8	2,805/30,875	9.1
Western migrants	1,002/7,717	13.0	527/3,171	16.6	637/6,704	9.5
First generation non-Western migrants	496/4,284	11.6	616/3,924	15.7	574/5,132	11.2
Second generation non-Western migrants	1,286/7,612	16.9	1,247/6,515	19.1	277/2,699	10.3
Non-Western, generation unknown	1/6	16.7	1/5	20.0	1/10	10.0
Unknown	2/15	13.3	0/10	0.0	3/34	8.8
Total	10,653/69,284	15.4	6,454/35,193	18.3	4,297/45,454	9.5

Table 3.2b Number of positive tests and persons tested for chlamydia among first and second generation migrants from an STI/HIV endemic area by region of origin, gender and type of sexual contact, 2017

Region of origin	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Turkey	125/716	17.5	145/1,083	13.4	70/707	9.9
North Africa/Morocco	173/1,127	15.4	268/1,612	16.6	66/688	9.6
Suriname	539/3,254	16.6	566/2,811	20.1	160/1,463	10.9
Netherlands Antilles/Aruba	279/1,681	16.6	320/1,398	22.9	107/995	10.8
Sub-Saharan Africa	212/1,520	13.9	305/1,508	20.2	49/535	9.2
Eastern Europe	240/2,579	9.3	85/581	14.6	128/1,114	11.5
Latin America	170/1,699	10.0	111/627	17.7	189/1,545	12.2
Asia	420/2,810	14.9	215/1,781	12.1	320/3,068	10.4
Total	2,158/15,386	14.0	2,015/11,401	17.7	1,089/10,115	10.8

Table 3.3a Number of positive tests and persons tested for chlamydia by triage indication, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Notified						
Not notified	7,036/57,878	12.2	3,482/25,524	13.6	2,999/36,671	8.2
Notified for chlamydia	3,263/9,151	35.7	2,764/8,132	34.0	691/3,315	20.8
Notified for other STI/HIV	79/741	10.7	47/609	7.7	539/4,994	10.8
Unknown	275/1,514	18.2	161/928	17.3	68/474	14.3
Symptoms						
No	6,889/49,223	14.0	3,548/23,742	14.9	3,029/36,943	8.2
Yes	3,724/19,744	18.9	2,892/11,340	25.5	1,262/8,451	14.9
Unknown	40/317	12.6	14/111	12.6	6/60	10.0
STI/HIV endemic area						
No	8,495/53,898	15.8	4,439/23,792	18.7	3,208/35,339	9.1
Yes	2,158/15,386	14.0	2,015/11,401	17.7	1,089/10,115	10.8
Age <25 years						
No	1,981/20,280	9.8	2,159/14,140	15.3	3,522/37,930	9.3
Yes	8,672/20,280	17.7	4,295/21,102	20.4	775/7,623	10.2
Partner in risk group						
No	7,774/48,206	16.1	4,869/24,093	20.2		
Yes	2,762/19,965	13.8	1,445/9,922	14.6		
Unknown	117/1,113	10.5	140/1,178	11.9		
CSW						
No	10,188/62,651	16.3	6,394/34,601	18.5	4,185/44,316	9.4
Yes, in past 6 months	378/5,978	6.3	19/154	12.3	88/865	10.2
Unknown	87/655	13.3	41/438	9.4	24/273	8.8
Gonorrhoea/chlamydia/syphilis in past year						
Not tested	6,890/43,099	16.0	4,710/26,027	18.1	1,300/14,507	9.0
Tested, negative	2,242/17,355	12.9	951/5,736	16.6	1,326/16,826	7.9
Tested, positive	1,434/8,080	17.7	757/3,171	23.9	1,465/11,587	12.6
Tested, unknown	15/140	10.7	7/40	17.5	39/297	13.1
Unknown	72/610	11.8	29/219	13.2	167/2,237	7.5

Table 3.3b Number of positive tests and persons tested for chlamydia by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Socioeconomic status						
High	2,929/19,534	15.0	1,658/9,211	18.0	1,246/13,982	8.9
Medium	2,791/17,331	16.1	1,507/8,377	18.0	1,018/10,293	9.9
Low	4,550/28,512	16.0	3,098/16,536	18.7	1,858/19,468	9.5
Unknown	383/3,907	9.8	191/1,069	17.9	175/1,711	10.2
Educational level#						
High	6,235/43,809	14.2	3,611/21,168	17.1	2,607/29,602	8.8
Low/medium	4,060/21,394	19.0	2,604/12,433	20.9	1,365/12,471	10.9
Unknown	358/4,081	8.8	239/1,592	15.0	325/3,381	9.6
Number of partners in past 6 months						
0 partners	36/385	9.4	12/207	5.8	16/249	6.4
1 partner	2,674/18,403	14.5	1,091/6,276	17.4	257/3,543	7.3
2 partners	2,903/18,016	16.1	1,252/7,187	17.4	350/4,611	7.6
3 or more partners	4,893/30,199	16.2	4,062/21,308	19.1	3,584/36,219	9.9
Unknown	147/2,281	6.4	37/215	17.2	90/832	10.8
Condom use if last sexual contact was casual*						
No	4,827/29,472	16.4	3,075/15,679	19.6	1,703/16,292	10.5
Yes	1,268/11,243	11.3	896/5,948	15.1	1,093/13,175	8.3
Unknown	117/872	13.4	85/461	18.4	84/1,001	8.4
Anal sex, in past 6 months						
No	7,823/48,646	16.1			195/3,706	5.3
Yes, insertive					641/8,442	7.6
Yes, receptive	1,769/11,388	15.5			508/5,126	9.9
Yes, insertive and receptive					2,693/24,212	11.1
Receptive oral sex with a man, in past 6 months						
No	1,514/9,115	16.6			98/1,371	7.1
Yes	7,737/49,067	15.8			4,115/43,158	9.5
Unknown	1,402/11,102	12.6			84/925	9.1

Table 3.3b (continued) Number of positive tests and persons tested for chlamydia by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW						
No	10,540/68,346	15.4	6,134/32,037	19.1	4,166/43,937	9.5
Yes, in past 6 months	17/223	7.6	280/2,741	10.2	108/1,254	8.6
Unknown	96/715	13.4	40/415	9.6	23/263	8.7
Previous HIV test						
No	7,870/45,174	17.4	4,507/22,799	19.8	472/5,119	9.2
Yes, positive	2/33	6.1	3/25	12.0	811/5,559	14.6
Yes, negative	2,564/22,465	11.4	1,822/11,596	15.7	2,993/34,514	8.7
Yes, result unknown	7/106	6.6	11/43	25.6	4/45	8.9
Unknown	210/1,506	13.9	111/730	15.2	17/217	7.8

* Type of sexual contact was steady for 36.0% (n=53,979) and missing for 1.2% (n=1,809) of persons tested for chlamydia.

Low/medium level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

Table 3.4 Concurrent STI among persons diagnosed with chlamydia by gender and type of sexual contact, 2017

Concurrent infection	Women (N=10,653) n (%)	Heterosexual men (N=6,454) n (%)	MSM (N=4,297) n (%)
Gonorrhoea	468 (4.4)	276 (4.3)	981 (22.8)
Syphilis, infectious	3 (0.0)	5 (0.1)	180 (4.2)
HIV newly diagnosed	5 (0.0)	2 (0.0)	56 (1.3)
Genital herpes	40 (0.4)	13 (0.2)	10 (0.2)
Genital warts	84 (0.8)	93 (1.4)	42 (1.0)
Hepatitis B, infectious	2 (0.0)	2 (0.0)	4 (0.1)
Hepatitis C	0 (0.0)	0 (0.0)	7 (0.2)

Footnote: SHC check for genital herpes and genital warts on indication only. In addition, clients are not routinely tested on hepatitis C.

Table 3.5 Number and percentage of positive tests for chlamydia by anatomic location, gender and type of sexual contact, 2017

Location	Women n positive (%)	Heterosexual men n positive (%)	MSM n positive (%)
Urogenital	10,024 (14.5)	6,441 (18.3)	1,429 (3.2)
Anorectal	2,976 (12.9)	14 (5.0)	3,120 (7.1)
Oral	630 (2.6)	5 (1.4)	443 (1.1)

Footnote 1: Heterosexual men are usually only tested urogenital, while women are tested on indication for anorectal or oral chlamydia; indications vary by region. MSM are usually tested in all three locations.

Footnote 2: Please note that people can have positive tests at multiple locations.

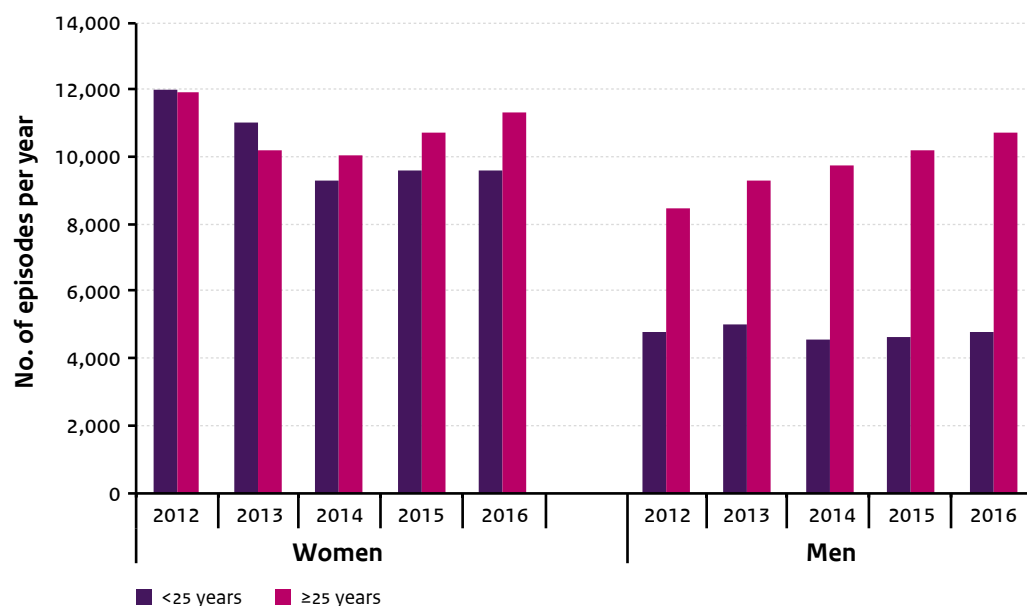
Table 3.6 Anatomic location of chlamydia infection by gender and type of sexual contact, 2017

Location	Women (N=10,642) n (%)	Heterosexual men (N=6,450) n (%)	MSM (N=4,285) n (%)
Urogenital only	7,306 (68.7)	6,431 (99.7)	969 (22.6)
Anorectal only	442 (4.2)	6 (0.1)	2,468 (57.6)
Oral only	139 (1.3)	3 (0.0)	176 (4.1)
Urogenital and anorectal	2,264 (21.3)	8 (0.0)	405 (9.5)
Urogenital and oral	221 (2.1)	2 (0.0)	20 (0.5)
Anorectal and oral	37 (0.3)	0 (0.0)	212 (4.9)
Urogenital and anorectal and oral	233 (2.2)	0 (0.0)	35 (0.8)
Pooled samples*	0 (0.0)	0 (0.0)	0 (0.0)

* Pooled samples are samples from more than one anatomical site tested in one molecular test, so that the location of the infection is unknown.

3.3 General practice

Figure 3.6 Estimated annual number of reported episodes of chlamydia at GPs by gender and age group, based on extrapolation from GP practices in NIVEL-PCD, 2012-2016



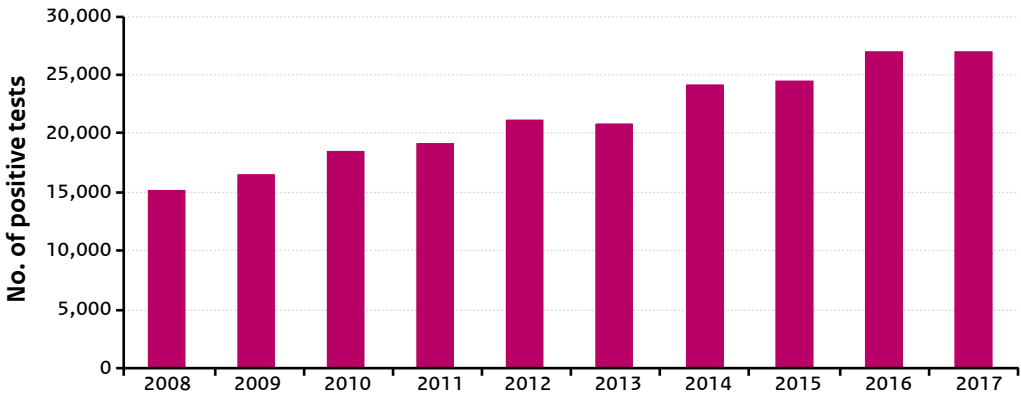
Footnote: About 70% of the total Dutch population consists of persons aged ≥25 years and about 30% consists of persons aged <25 years.

Table 3.7 Annual reporting rate (number of episodes per 1,000 population) of chlamydia at GPs in the Netherlands by gender and age group, based on GP practices in NIVEL-PCD, 2012-2016

	Women n/1,000			Men n/1,000			Total n/1,000		
	All	<25	≥25	All	<25	≥25	All	<25	≥25
2012	2.9	5.0	2.0	1.6	1.9	1.5	2.3	3.4	1.7
2013	2.6	4.6	1.7	1.7	2.0	1.6	2.1	3.3	1.7
2014	2.3	3.9	1.7	1.7	1.8	1.7	2.0	2.9	1.7
2015	2.3	4.0	1.8	1.8	1.9	1.8	2.1	3.0	1.8
2016	2.4	4.0	1.8	1.9	1.9	1.8	2.1	3.0	1.8

3.4 Laboratory surveillance

Figure 3.7 Number of positive tests for *Chlamydia trachomatis* from 21 medical microbiology laboratories, 2008-2017



(Source: 'Virologische weekstaten')

3.5 Lymphogranuloma venereum

Figure 3.8 Number of tests for Lymphogranuloma venereum and positivity rate in the SHC among chlamydia positive MSM, 2008-2017

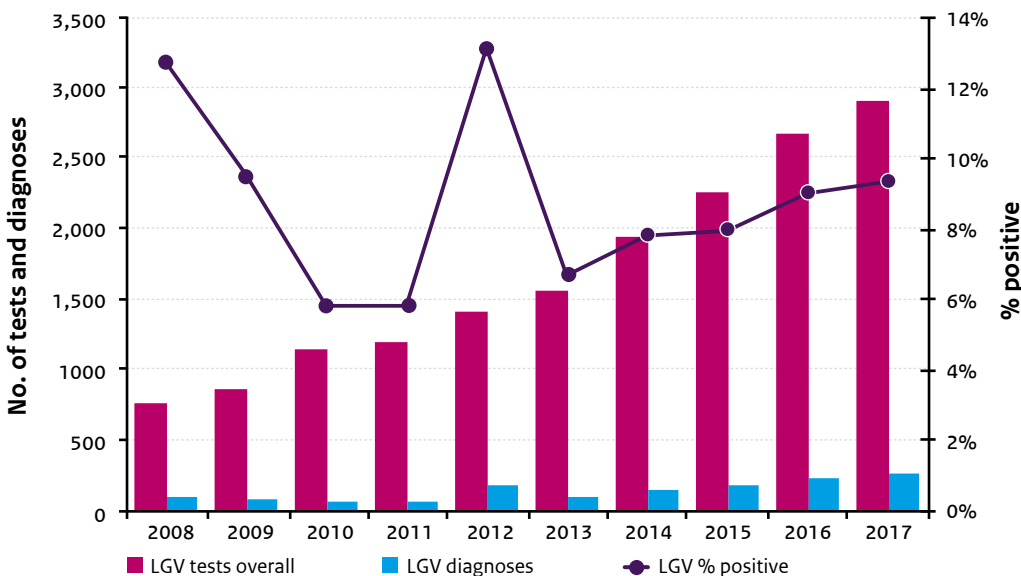
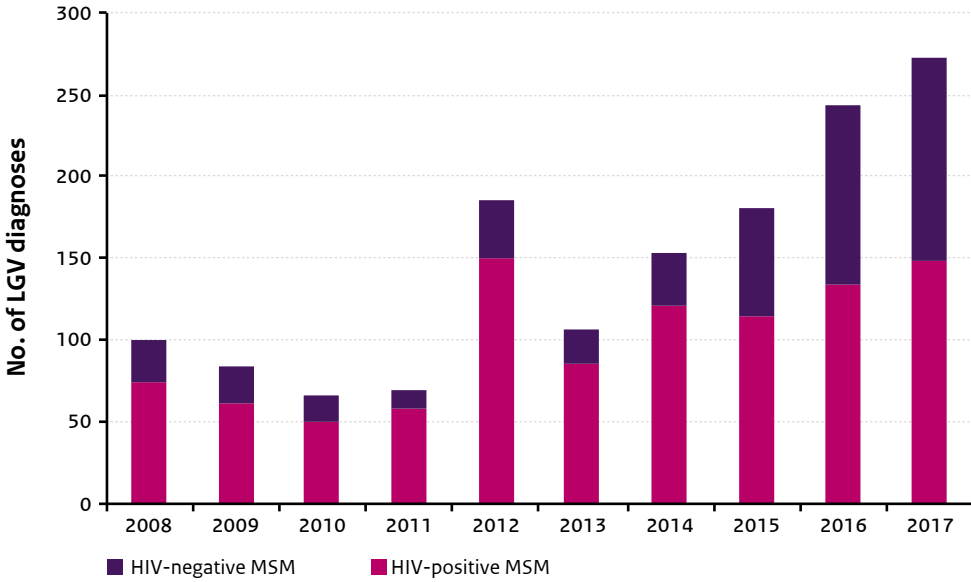


Table 3.8 Characteristics of MSM diagnosed with LGV, 2012-2017

	2012 (N=184) n (%)	2013 (N=106) n (%)	2014 (N=152) n (%)	2015 (N=179*) n (%)	2016 (N=242) n (%)	2017 (N=271) n (%)
Median age (range)	41 (19-67)	43 (19-69)	42 (21-63)	41 (18-66)	39 (16-75)	40 (19-73)
Dutch ethnicity	117 (63.6)	71 (67.0)	101 (66.4)	118 (65.9)	158 (65.3)	163 (60.1)
Notified for LGV					12 (5.0)	11 (4.1)
Symptoms recorded	126 (68.5)	79 (1.9)	95 (62.5)	96 (53.6)	142 (58.7)	137 (50.6)
Known HIV positive	140 (76.1)	83 (78.3)	116 (76.3)	113 (63.1)	131 (54.1)	144 (53.1)
Concurrent gonorrhoea	47 (25.5)	30 (28.3)	40 (26.3)	48 (26.8)	91 (37.6)	96 (35.4)
Concurrent syphilis	17 (9.2)	9 (8.5)	11 (7.2)	18 (10.1)	31 (12.8)	35 (12.9)
Concurrent new HIV diagnosis	9 (4.9)	2 (1.9)	4 (2.6)	1 (0.6)	2 (0.8)	4 (1.5)
LGV with anorectal chlamydia infection only	153 (83.2)	97 (91.5)	126 (82.9)	159 (88.8)	211 (87.2)	236 (87.1)
LGV with urethral chlamydia infection only	0 (0.0)	1 (0.9)	2 (1.3)	2 (1.1)	5 (2.1)	2 (0.7)
LGV with anorectal and urethral chlamydia	22 (12.0)	8 (7.5)	18 (11.8)	12 (6.7)	15 (6.2)	25 (9.2)

* For eight cases there was no location of chlamydia infection reported.

Figure 3.9 Number of LGV diagnoses among MSM by HIV status, 2008-2017



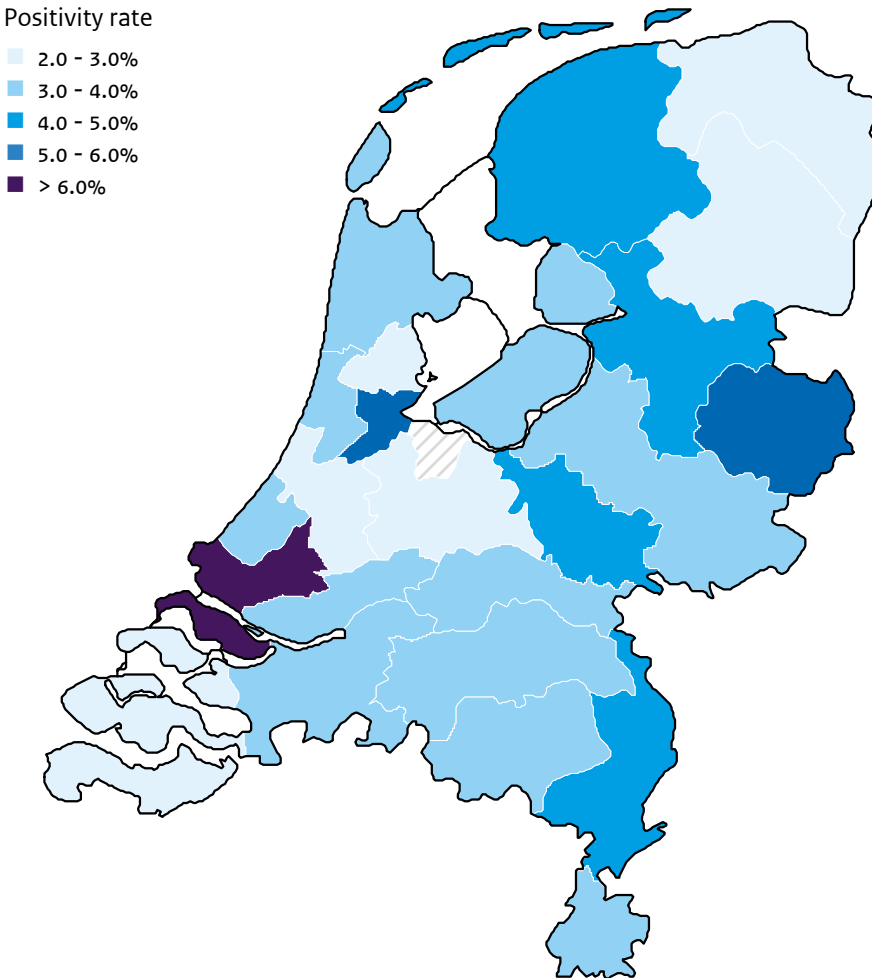
4 Gonorrhoea

4.1 Key points

- In 2017, 6,764 patients were diagnosed with gonorrhoea at the SHC in the Netherlands, an increase of 11% compared with 2016. 16.3% of patients were women, 9.7% heterosexual men, and 74% MSM.
- Positivity rates for gonorrhoea were comparable to those in 2016. Among MSM, 11.0% tested positive (11.3 in 2016), among heterosexual men 1.9% (1.7 in 2016), and among women, 1.6% tested positive for gonorrhoea (1.4 in 2016).
- Particularly high positivity rates were seen among MSM newly diagnosed with HIV (25.0%), MSM who previously had an STI (17.3%), MSM who reported symptoms (22.3%), and women, heterosexual men and MSM who were notified for gonorrhoea (26.3, 17.9 and 29.3%, respectively).
- Of women and heterosexual men diagnosed with gonorrhoea, 42.3% had a chlamydia co-infection. Of MSM diagnosed with gonorrhoea, 3.8% were also diagnosed with syphilis and 1.3% were newly diagnosed with HIV.
- At GPs, the number of estimated gonorrhoea episodes was 9,000 in 2016; 13.9% higher than in 2015 (7,900). This increase was mainly due to an increase among men older than 25. The reporting rate of gonorrhoea in 2016 was 0.5 per 1,000 population, and was higher among men than among women (0.7 versus 0.3 per 1,000).
- Antimicrobial susceptibility testing was performed in 38% of gonorrhoea diagnoses at SHC participating in the Gonococcal Resistance to Antimicrobials Surveillance (GRAS) programme.
- Antimicrobial resistance for ceftriaxone (first-choice treatment in the Netherlands) was not found. However, three isolates reached the borderline value for resistance. Resistance for ciprofloxacin was 27.2% and for cefotaxime 1.5%. Resistance for azithromycin has steadily increased from 5.8% in 2012 to 15.0% in 2017. Clinical resistance to third generation cephalosporins was not reported.

4.2 Sexual Health Centres: characteristics, risk groups and trends

Figure 4.1 Positivity rates of gonorrhoea by region, the Netherlands, 2017



Footnote: GGD Gooi en Vechtstreek (grey striped region) does not have an SHC. Hence, no STI data were available for this region.

Figure 4.2 Number of gonorrhoea tests and percentage of gonorrhoea positives by region, gender and type of sexual contact, 2017

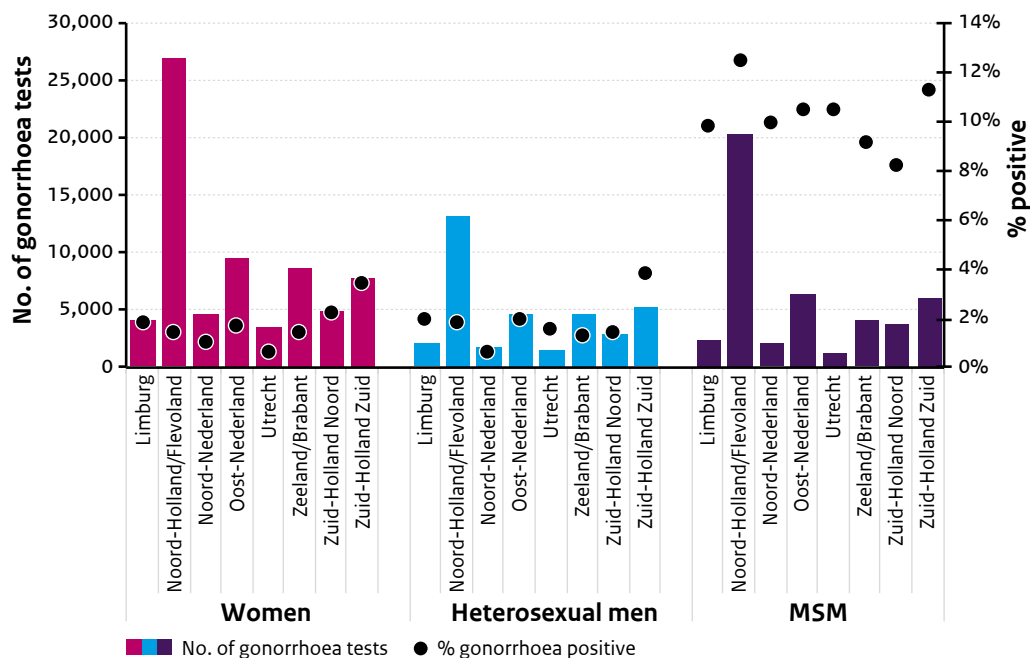
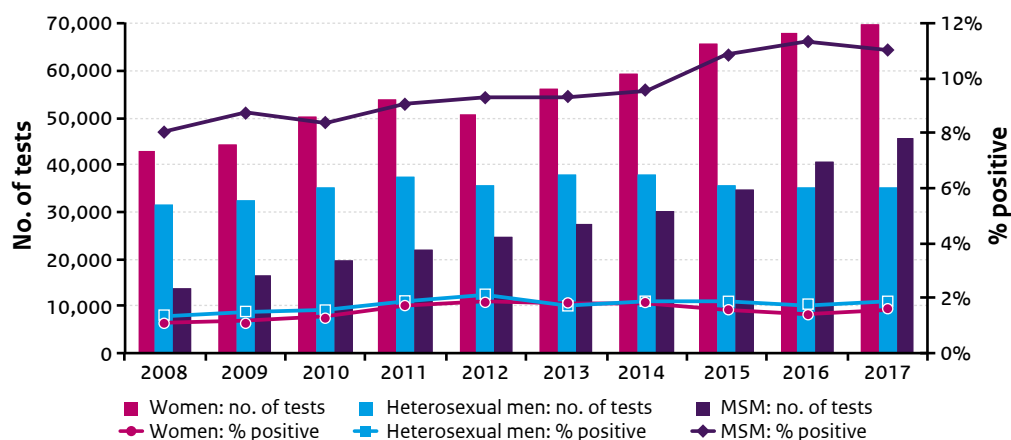


Figure 4.3 Total number of tests and positivity rates of gonorrhoea by gender and type of sexual contact, 2008-2017



Footnote: Between 2012 and 2015, attendees below the age of 25 years with no further risk factors were only tested for chlamydia. Since 2015, attendees below the age of 25 years with no further risk factors were tested for chlamydia and gonorrhoea.

Table 4.1 Number of positive tests and persons tested for gonorrhoea by age, gender and type of sexual contact, 2017

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	232/8,580	2.7	88/2,368	3.7	131/1,062	12.3
20-24	470/40,468	1.2	274/18,706	1.5	874/6,542	13.4
25-29	171/11,440	1.5	143/8,064	1.8	1,065/8,294	12.8
30-34	79/3,448	2.3	67/2,860	2.3	770/6,268	12.3
35-39	45/1,779	2.5	27/1,235	2.2	630/5,325	11.8
40-44	28/1,061	2.6	15/670	2.2	455/4,295	10.6
45-49	31/1,144	2.7	16/542	3.0	371/4,407	8.4
50-54	26/775	3.4	11/322	3.4	359/4,031	8.9
≥ 55	19/586	3.2	17/422	4.0	350/5,228	6.7
Total	1,101/69,281	1.6	658/35,189	1.9	5,005/45,453	11.0

Figure 4.4 Trends in positivity rate for gonorrhoea in MSM by HIV-status, 2008-2017

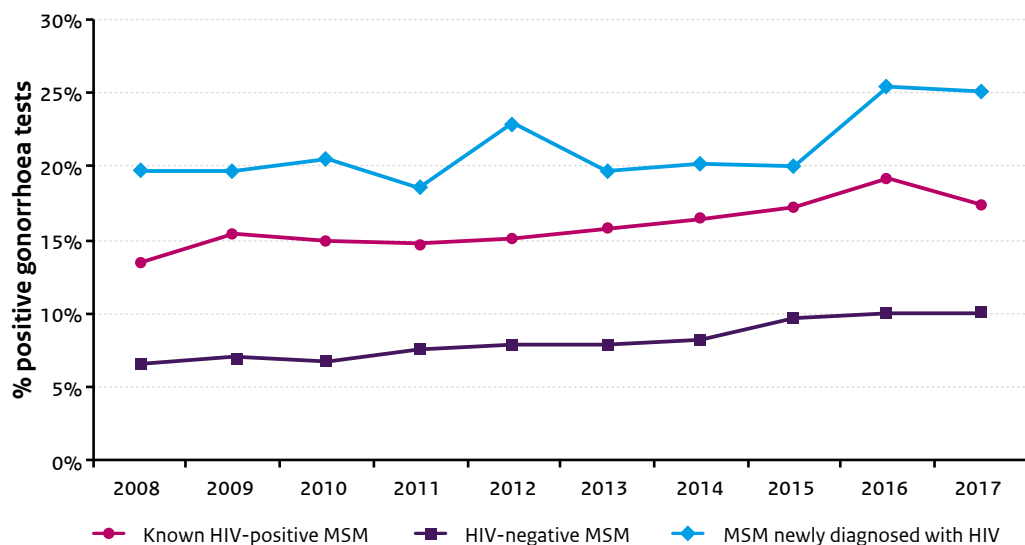
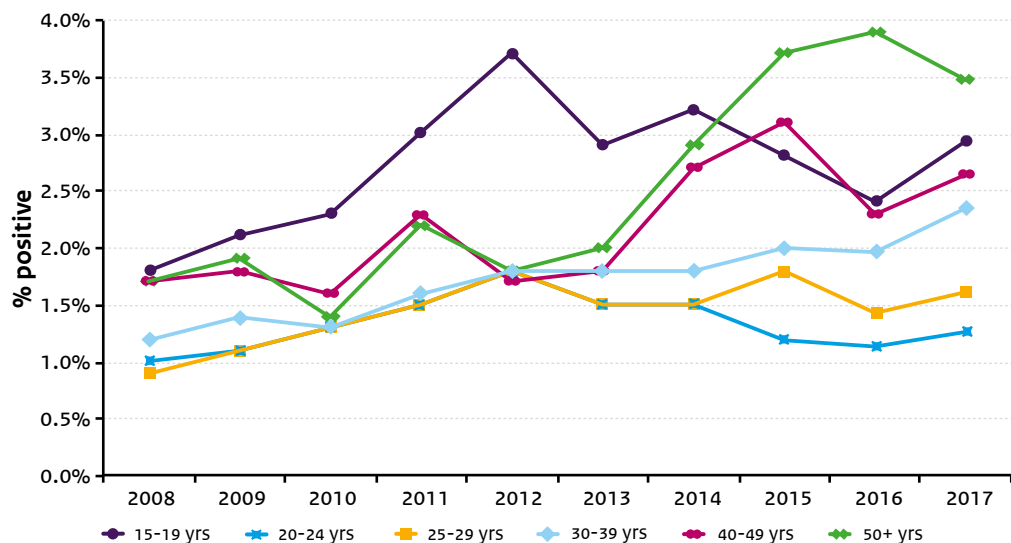


Figure 4.5a Trends in positivity rate for gonorrhoea in women and heterosexual men by age group, 2008-2017



Footnote: Between 2012 and 2015, attendees below the age of 25 years with no further risk factors were only tested for chlamydia. Since 2015, attendees below the age of 25 years with no further risk factors were tested for chlamydia and gonorrhoea.

Figure 4.5b Trends in positivity rate for gonorrhoea in MSM by age group, 2008-2017

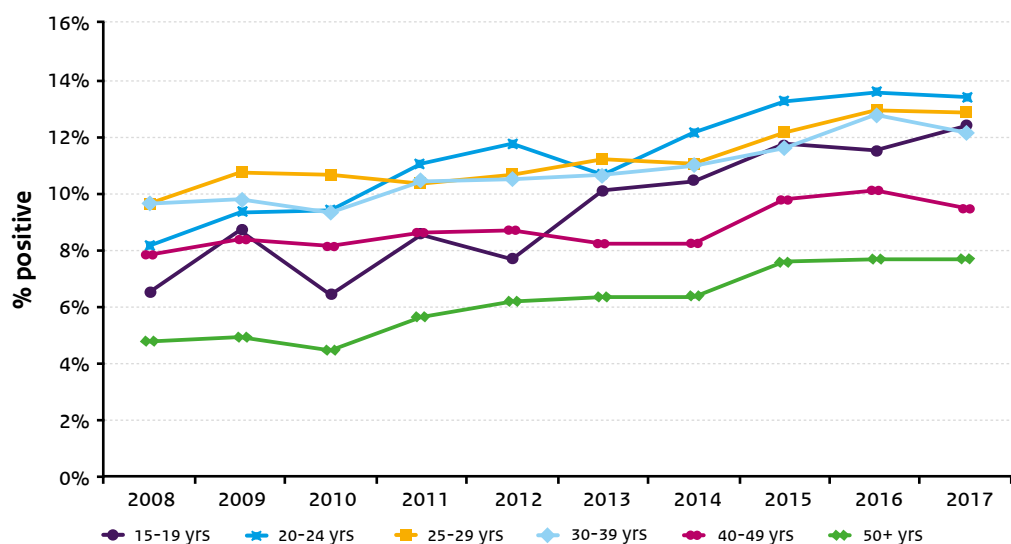


Table 4.2a Number of positive tests and persons tested for gonorrhoea by migration background, gender and type of sexual contact, 2017

Migration background	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	578/49,649	1.2	185/21,565	0.9	3,225/30,872	10.4
Western migrants	169/7,717	2.2	48/3,171	1.5	822/6,705	12.3
First generation non-Western migrants	96/4,283	2.2	141/3,924	3.6	618/5,132	12.0
Second generation non-Western migrants	258/7,611	3.4	284/6,514	4.4	337/2,700	12.5
Non-Western, generation unknown	0/6	0.0	0/5	0.0	0/10	0.0
Unknown	0/15	0.0	0/10	0.0	3/34	8.8
Total	1,101/69,281	1.6	658/35,189	1.9	5,005/45,453	11.0

Table 4.2b Number of positive tests and persons tested for gonorrhoea among first and second generation migrants from an STI/HIV endemic area by region of origin, gender and type of sexual contact, 2017

Region of origin	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Turkey	29/716	4.1	31/1,083	2.9	84/707	11.9
North Africa/Morocco	39/1,126	3.5	63/1,611	3.9	85/688	12.4
Suriname	109/3,254	3.3	139/2,811	4.9	175/1,464	12.0
Netherlands Antilles/Aruba	78/1,681	4.6	72/1,398	5.2	130/995	13.1
Sub-Saharan Africa	41/1,520	2.7	79/1,508	5.2	54/535	10.1
Eastern Europe	71/2,579	2.8	14/581	2.4	151/1,114	13.6
Latin America	29/1,698	1.7	15/627	2.4	218/1,545	14.1
Asia	46/2,810	1.6	29/1,781	1.6	351/3,069	11.4
Total	442/15,384	2.9	442/11,400	3.9	1,248/10,117	12.3

Table 4.3a Number of positive tests and persons tested for gonorrhoea by triage indication, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Notified						
Not notified	744/57,877	1.3	483/25,520	1.9	3,381/36,668	9.2
Notified for gonorrhoea	198/754	26.3	106/592	17.9	1,104/3,769	29.3
Notified for other STI/HIV	116/9,136	1.3	45/8,149	0.6	446/4,542	9.8
Unknown	43/1,514	2.8	24/928	2.6	74/474	15.6
Symptoms						
No	685/49,223	1.4	179/23,742	0.8	3,115/36,943	8.4
Yes	413/19,744	2.1	476/11,340	4.2	1,883/8,451	22.3
Unknown	3/317	0.9	3/111	2.7	3/60	5.0
STI/HIV endemic area						
No	659/53,897	1.2	216/23,789	0.9	3,757/35,336	10.6
Yes	442/15,384	2.9	442/11,400	3.9	1,248/10,117	12.3
Age <25 years						
No	399/20,233	2.0	296/14,115	2.1	4,000/37,848	10.6
Yes	702/49,048	1.4	362/21,074	1.7	1,005/7,604	13.2
Partner in risk group						
No	536/48,204	1.1	373/24,091	1.5		
Yes	535/19,965	2.7	264/9,920	2.7		
Unknown	30/1,112	2.7	21/1,178	1.8		
CSW						
No	901/62,648	1.4	656/34,597	1.9	4,860/44,314	11.0
Yes, in past 6 months	198/5,978	3.3	1/154	0.6	121/865	14.0
Unknown	2/655	0.3	1/438	0.2	24/274	8.8
Gonorrhoea/chlamydia/syphilis in past year						
Not tested	577/43,098	1.3	464/26,025	1.8	1,187/14,503	8.2
Tested, negative	311/17,356	1.8	92/5,735	1.6	1,579/16,825	9.4
Tested, positive	198/8,078	2.5	95/3,170	3.0	2,005/11,590	17.3
Tested, unknown	3/140	2.1	3/40	7.5	41/298	13.8
Unknown	12/609	2.0	4/219	1.8	193/2,237	8.6

Table 4.3b Number of positive tests and persons tested for gonorrhoea by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Socioeconomic status						
High	231/19,533	1.2	101/9,210	1.1	1,509/13,985	10.8
Medium	229/17,331	1.3	100/8,377	1.2	1,073/10,287	10.4
Low	532/28,510	1.9	421/16,533	2.5	2,224/19,470	11.4
Unknown	109/3,907	2.8	36/1,069	3.4	199/1,711	11.6
Educational level#						
High	366/43,804	0.8	175/21,167	0.8	3,093/29,604	10.4
Low/medium	626/21,396	2.9	439/12,430	3.5	1,545/12,466	12.4
Unknown	109/4,081	2.7	44/1,592	2.8	367/3,383	10.8
Number of partners in past 6 months						
0 partners	4/385	1.0	2/207	1.0	21/249	8.4
1 partner	293/18,400	1.6	96/6,275	1.5	234/3,541	6.6
2 partners	241/18,015	1.3	148/7,185	2.1	385/4,609	8.4
3 or more partners	483/30,201	1.6	408/21,307	1.9	4,270/36,222	11.8
Unknown	80/2,280	3.5	4/215	1.9	95/832	11.4
Condom use if last sexual contact was casual*						
No	377/29,470	1.3	344/15,678	2.2	1,973/16,289	12.1
Yes	191/11,244	1.7	99/5,947	1.7	1,358/13,175	10.3
Unknown	14/871	1.6	4/461	0.9	111/1,001	11.1
Anal sex, in past 6 months						
No	751/48,646	1.5			175/3,704	4.7
Yes, insertive					713/8,443	8.4
Yes, receptive	297/11,388	2.6			494/5,124	9.6
Yes, insertive and receptive					3,305/24,214	13.6
Receptive oral sex with a man, in past 6 months						
No	166/9,113	1.8			84/1,371	6.1
Yes	862/49,068	1.8			4,867/43,156	11.3
Unknown	73/11,100	0.7			54/926	5.8

Table 4.3b (continued) Number of positive tests and persons tested for gonorrhoea by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW						
No	1,092/68,343	1.6	589/32,034	1.8	4,909/43,935	11.2
Yes, in past 6 months	5/223	2.2	67/2,740	2.4	70/1,254	5.6
Unknown	4/715	0.6	2/415	0.5	26/264	9.8
Previous HIV test						
No	543/45,174	1.2	373/22,797	1.6	419/5,118	8.2
Yes, positive	1/33	3.0	2/25	8.0	962/5,560	17.3
Yes, negative	528/22,463	2.4	268/11,595	2.3	3,603/34,512	10.4
Yes, result unknown	1/106	0.9	0/43	0.0	3/45	6.7
Unknown	28/1,505	1.9	15/729	2.1	18/218	8.3

Low/medium level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

* Type of sexual contact was steady for 36% (n=53,977) and missing for 1,2% (n=1,810) of persons tested for gonorrhoea.

Table 4.4 Concurrent STI among persons diagnosed with gonorrhoea by gender and type of sexual contact, 2017

Concurrent infection	Women (N=1,101) n (%)	Heterosexual men (N=658) n (%)	MSM (N=5,005) n (%)
Chlamydia	468 (42.5)	276 (41.9)	981 (19.6)
Syphilis, infectious	1 (0.1)	1 (0.2)	189 (3.8)
HIV newly diagnosed	1 (0.1)	2 (0.3)	64 (1.3)
Genital herpes	1 (0.1)	1 (0.2)	25 (0.5)
Genital warts	12 (1.1)	16 (2.4)	49 (1.0)
Hepatitis B, infectious	2 (0.2)	1 (0.2)	4 (0.1)
Hepatitis C	0 (0.0)	0 (0.0)	7 (0.1)

Footnote: SHC check for genital herpes and genital warts on indication only. In addition, clients are not routinely tested on hepatitis C.

Table 4.5 Number and percentage of positive tests for gonorrhoea by anatomic location, gender and type of sexual contact, 2017

Location	Women n positive (%)	Heterosexual men n positive (%)	MSM n positive (%)
Urogenital	873 (1.3)	649 (1.8)	1,266 (2.8)
Anorectal	307 (1.3)	3 (1.1)	3,314 (7.6)
Oral	342 (1.4)	8 (2.3)	2,583 (5.8)

Footnote 1: Heterosexual men are usually only tested urogenital, while women are tested on indication for anorectal or oral gonorrhoea; indications vary by region. MSM are usually tested in all three locations.

Footnote 2: Please note that people can have positive tests at multiple locations.

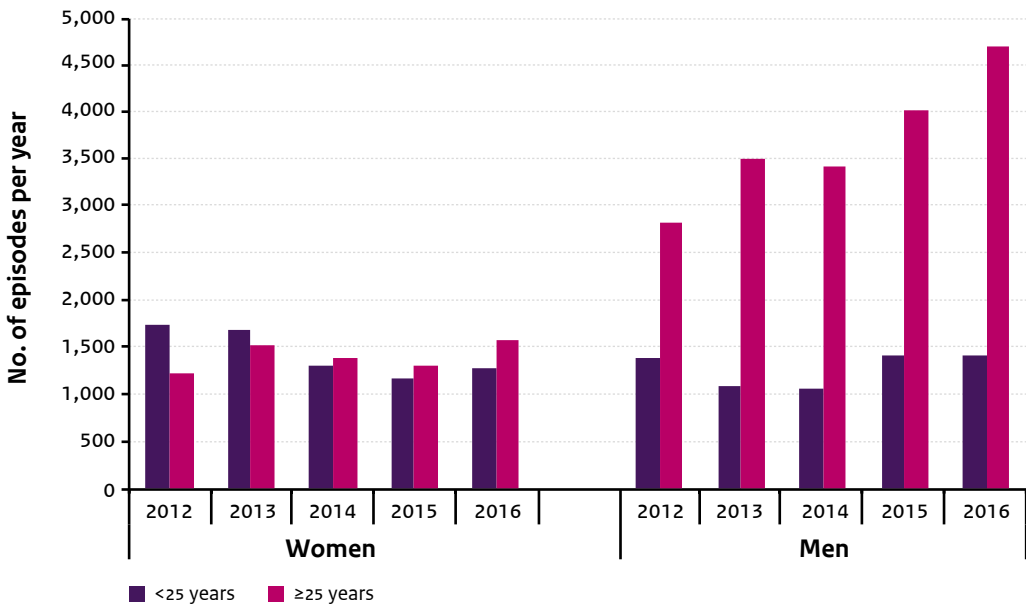
Table 4.6 Anatomic location of gonorrhoea infection by gender and type of sexual contact, 2017

Location	Women (N=1,101) n (%)	Heterosexual men (N=658) n (%)	MSM (N=5,005) n (%)
Urogenital only	557 (50.6)	647 (98.3)	288 (5.8)
Anorectal only	57 (5.2)	2 (0.3)	1,622 (32.4)
Oral only	161 (14.6)	7 (1.1)	1,286 (25.7)
Urogenital and anorectal	145 (13.2)	1 (0.2)	512 (10.2)
Urogenital and oral	76 (6.9)	1 (0.2)	117 (2.3)
Anorectal and oral	10 (0.9)	0 (0.0)	831 (16.6)
Urogenital and anorectal and oral	95 (8.6)	0 (0.0)	349 (7.0)
Pooled samples*	0 (0.0)	0 (0.0)	0 (0.0)

* Pooled samples are samples from more than one anatomical site tested in one molecular test, so that location of infection is unknown

4.3 General practice

Figure 4.6 Estimated annual number of reported episodes of gonorrhoea at GPs by gender and age group, based on extrapolation from GP practices in NIVEL-PCD, 2012-2016



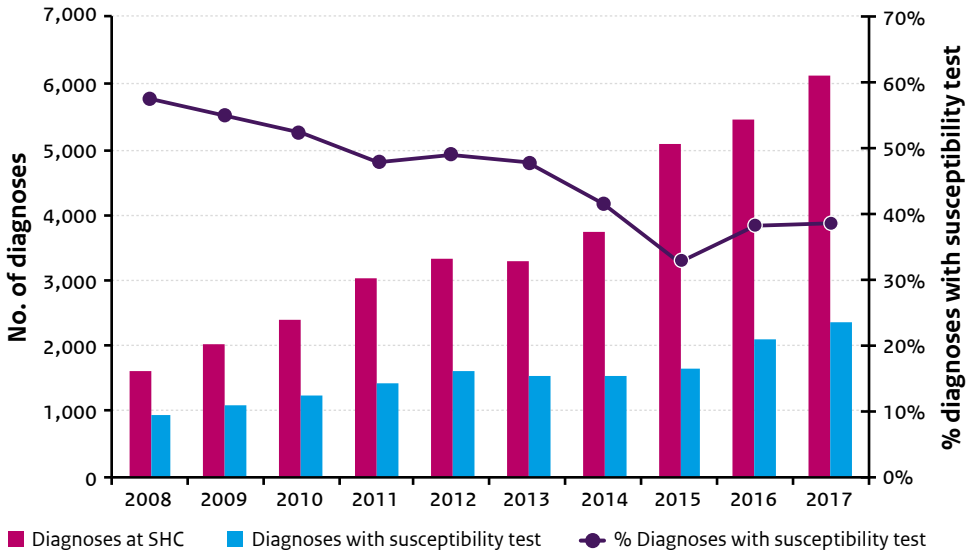
Footnote: About 70% of the total Dutch population consists of persons aged ≥25 years and about 30% consists of persons aged <25 years.

Table 4.7 Annual reporting rate (number of episodes per 1,000 population) of gonorrhoea at GPs in the Netherlands by gender and age group, based on GP practices in NIVEL-PCD, 2012-2016

	Women n/1,000			Men n/1,000			Total n/1,000		
	All	<25	≥25	All	<25	≥25	All	<25	≥25
2012	0.3	0.7	0.2	0.5	0.6	0.5	0.4	0.6	0.3
2013	0.4	0.7	0.3	0.6	0.4	0.6	0.5	0.6	0.4
2014	0.3	0.5	0.2	0.5	0.4	0.6	0.4	0.5	0.4
2015	0.3	0.5	0.2	0.7	0.6	0.7	0.5	0.5	0.4
2016	0.3	0.5	0.3	0.7	0.6	0.8	0.5	0.5	0.5

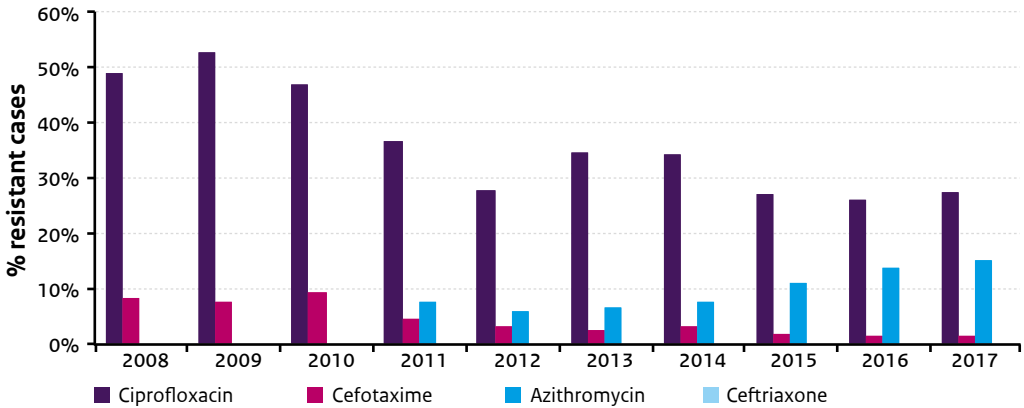
4.4 Antimicrobial resistance of gonococci in the Netherlands

Figure 4.7 Number of gonorrhoea diagnoses and number and percentage of diagnoses including an antimicrobial susceptibility test at SHC participating in GRAS, 2008-2017



Footnote: In less than half of all gonorrhoea diagnoses at SHC antimicrobial susceptibility was measured by culture. This can partially be explained by negative cultures, making measurement of resistance levels impossible. Furthermore, the STI register data show that gonorrhoea diagnoses are sometimes only confirmed by PCR, not by culture.

Figure 4.8 Gonococcal resistance (following Eucast breakpoints) in the Netherlands, proportion of resistant cases 2008-2017

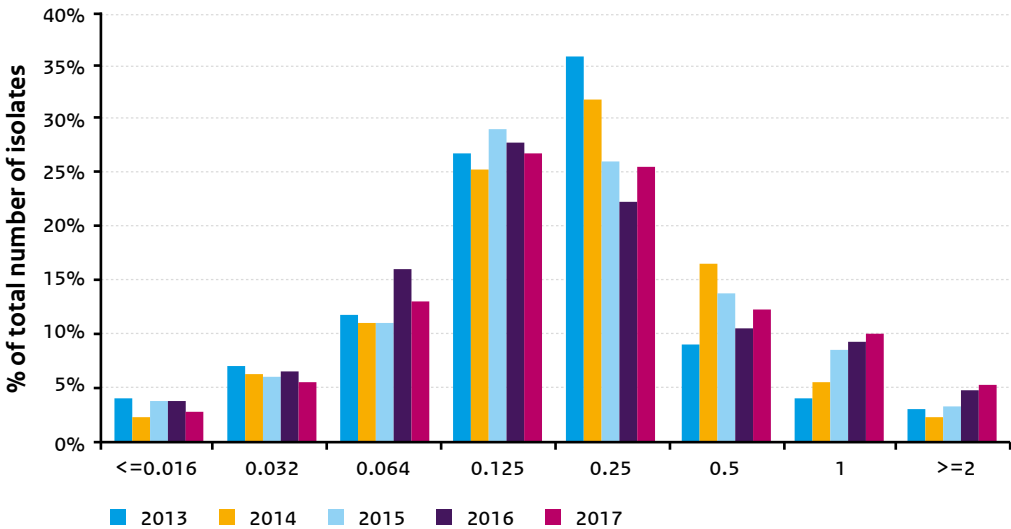


(Source: GRAS, SHC)

Footnote 1: Resistant following Eucast criteria, no clinical resistance has been reported yet.

Footnote 2: In 2011, ceftriaxone and azithromycin were added to the panel.

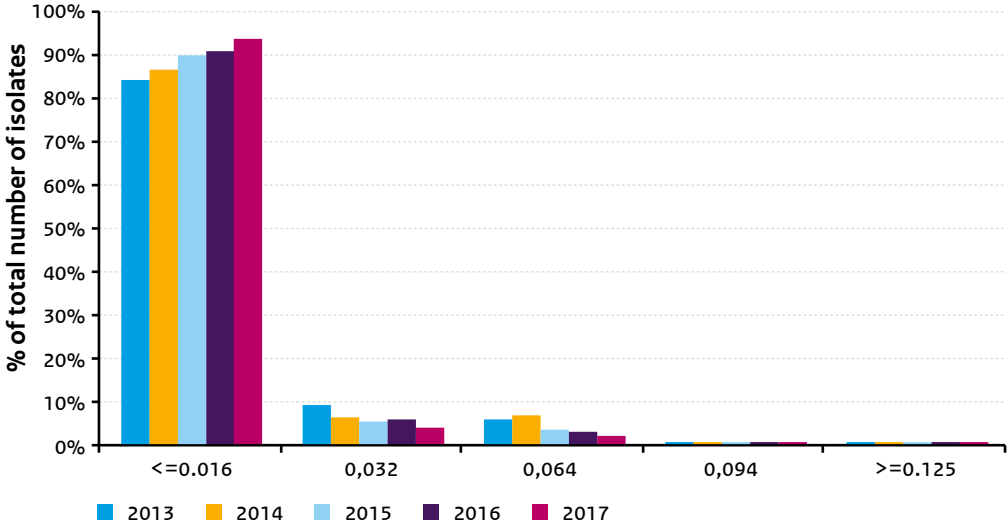
Figure 4.9a MIC (= minimum inhibitory concentration) distribution for azithromycin, 2013-2017



(Source: GRAS, SHC)

Footnote: Following EUCAST breakpoints, an MIC of >0.50 mg/L is considered resistant.

Figure 4.9b MIC (= minimum inhibitory concentration) distribution for ceftriaxone, 2013-2017



(Source: GRAS, SHC)
Footnote: Following EUCAST criteria, an MIC of >0.125 mg/L is considered resistant. However, in clinical practice this value is set to >0.12 mg/L, since an MIC of 0.125 mg/L cannot be measured with Etest.

5 Syphilis

5.1 Key points

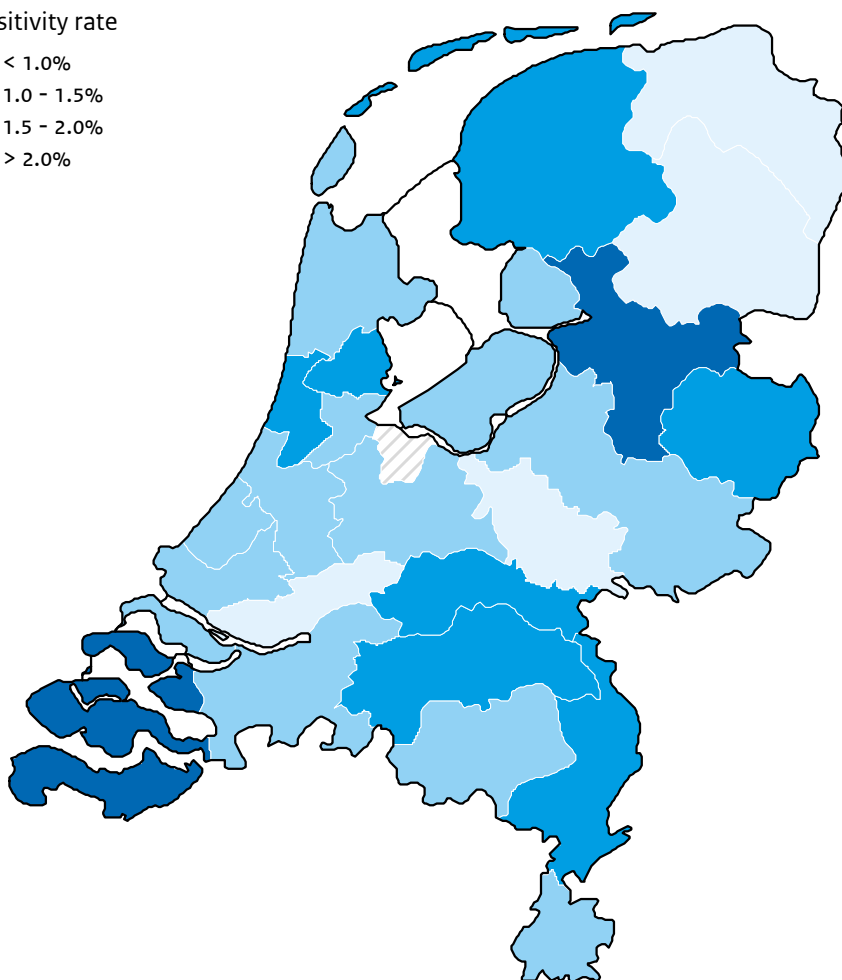
- In 2017, 1,228 clients (95.3% MSM, 2.4% heterosexual men, 2.3% women) were diagnosed with infectious syphilis at SHC in the Netherlands.
- The number of diagnoses of infectious syphilis remained stable; 1,223 in 2016 and 1,228 in 2017.
- The percentage of positive tests for infectious syphilis among MSM dropped from 4.3% to 2.0% between 2007 and 2011, but increased in 2013 from 2.0% to 2.9% in 2016. In 2017, there was a slight drop to 2.6%. This was mainly due to the decline in HIV-positive MSM from 8.4% in 2016 to 7.2% in 2017. The syphilis positive rate among HIV-negative MSM was stable: 2.0% in 2016 and 1.9% in 2017.
- Of all infectious syphilis cases among MSM, 21.7% were notified for syphilis; 33.7% were diagnosed in known HIV-positives, and 1.7% in newly diagnosed HIV cases.
- Of the MSM diagnosed with infectious syphilis, 15.4% had a co-infection with chlamydia and 16.2% had a co-infection with gonorrhoea.
- The number of tests in 2017 among women (n=30,842) and heterosexual men (n=19,335) remained similar to that of 2016, with 29,991 and 19,409 respectively. The number of syphilis diagnoses among heterosexual men decreased from 37 in 2016 to 30 in 2017; among women the number of syphilis diagnoses increased from 21 in 2016 and 28 in 2017.
- The number of infections of congenital syphilis found in neonates ranged from 0 or 1 per year from 2008, but increased to 3 in 2017.

5.2 Sexual Health Centres: characteristics, risk groups and trends

Figure 5.1 Positivity rates of infectious syphilis by region, the Netherlands, 2017

Positivity rate

- < 1.0%
- 1.0 - 1.5%
- 1.5 - 2.0%
- > 2.0%



Footnote: GGD Gooi en Vechtstreek (grey striped region) does not have an SHC. Hence, no STI data were available for this region.

Figure 5.2 Number of syphilis tests and percentage of syphilis positives by region, gender and type of sexual contact, 2017

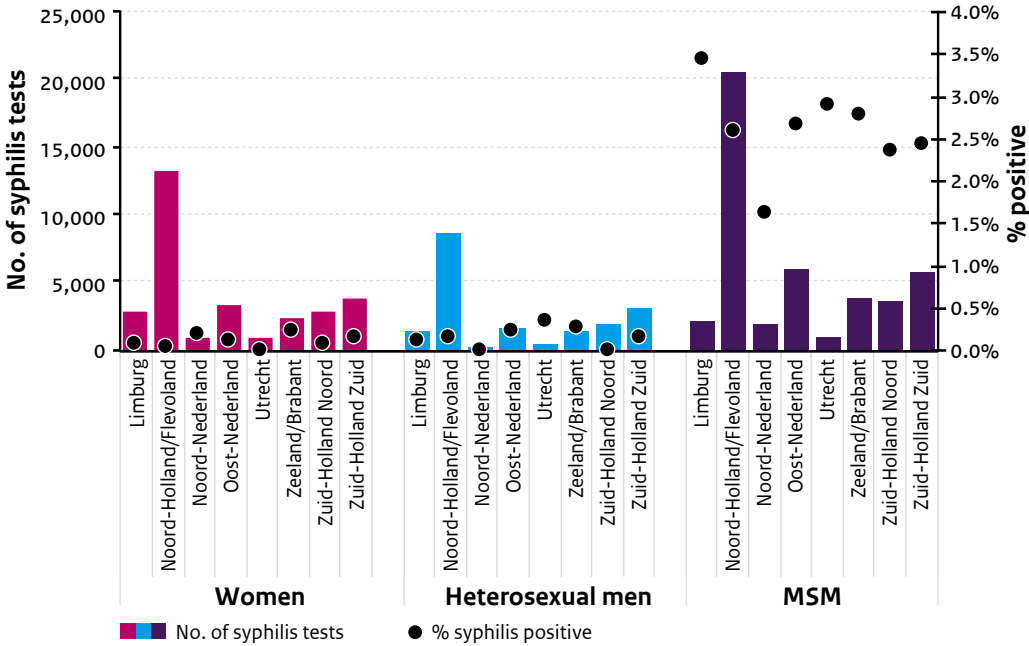


Figure 5.3 Total number of tests and positivity rate of infectious syphilis by gender and type of sexual contact, 2008-2017

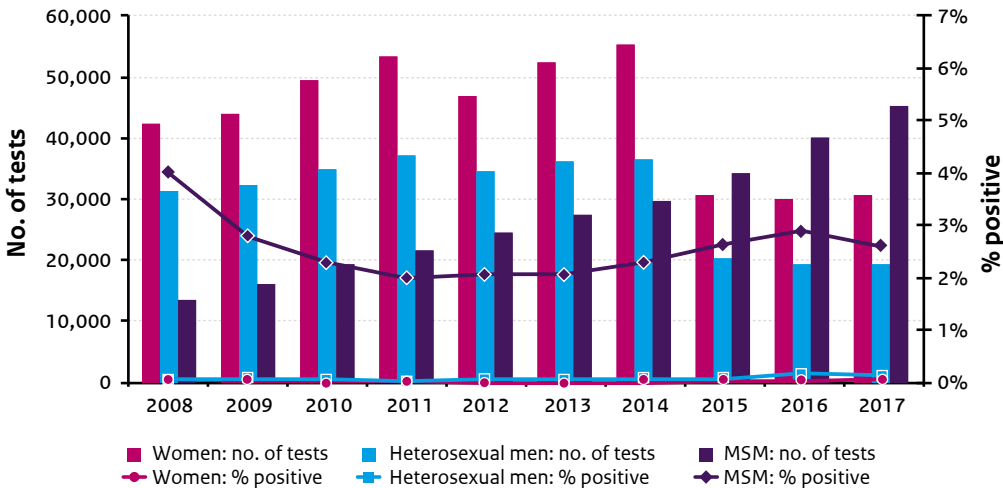


Table 5.1 Number of positive tests and persons tested for infectious syphilis by age, gender and type of sexual contact, 2017

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	2/2,050	0.10	1/694	0.14	20/1,046	1.91
20-24	10/11,444	0.09	7/6,200	0.11	115/6,488	1.77
25-29	2/8,674	0.02	6/6,500	0.09	172/8,268	2.08
30-34	3/3,397	0.09	6/2,791	0.21	135/6,240	2.16
35-39	0/1,756	0.00	3/1,219	0.25	149/5,301	2.81
40-44	2/1,051	0.19	1/667	0.15	131/4,277	3.06
45-49	3/1,129	0.27	2/528	0.38	145/4,395	3.30
50-54	5/764	0.65	1/320	0.31	137/4,018	3.41
≥ 55	1/577	0.17	3/416	0.72	166/5,217	3.18
Unknown	0/0	0.00	0/0	0.00	0/1	0.00
Total	28/30,842	0.09	30/19,335	0.16	1,170/45,251	2.59

Figure 5.4 Percentage of positive syphilis tests in MSM by HIV status, 2008-2017

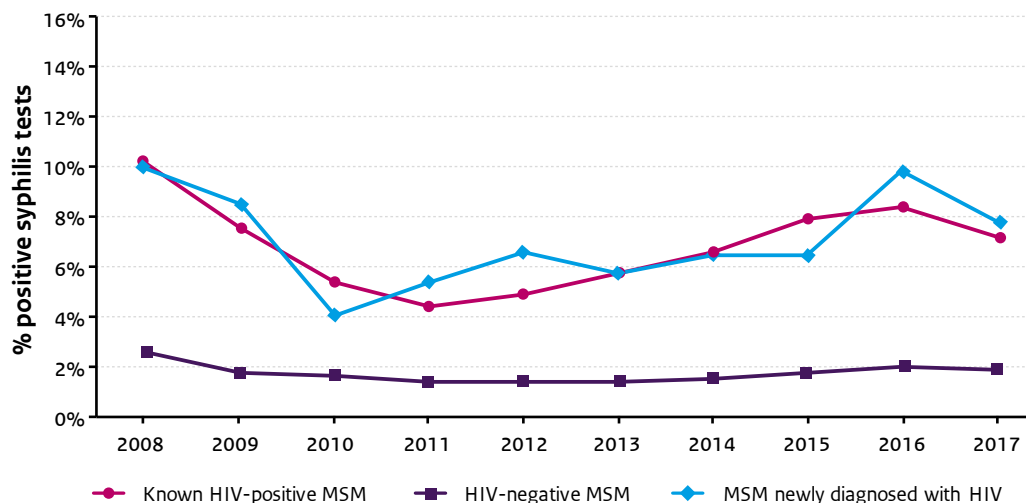


Table 5.2a Number of positive tests and persons tested for infectious syphilis by migration background, gender and type of sexual contact, 2017

Migration background	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	19/17,285	0.11	12/9,216	0.13	748/30,717	2.44
Western migrants	1/5,083	0.02	7/2,153	0.33	208/6,680	3.11
First generation non-Western migrants	4/4,011	0.10	7/3,692	0.19	157/5,116	3.07
Second generation non-Western migrants	4/4,434	0.09	4/4,260	0.09	56/2,694	2.08
Non-Western, generation unknown	0/6	0.00	0/5	0.00	0/10	0.00
Unknown	0/23	0.00	0/9	0.00	1/34	2.94
Total	28/30,842	0.09	30/19,335	0.16	1,170/45,251	2.59

Table 5.2b Number of positive tests and persons tested for infectious syphilis among first and second generation migrants from an STI/HIV endemic area by region of origin, gender and type of sexual contact, 2017

Region of origin	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Turkey	1/440	0.23	1/770	0.13	9/704	1.28
North Africa/Morocco	0/739	0.00	0/1,200	0.00	16/685	2.34
Suriname	2/2,210	0.09	4/2,128	0.19	58/1,461	3.97
Netherlands Antilles/Aruba	5/1,253	0.40	1/1,081	0.09	32/996	3.21
Eastern Europe	1/2,315	0.04	3/474	0.63	41/1,104	3.71
Sub-Saharan Africa	0/1,068	0.00	1/1,121	0.09	6/530	1.13
Latin America	0/1,429	0.00	2/493	0.41	50/1,543	3.24
Asia	0/1,853	0.00	2/1,436	0.14	83/3,060	2.71
Total	9/11,307	0.08	14/8,703	0.16	295/10,083	2.93

Table 5.3a Number of positive tests and persons tested for infectious syphilis by triage indication, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Notified						
Not notified	11/24,938	0.0	18/13,628	0.1	756/36,511	2.1
Notified for syphilis	14/115	12.2	10/92	10.9	254/1,822	13.9
Notified for other STI/HIV	2/4,940	0.0	1/4,976	0.0	143/6,446	2.2
Unknown	1/849	0.1	1/639	0.2	17/472	3.6
Symptoms						
No	14/20,935	0.1	7/11,988	0.1	587/36,804	1.6
Yes	14/9,828	0.1	22/7,310	0.3	581/8,381	6.9
Unknown	0/79	0.0	1/37	2.7	2/66	3.0
STI/HIV endemic area						
No	19/19,535	0.1	16/10,632	0.2	875/35,168	2.5
Yes	9/11,307	0.1	14/8,703	0.2	295/10,083	2.9
Age <25 years						
No	16/17,348	0.1	22/12,441	0.2	1,035/37,716	2.7
Yes	12/13,494	0.1	8/6,894	0.1	135/7,534	1.8
Partner in risk group						
No	15/11,720	0.1	15/8,943	0.2		
Yes	12/18,412	0.1	14/9,395	0.1		
Unknown	1/710	0.1	1/997	0.1		
CSW						
No	25/24,863	0.1	30/19,098	0.2	1,129/44,115	2.6
Yes, in past 6 months	3/5,879	0.1	0/142	0.0	31/862	3.6
Unknown	0/100	0.0	0/95	0.0	10/274	3.6
Gonorrhoea/chlamydia/syphilis in past year						
Not tested	14/17,650	0.1	23/13,955	0.2	302/14,425	2.1
Tested, negative	8/9,271	0.1	5/3,591	0.1	389/16,755	2.3
Tested, positive	4/3,512	0.1	2/1,652	0.1	428/11,531	3.7
Tested, unknown	1/79	1.3	0/25	0.0	14/298	4.7
Unknown	1/330	0.3	0/112	0.0	37/2,242	1.7

Table 5.3b Number of positive tests and persons tested for infectious syphilis by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Socioeconomic status						
High	6/7,307	0.1	7/4,808	0.1	371/13,935	2.7
Medium	5/6,655	0.1	5/4,007	0.1	257/10,231	2.5
Low	13/13,686	0.1	16/9,810	0.2	488/19,378	2.5
Unknown	4/3,194	0.1	2/710	0.3	54/1,707	3.2
Educational level#						
High	7/16,773	0.0	5/10,956	0.0	638/29,501	2.2
Low/medium	19/10,650	0.2	19/7,143	0.3	419/12,392	3.4
Unknown	2/3,419	0.1	6/1,236	0.5	113/3,358	3.4
Number of partners in past 6 months						
0 partners	0/226	0.0	0/115	0.0	4/248	1.6
1 partner	15/6,818	0.2	11/2,976	0.4	75/3,506	2.1
2 partners	4/6,621	0.1	6/3,787	0.2	91/4,569	2.0
3 or more partners	7/15,187	0.0	13/12,371	0.1	976/36,093	2.7
Unknown	2/1,990	0.1	0/86	0.0	24/835	2.9
Condom use if last sexual contact was casual*						
No	1/11,443	0.0	11/8,455	0.1	503/16,202	3.1
Yes	3/7,084	0.0	9/3,847	0.2	279/13,143	2.1
Unknown	1/484	0.2	0/287	0.0	28/996	2.8
Anal sex, in past 6 months						
No	18/22,633	0.1			39/3,654	1.1
Yes, insertive					168/8,419	2.0
Yes, receptive	9/7,434	0.1			137/5,105	2.7
Yes, insertive and receptive					773/24,112	3.2
Receptive oral sex with a man, in past 6 months						
No	2/3,551	0.1			15/1,358	1.1
Yes	23/26,027	0.1			1,128/42,983	2.6
Unknown	3/1,264	0.2			27/910	3.0

Table 5.3b (continued) Number of positive tests and persons tested for infectious syphilis by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW						
No	28/30,502	0.1	25/16,797	0.1	1,139/43,730	2.6
Yes, in past 6 months	0/178	0.0	5/2,457	0.2	19/1,255	1.5
Unknown	0/162	0.0	0/81	0.0	12/266	4.5
Previous HIV test						
No	12/12,823	0.1	11/9,308	0.1	87/5,074	1.7
Yes, positive	0/27	0.0	1/24	4.2	394/5,505	7.2
Yes, negative	14/17,211	0.1	14/9,605	0.1	684/34,408	2.0
Yes, result unknown	0/71	0.0	0/30	0.0	1/45	2.2
Unknown	2/710	0.3	4/368	1.1	4/219	1.8

* Type of sexual contact was steady for 34.0% (n=30,436) and missing for 1.3% (n=1,192) of persons tested for syphilis.

Low/medium level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

Table 5.4 Concurrent STI among persons diagnosed with infectious syphilis by gender and type of sexual contact, 2017

Concurrent infection	Women (N=28) n (%)	Heterosexual men (N=30) n (%)	MSM (N=1,170) n (%)
Chlamydia	3 (10.7)	5 (16.7)	180 (15.4)
Gonorrhoea	1 (3.6)	1 (3.3)	189 (16.2)
HIV newly diagnosed	0 (0.0)	0 (0.0)	20 (1.7)
Genital herpes	0 (0.0)	0 (0.0)	8 (0.7)
Genital warts	1 (3.6)	0 (0.0)	20 (1.7)
Hepatitis B, infectious	0 (0.0)	0 (0.0)	5 (0.4)
Hepatitis C	1 (3.6)	0 (0.0)	3 (0.3)

Footnote: SHC check for genital herpes and genital warts on indication only. In addition, clients are not routinely tested on hepatitis C.

5.3 Antenatal screening

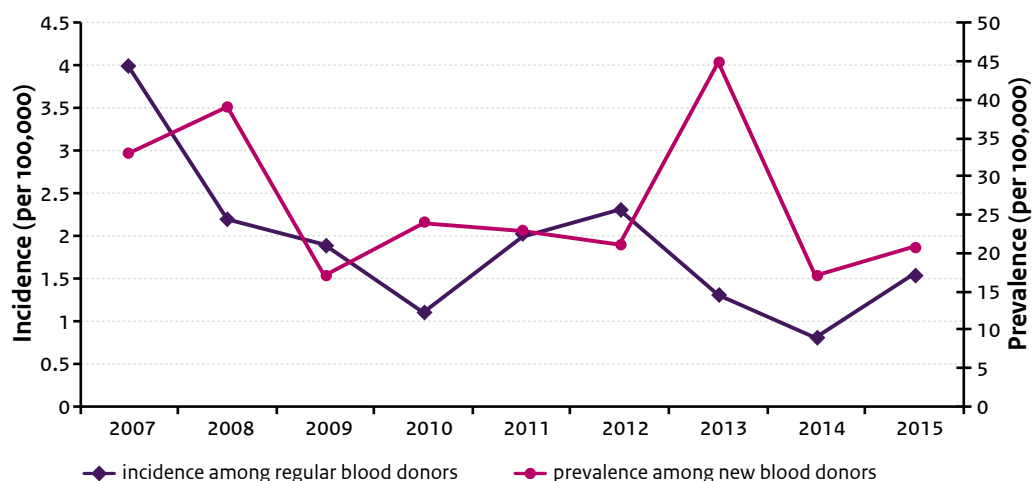
Table 5.5 Syphilis prevalence estimates in pregnant women, based on test results of antenatal screening, 2012-2016

Year	No. of women screened	Confirmed positive test results	Prevalence estimate
2012	173,878	101	0.06
2013	176,070	135	0.08
2014	174,610	97	0.06
2015	176,219	98	0.06
2016	172,785	36	0.02

(Sources: C.P.B. van der Ploeg (TNO), Y. Schönbeck (TNO), P. Oomen (RIVM), K. Vos (RIVM). Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE). Procesmonitor 2016. TNO/RIVM 2018; and earlier monitors)

5.4 Blood donors

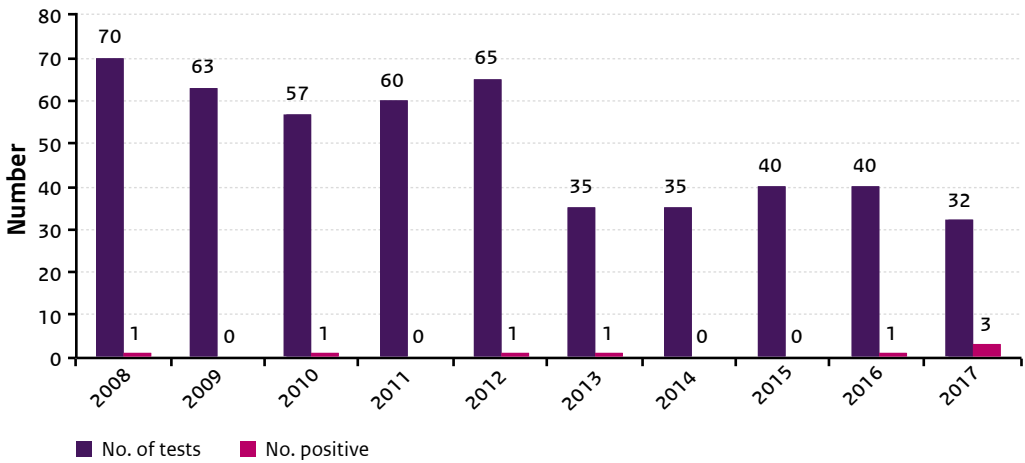
Figure 5.5 Syphilis incidence and prevalence (per 100,000) among regular and new blood donors in the Netherlands, 2007-2015



(Source: Sanquin)

5.5 Congenital syphilis

Figure 5.6 Number of tests among neonates and young infants (<1 year) suspected of being infected with congenital syphilis and the number of IgM positives, 2008-2017



(Source: RIVM/Cib/IDS)

VIRAL STI

6 HIV and AIDS

6.1 Key points

6.1.1 Sexual Health Centres

- In 2017, 286 individuals were newly diagnosed with HIV at SHC in the Netherlands (89% MSM), compared to 285 in 2016 (93% MSM).
- Among heterosexual men and women, 25 of the 30 (83%) people newly diagnosed with HIV originated from an STI/HIV endemic country.
- The positivity rate among MSM decreased from 2.8% in 2007 to 0.7% in 2017.
- The highest positivity rates were found among MSM notified for HIV (5.0%), MSM originating from Latin America (2.0%), and MSM who were first generation non-Western immigrants (1.4%).

6.1.2 HIV treatment centres

- In total, 19,677 HIV patients were reported in clinical care, as of December 2017.
- In 2017, 1,037 new HIV patients were reported in care (2016: 1,047). Of the newly registered patients, 615 were diagnosed in 2017 (incomplete due to reporting delay). The proportion of MSM (68%) was comparable to 2016 (67%). The proportion of people infected through heterosexual contact was 25% in 2017.
- Of HIV positive MSM entering care and diagnosed in 2017, 40% were diagnosed at SHC, 31% at GPs, and 17% in hospitals. Of heterosexual males, 41% were diagnosed in hospitals, 43% by GPs, and 11% at SHC. Of women, 37% were diagnosed at a hospital, 33% by GPs, 11% through pregnancy screening, and 12% at SHC.
- Of patients diagnosed in 2017, 45% presented late ($CD4 < 350/mm^3$, or AIDS-defining event regardless of CD4 count). This proportion was lower for MSM (38%) than for women (53%) and heterosexual men (63%).
- In 2016, about 89% of those infected with HIV were estimated to have been diagnosed and linked to care. Of these, 92% started a combination antiretroviral therapy (cART) and 95% had a suppressed viral load.

6.1.3 General practice

- At GPs, an estimated prevalence of 24,500 HIV cases was reported in 2016, with a reporting rate of 1.4 per 1,000 population. Prevalence rates were higher in men than in women (2.4 versus 0.5/1,000).

6.2 Sexual Health Centres: characteristics, risk groups and trends

Figure 6.1 Total number of tests and positivity rate of new HIV cases by gender and type of sexual contact, 2008-2017

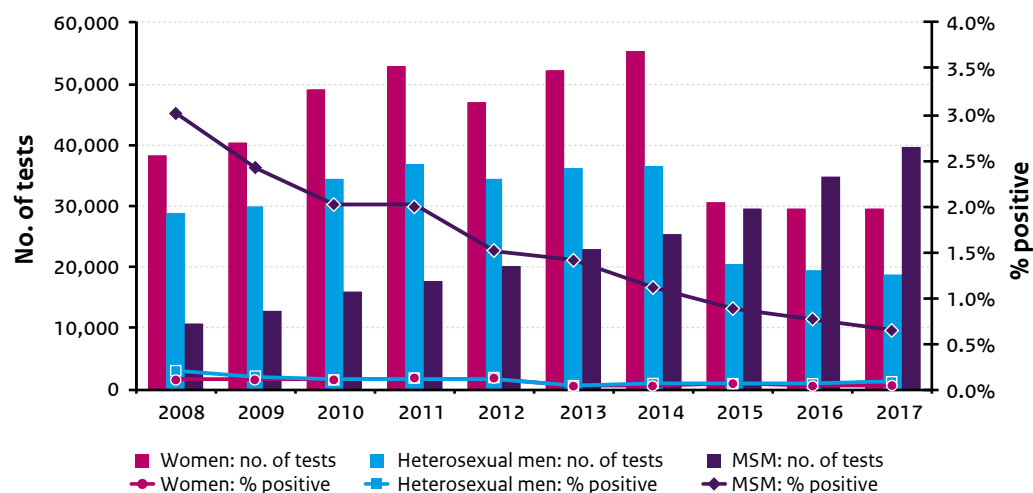


Table 6.1 Number of positive tests and persons tested for HIV by age, gender and type of sexual contact, 2017

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	2/1,880	0.11	0/634	0.00	5/1,044	0.48
20-24	4/10,455	0.05	1/5,768	0.02	38/6,334	0.58
25-29	2/8,547	0.03	4/6,427	0.04	68/7,685	0.76
30-34	1/3,385	0.03	4/2,773	0.09	36/5,559	0.79
35-39	1/1,744	0.04	2/1,210	0.15	30/4,502	0.66
40-44	1/1,045	0.07	3/664	0.27	16/3,532	0.57
45-49	0/1,124	0.05	1/527	0.34	22/3,495	0.54
50-54	0/758	0.00	2/314	0.36	21/3,027	0.66
≥ 55	1/567	0.18	1/409	0.24	20/4,250	0.47
Total	12/29,505	0.04	18/18,726	0.10	256/39,428	0.65

Table 6.2a Number of positive tests and persons tested for HIV by migration background, gender and type of sexual contact, 2017

Migration background	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	2/16,184	0.01	2/8,759	0.02	136/27,172	0.50
Western migrants	1/4,932	0.02	1/2,084	0.05	42/5,673	0.74
First generation non-Western migrants	7/3,979	0.18	12/3,656	0.33	58/4,092	1.42
Second generation non-Western migrants	2/4,381	0.05	3/4,231	0.07	20/2,456	0.82
Non-Western, generation unknown	0/6	0.00	0/5	0.00	0/10	0.00
Unknown	0/23	0.04	0/9	0.10	0/26	0.65
Total	12/29,505	0.04	18/18,726	0.10	256/39,429	0.65

Table 6.2b Number of positive tests and persons tested for HIV among first and second generation migrants from an STI/HIV endemic area by region of origin, gender and type of sexual contact, 2017

Region of origin	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Turkey	0/436	0.00	1/760	0.13	5/642	0.78
North Africa/Morocco	0/733	0.00	4/1,182	0.34	9/643	1.40
Suriname	2/2,197	0.09	1/2,114	0.05	16/1,171	1.37
Netherlands Antilles/Aruba	0/1,249	0.00	1/1,073	0.09	10/813	1.23
Eastern Europe	1/2,303	0.04	0/469	0.00	16/881	1.82
Sub-Saharan Africa	5/1,052	0.48	7/1,106	0.63	6/461	1.30
Latin America	0/1,410	0.00	1/489	0.20	22/1,128	1.95
Asia	2/1,820	0.11	0/1,419	0.00	20/2,677	0.75
Total	10/11,200	0.09	15/8,612	0.17	104/8,416	1.24

Table 6.3a Number of positive tests and persons tested for HIV by triage indication, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Notified						
Not notified	8/23,774	0.03	12/13,148	0.09	168/32,456	0.52
Notified for HIV	3/136	2.21	3/105	2.86	31/621	4.99
Notified for other STI/HIV	1/4,757	0.02	3/4,843	0.06	49/5,967	0.82
Unknown	0/838	0.00	0/630	0.00	8/385	2.08
Symptoms						
No	6/202,024	0.00	13/11,650	0.11	181/32,621	0.55
Yes	6/9,223	0.07	5/7,038	0.07	74/6,746	1.10
Unknown	0/78	0.00	0/38	0.00	1/62	1.61
STI/HIV endemic area						
No	2/18,305	0.01	3/10,114	0.03	152/31,013	0.49
Yes	10/11,200	0.09	15/8,612	0.17	104/8,416	1.24
Age <25 years						
No	6/17,170	0.03	17/12,324	0.14	213/32,050	0.66
Yes	6/12,335	0.05	1/6,402	0.02	43/7,378	0.58
Partner in risk group						
No	3/10,447	0.03	8/8,376	0.10		
Yes	9/18,347	0.05	9/9,362	0.10		
Unknown	0/711	0.00	1/988	0.10		
CSW						
No	11/23,549	0.05	17/18,494	0.09	242/38,459	0.63
Yes, in past 6 months	1/5,856	0.02	0/140	0.00	11/739	1.49
Unknown	0/100	0.00	1/92	1.09	3/231	1.30
Gonorrhoea/chlamydia/syphilis in past year						
Not tested	9/16,728	0.05	15/13,495	0.11	111/13,413	0.83
Tested, negative	0/8,983	0.00	3/3,505	0.09	62/14,973	0.41
Tested, positive	3/3,390	0.09	0/1,591	0.00	66/8,721	0.76
Tested, unknown	0/77	0.00	0/23	0.00	3/256	1.17
Unknown	0/327	0.00	0/112	0.00	14/2,066	0.68

Table 6.3b Number of positive tests and persons tested for HIV by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Socioeconomic status						
High	3/7,231	0.04	1/4,750	0.02	59/12,009	0.49
Medium	2/6,108	0.03	2/3,813	0.05	54/9,068	0.60
Low	6/13,007	0.05	11/9,470	0.12	117/16,862	0.69
Unknown	1/3,159	0.03	4/693	0.58	26/1,490	1.74
Educational level#						
High	0/15,834	0.00	3/10,593	0.03	126/26,049	0.48
Low/medium	9/10,296	0.09	8/6,921	0.12	93/10,588	0.88
Unknown	3/3,375	0.09	7/1,212	0.58	37/2,792	1.33
Number of partners in past 6 months						
0 partners	0/210	0.00	2/110	1.82	3/214	1.40
1 partner	6/6,385	0.09	4/2,824	0.14	26/3,231	0.80
2 partners	1/6,181	0.02	5/3,625	0.14	24/4,094	0.59
3 or more partners	5/14,742	0.03	7/12,083	0.06	194/31,218	0.62
Unknown	0/1,987	0.00	0/84	0.00	9/672	1.34
Condom use if last sexual contact was casual*						
No	3/10,874	0.03	6/8,186	0.07	90/13,531	0.67
Yes	0/6,957	0.00	4/3,796	0.11	65/11,852	0.55
Unknown	0/483	0.00	0/286	0.00	2/888	0.23
Anal sex, in past 6 months						
No	9/21,475	0.04			9/3,508	0.26
Yes, insertive					20/7,916	0.25
Yes, receptive	2/7,261	0.03			37/4,511	0.82
Yes, insertive and receptive					177/20,011	0.88
Receptive oral sex with a man, in past 6 months						
No	3/3,381	0.09			3/1,263	0.24
Yes	7/24,861	0.03			251/37,352	0.67
Unknown	2/1,263	0.16			2/814	0.25

Table 6.3b (continued) Number of positive tests and persons tested for HIV by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW						
No	12/29,167	0.04	16/16,200	0.10	249/38,049	0.65
Yes, in past 6 months	0/176	0.00	2/2,446	0.08	4/1,168	0.34
Unknown	0/162	0.00	0/80	0.00	3/212	1.42
Previous HIV test						
No	7/11,847	0.06	6/8,865	0.07	36/5,010	0.72
Yes, positive	0/0	0.00	0/1	0.00	0/5	0.00
Yes, negative	5/16,991	0.03	12/9,499	0.13	216/34,160	0.63
Yes, result unknown	0/70	0.00	0/30	0.00	2/40	5.00
Unknown	0/597	0.00	0/331	0.00	2/214	0.93

* Last sexual contact was steady for 33.9% (n=29,699) and unknown for 1.3% (n=1,108) of persons tested for HIV.

Low/medium level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

Table 6.4 Concurrent STI among persons newly diagnosed with HIV by gender and type of sexual contact, 2017

Concurrent infection	Women (N=12) n (%)	Heterosexual men (N=18) n (%)	MSM (N=256) n (%)
Chlamydia	5 (41.7)	2 (11.1)	56 (21.9)
Gonorrhoea	1 (8.3)	2 (11.1)	64 (25.0)
Syphilis, infectious	0 (0.0)	0 (0.0)	20 (7.8)
Genital herpes	0 (0.0)	0 (0.0)	0 (0.0)
Genital warts	0 (0.0)	0 (0.0)	3 (1.2)
Hepatitis B, infectious	0 (0.0)	1 (5.6)	3 (1.2)
Hepatitis C	0 (0.0)	0 (0.0)	0 (0.0)

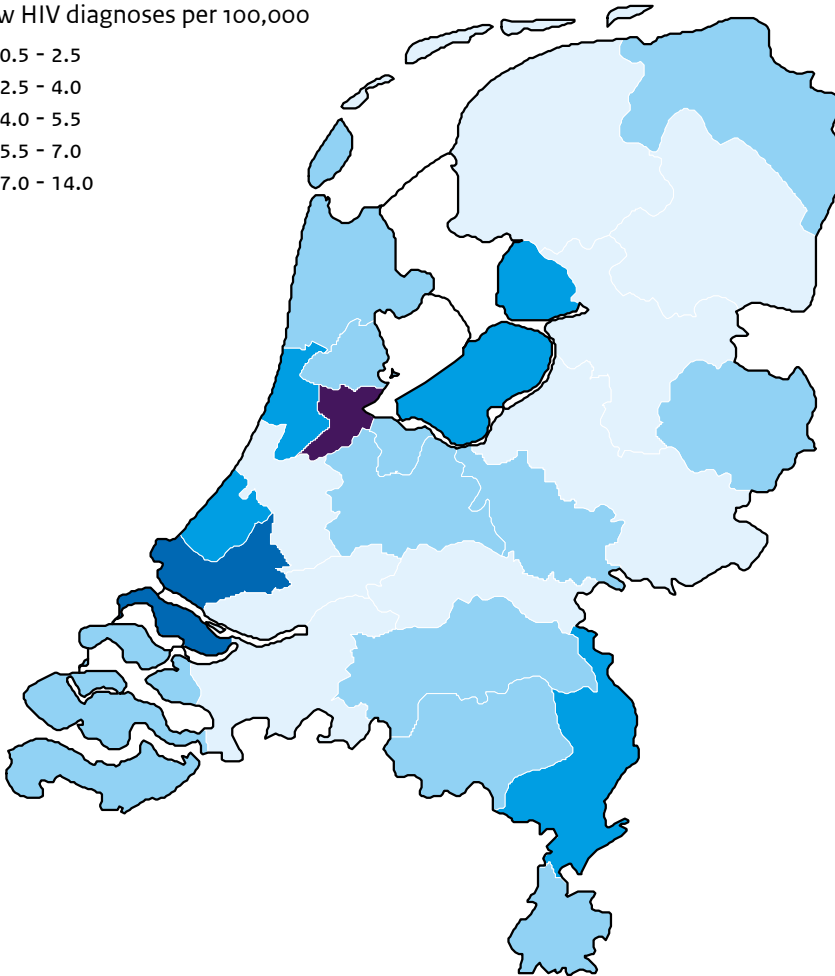
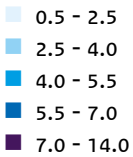
Footnote: SHC check for genital herpes and genital warts on indication only. In addition, clients are not routinely tested on hepatitis C.

6.3 HIV treatment centres

6.3.1 Newly diagnosed HIV cases in care in 2017

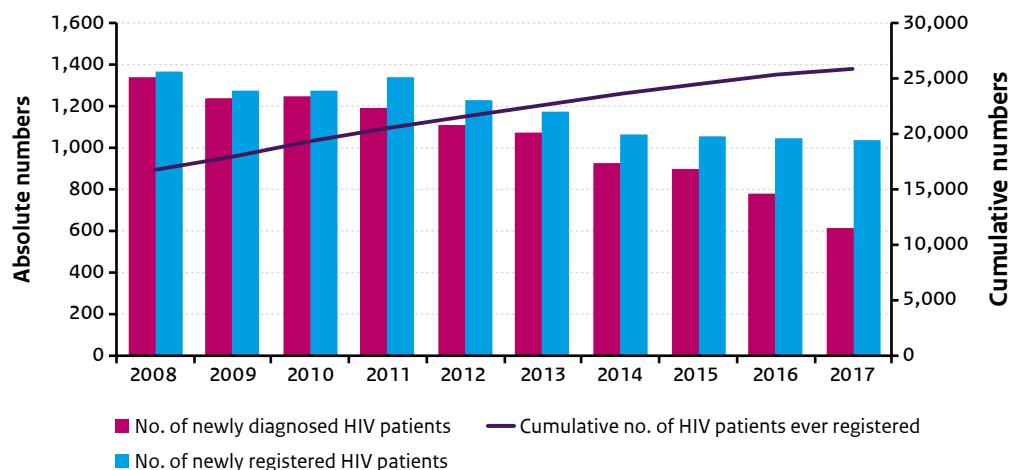
Figure 6.2 Number of new HIV diagnoses per 100,000 inhabitants by region, the Netherlands, 2017

New HIV diagnoses per 100,000



(Sources: Stichting HIV Monitoring, CBS)

Figure 6.3 Number of newly diagnosed HIV cases and newly registered HIV patients by year, 2008-2017



(Source: Stichting HIV Monitoring, 2017 incomplete)

Table 6.5a Number of HIV patients diagnosed in 2017 by age and main transmission category, as of December 31, 2017

Age (years)	Women (%)	Heterosexual men (%)	MSM (%)	Other/unknown* (%)
0-14	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.3)
15-19	1 (1.4)	0 (0.0)	14 (3.4)	2 (4.5)
20-24	10 (13.9)	5 (6.1)	46 (11.0)	2 (4.5)
25-29	9 (12.5)	6 (7.3)	79 (18.9)	1 (2.3)
30-39	21 (29.2)	26 (31.7)	102 (24.5)	6 (13.6)
40-49	16 (22.2)	21 (25.6)	78 (18.7)	15 (34.1)
50-59	13 (18.1)	19 (23.2)	60 (14.4)	9 (20.5)
60-69	1 (1.4)	3 (3.7)	32 (7.7)	6 (13.6)
70-79	1 (1.4)	2 (2.4)	6 (1.4)	2 (4.5)
≥ 80	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	72	82	417	44

* Injecting drug use, blood and blood contacts, mother-to-child transmission, other, unknown.

Table 6.5b Number of HIV patients in care, by age at diagnosis and main transmission category, as of December 31, 2017

Age (years)	Women (%)	Heterosexual men (%)	MSM (%)	Other/unknown* (%)
0-14	3 (0.1)	0 (0.0)	8 (0.1)	294 (17.8)
15-19	156 (4.9)	31 (1.3)	206 (1.7)	45 (2.7)
20-24	450 (14.0)	168 (6.8)	1,052 (8.5)	142 (8.6)
25-29	692 (21.6)	292 (11.9)	1,874 (15.2)	202 (12.2)
30-39	1,084 (33.8)	848 (34.5)	4,310 (34.9)	449 (27.1)
40-49	477 (14.9)	655 (26.6)	3,186 (25.8)	269 (16.3)
50-59	248 (7.7)	333 (13.5)	1,324 (10.7)	140 (8.5)
60-69	69 (2.1)	114 (4.6)	339 (2.7)	54 (3.3)
70-79	16 (0.5)	14 (0.6)	45 (0.4)	11 (0.7)
≥ 80	0 (0.0)	1 (0.0)	1 (0.0)	0 (0.0)
Unknown	16 (0.5)	4 (0.2)	6 (0.0)	49 (3.0)
Total	3,211	2,460	12,351	1,655

* Injecting drug use, blood and blood contacts, mother-to-child transmission, other, unknown.

Table 6.6 Number of HIV cases diagnosed in 2017 and number of HIV patients in care by gender and main reported transmission risk group, as of December 31, 2017

Transmission risk group	Women		Men		Total	
	2017 (%)	Total in care (%)	2017 (%)	Total in care (%)	2017 (%)	Total in care (%)
MSM	-	-	417 (77.7)	12,351 (77.1)	417 (67.8)	12,351 (62.8)
Heterosexual contact	72 (92.3)	3,211 (87.7)	82 (15.3)	2,460 (15.4)	154 (25.0)	5,671 (28.8)
Injecting drug use	0 (0.0)	75 (2.0)	2 (0.4)	214 (1.3)	2 (0.3)	289 (1.5)
Blood or blood products	1 (1.3)	91 (2.5)	6 (1.1)	155 (1.0)	7 (1.1)	246 (1.3)
Mother to child	1 (1.3)	131 (3.6)	0 (0.0)	137 (0.9)	1 (0.2)	268 (1.4)
Other/unknown	4 (5.1)	154 (4.2)	30 (5.6)	698 (4.4)	34 (5.5)	852 (4.3)
Total	78	3,662	537	16,015	615	19,677

Table 6.7a Number of HIV cases diagnosed in 2017 by region of origin and main transmission category, as of December 31, 2017

Region of origin	Women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
The Netherlands	26 (36.1)	44 (53.7)	274 (65.7)	32 (72.7)
Europe, other	5 (6.9)	8 (9.8)	40 (9.6)	4 (9.1)
Caribbean & Latin America	9 (12.5)	10 (12.2)	57 (13.7)	2 (4.5)
Sub-Saharan Africa	22 (30.6)	17 (20.7)	5 (1.2)	4 (9.1)
Other	9 (12.5)	2 (2.4)	41 (9.8)	2 (4.5)
Unknown	1 (1.4)	1 (1.2)	0 (0.0)	0 (0.0)
Total	72	82	417	44

* Injecting drug use, blood and blood contacts, mother-to-child transmission, other, unknown.

Table 6.7b Number of HIV patients in care by region of origin and main transmission group, as of December 31, 2017

Region of origin	Women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
The Netherlands	945 (29.4)	1,156 (47.0)	8,896 (72.0)	772 (46.6)
Europe, other	159 (5.0)	168 (6.8)	1,148 (9.3)	213 (12.9)
Caribbean & Latin America	479 (14.9)	346 (14.1)	1,284 (10.4)	124 (7.5)
Sub-Saharan Africa	1,352 (42.1)	666 (27.1)	166 (1.3)	401 (24.2)
Other	268 (8.3)	118 (4.8)	811 (6.6)	139 (8.4)
Unknown	8 (0.2)	6 (0.2)	46 (0.4)	6 (0.4)
Total	3,211	2,460	12,351	1,655

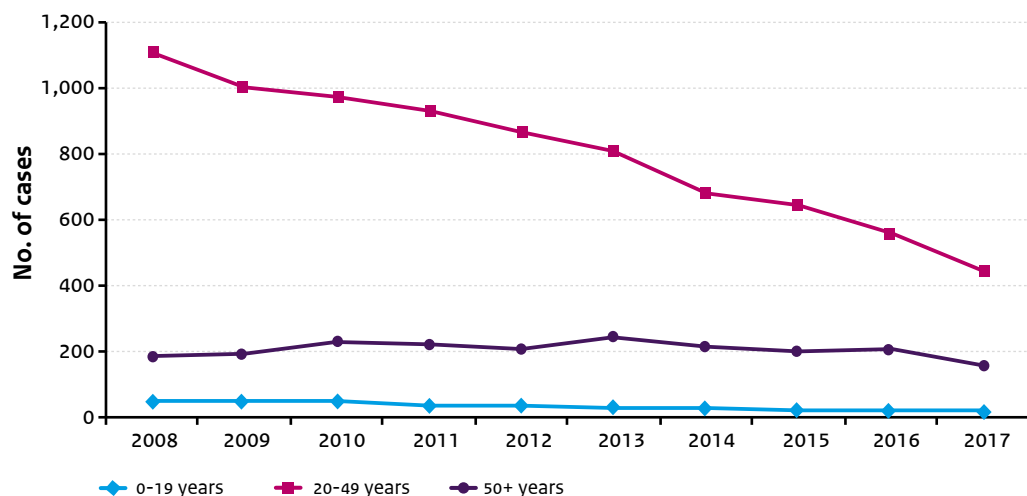
* Injecting drug use, blood and blood contacts, mother-to-child transmission, other, unknown.

Table 6.8 Number of HIV cases diagnosed in 2017 by test location and main transmission category, as of December 31, 2017

Test location	Women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
PHS/STI clinic	9 (12.5)	9 (11.0)	167 (40.0)	5 (11.4)
Hospital	27 (37.5)	34 (41.5)	72 (17.3)	25 (56.8)
General practitioner	24 (33.3)	35 (42.7)	131 (31.4)	9 (20.5)
Pregnancy screening	8 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)
Other	4 (5.6)	4 (4.9)	47 (11.3)	5 (11.4)
Total	72	82	417	44

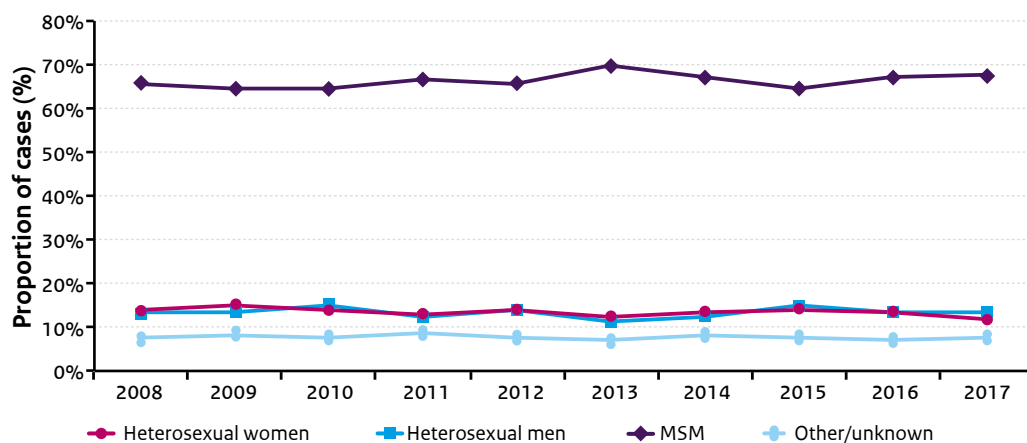
* Injecting drug use, blood and blood contacts, mother-to-child transmission, other, unknown.

Figure 6.4 Number of newly diagnosed HIV cases by age group and year of diagnosis, 2008-2017



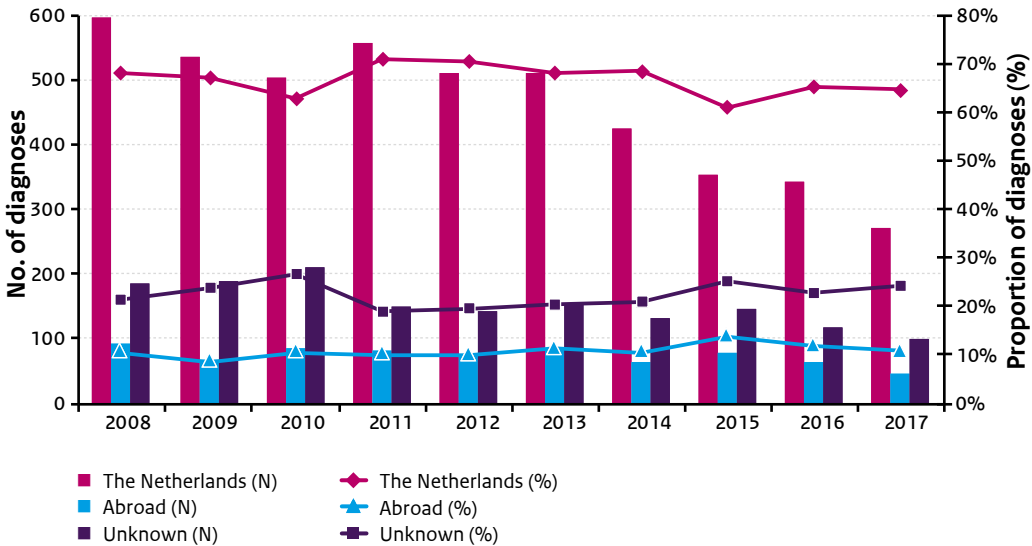
(Source: Stichting HIV Monitoring, 2017 incomplete)

Figure 6.5 Proportion of newly diagnosed HIV cases, by main transmission group and year of diagnosis, 2008-2017



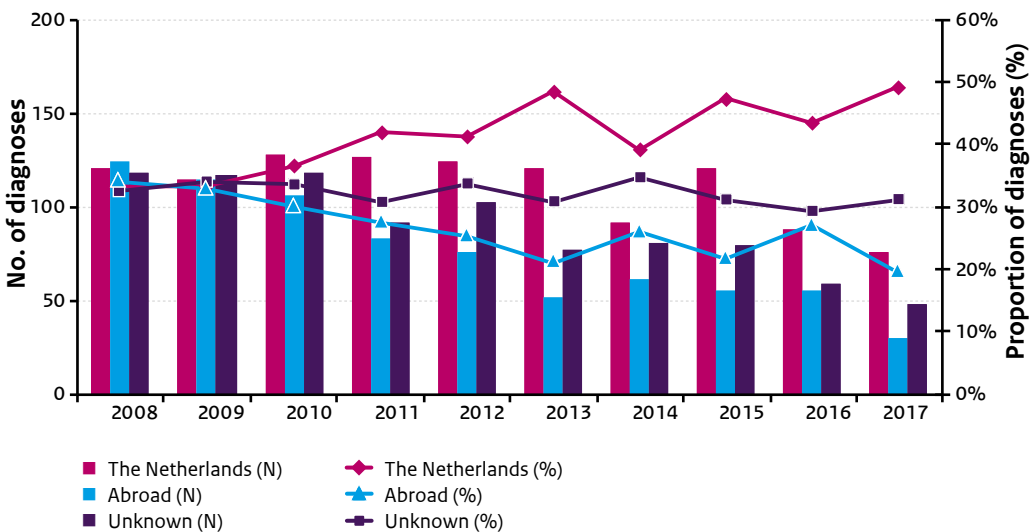
(Source: Stichting HIV Monitoring, 2017 incomplete)

Figure 6.6a Reported country of HIV infection of newly diagnosed MSM by year of diagnosis, 2008-2017



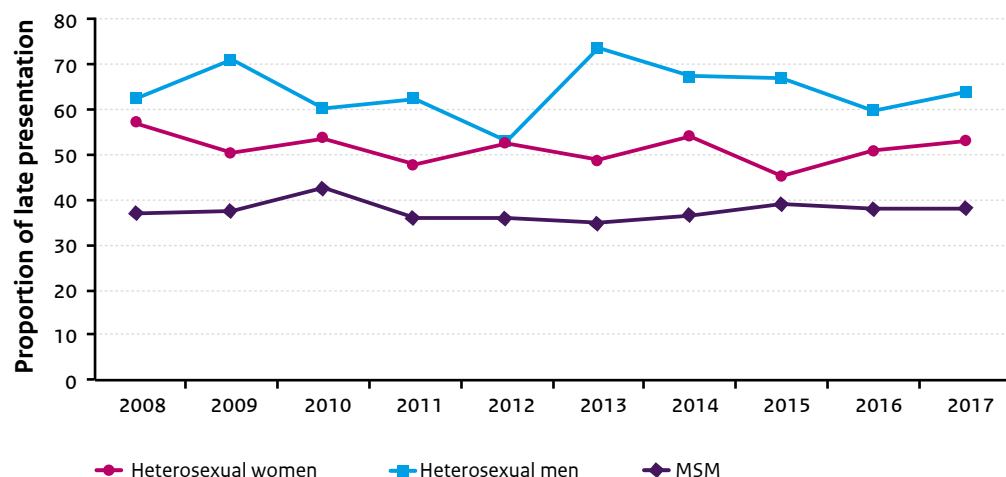
(Source: Stichting HIV Monitoring, 2017 incomplete)

Figure 6.6b Reported country of HIV infection of newly diagnosed HIV positive heterosexuals by year of diagnosis, 2008-2017



(Source: Stichting HIV Monitoring, 2017 incomplete)

Figure 6.7 Proportion of late presentation (CD4 count <350/mm³ or AIDS at diagnosis) by transmission risk group, 2008-2017



(Source: Stichting HIV Monitoring, 2017 incomplete)

6.3.2 AIDS cases and deaths among people with HIV

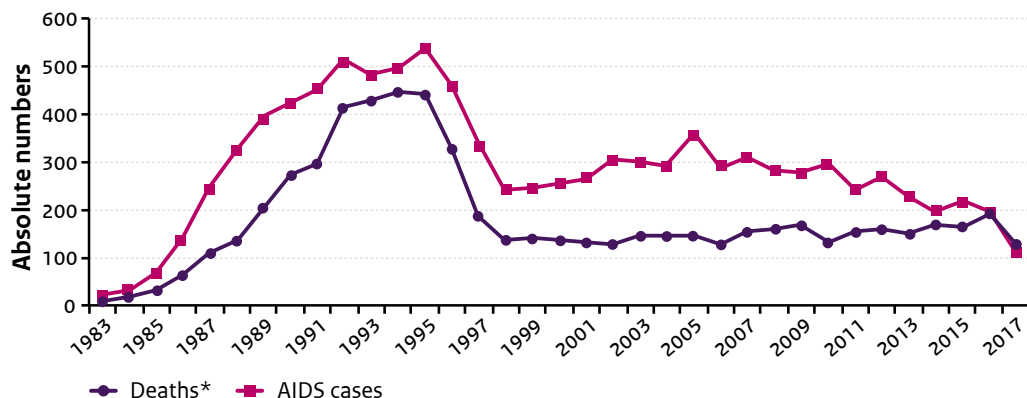
Table 6.9 Number of AIDS patients by year of AIDS diagnosis and transmission risk group, 2008-2017

Year of diagnosis	Heterosexual women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
2008	46 (16.5)	56 (20.1)	133 (47.7)	44 (15.8)
2009	39 (14.2)	68 (24.7)	138 (50.2)	30 (10.9)
2010	58 (19.9)	62 (21.3)	132 (45.4)	39 (13.4)
2011	45 (18.9)	40 (16.8)	117 (49.2)	36 (15.1)
2012	47 (17.5)	52 (19.4)	132 (49.3)	37 (13.8)
2013	34 (15.0)	40 (17.7)	119 (52.7)	33 (14.6)
2014	23 (11.9)	40 (20.7)	96 (49.7)	34 (17.6)
2015	30 (14.0)	43 (20.0)	106 (49.3)	36 (16.7)
2016	36 (18.6)	38 (19.6)	92 (47.4)	28 (14.4)
2017	20 (18.3)	24 (22.0)	48 (44.0)	17 (15.6)

(Source: Stichting HIV Monitoring, 2017 incomplete)

* injecting drug use, blood and blood contacts, mother-to-child transmission, other, unknown.

Figure 6.8 Number of AIDS cases and deaths among people with HIV, 1983-2017



(Sources: AIDS cases < 1999: AIDS registration Health Inspectorate, ≥ 1999: Stichting HIV Monitoring.
Deaths < 2002: CBS, ≥ 2002: Stichting HIV Monitoring, 2017 incomplete)

* Total deaths among HIV patients, not only caused by HIV/AIDS.

Table 6.10 Number of deaths among people with HIV/AIDS by year of death and transmission risk group, 2008-2017

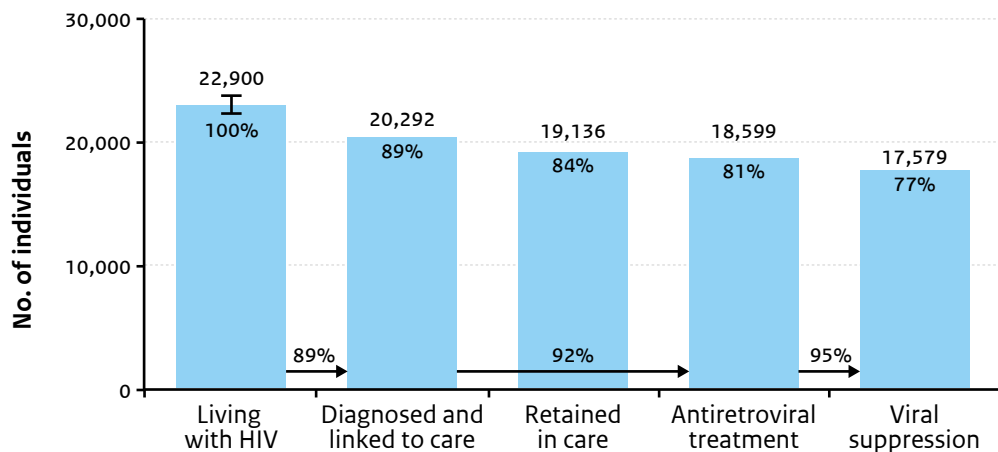
Year of diagnosis	Heterosexual women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
2008	16 (10.3)	25 (16.0)	80 (51.3)	35 (22.4)
2009	13 (7.9)	27 (16.5)	83 (50.6)	41 (25.0)
2010	16 (12.2)	16 (12.2)	64 (48.9)	35 (26.7)
2011	13 (8.4)	32 (20.8)	77 (50.0)	32 (20.8)
2012	9 (5.7)	27 (17.1)	88 (55.7)	34 (21.5)
2013	12 (8.0)	31 (20.7)	80 (53.3)	27 (18.0)
2014	19 (11.5)	26 (15.8)	87 (52.7)	33 (20.0)
2015	18 (11.2)	38 (23.6)	76 (47.2)	29 (18.0)
2016	20 (10.5)	35 (18.4)	95 (50.0)	40 (21.1)
2017	4 (3.2)	24 (19.4)	65 (52.4)	31 (25.0)

(Source: Stichting HIV Monitoring, 2017 incomplete)

* injecting drug use, blood and blood contacts, mother-to-child transmission, other, unknown.

Footnote: Deaths, not only caused by HIV/AIDS.

Figure 6.9 Continuum of care for HIV in 2016, Stichting HIV Monitoring



(Source: Stichting HIV Monitoring, Monitoring Report 2017 SHM: Monitoring of Human Immunodeficiency Virus (HIV) Infection in the Netherlands. See for details: www.hiv-monitoring.nl)

6.4 Other sources

6.4.1 Antenatal screening

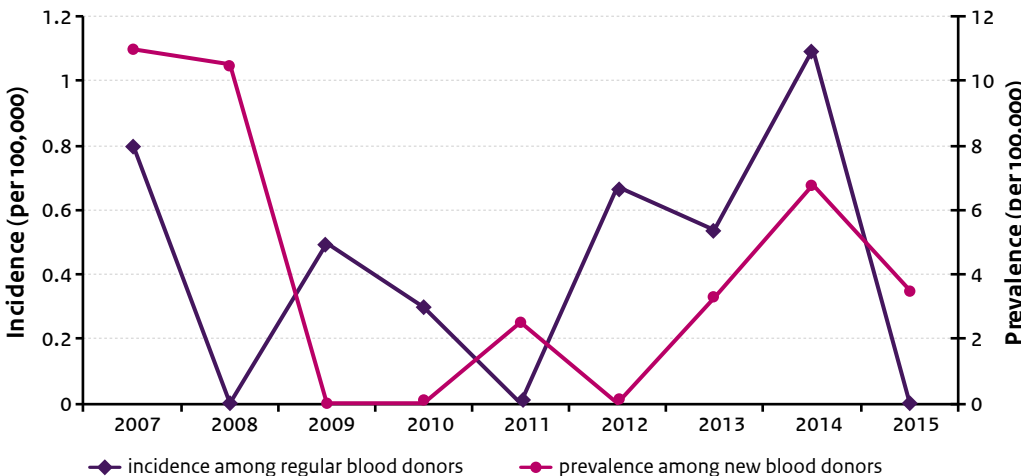
Table 6.11 HIV prevalence estimates in pregnant women, based on test results of antenatal screening, 2012-2016

Year	No. of women screened	Confirmed positive test results	Prevalence estimate
2012	173,802	113	0.07
2013	176,008	99	0.06
2014	174,566	100	0.06
2015	176,103	105	0.06
2016	172,694	88	0.05

(Sources: C.P.B. van der Ploeg (TNO), Y. Schönbeck (TNO), P.Oomen (RIVM), K. Vos (RIMV). Prenatale Screening Infectieziekten en Erythrocytenimmunisatie (PSIE). Procesmonitor 2016. TNO/RIVM 2018; and earlier monitors)

6.4.2 Blood donors

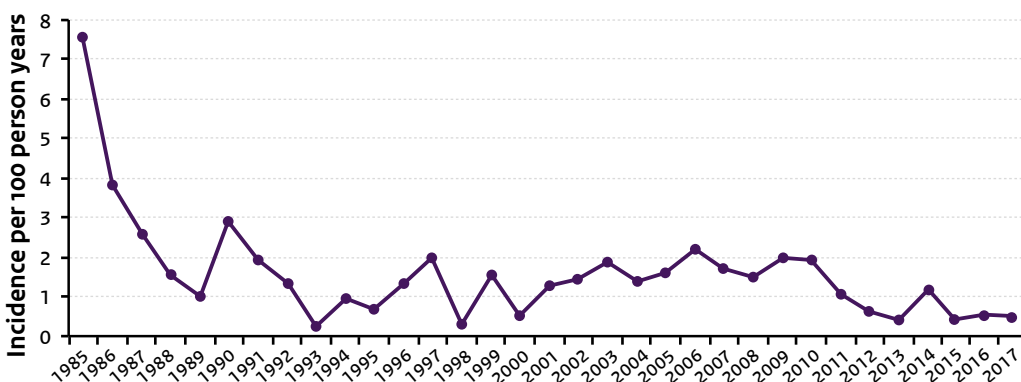
Figure 6.10 HIV incidence and prevalence (per 100,000) among regular and new blood donors in the Netherlands, 2007–2015



(Source: Sanquin)

6.4.3 HIV incidence in MSM in the Amsterdam Cohort Studies

Figure 6.11 Yearly HIV incidence among MSM in Amsterdam Cohort Studies, 1985–2017



6.5 General practice

Figure 6.12 Estimated number of prevalent HIV-cases at GPs by gender, based on extrapolation from GP practices in NIVEL-Primary Care Database, 2009-2016.

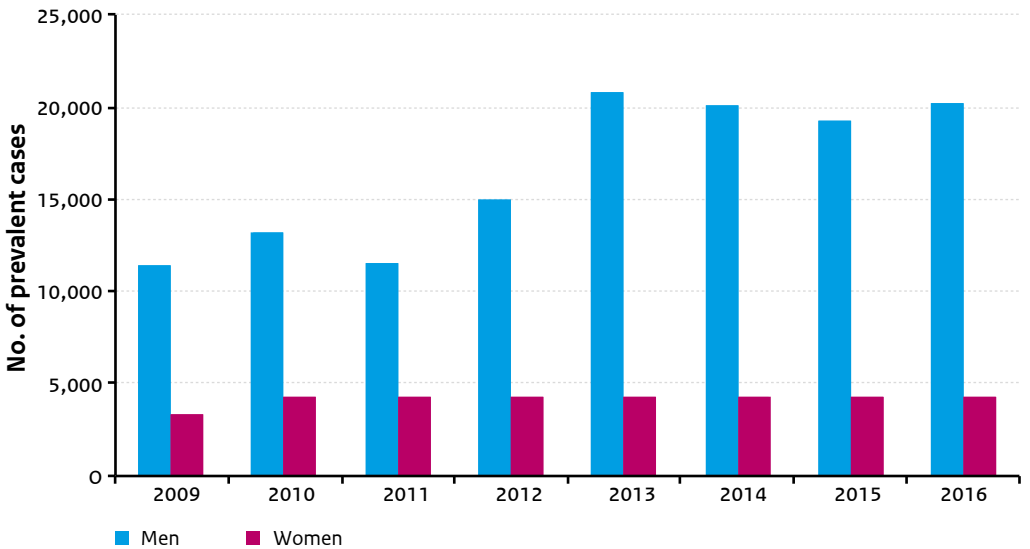


Table 6.12 Estimated prevalence of HIV (rate per 1,000 population) at GPs in the Netherlands by gender, based on GP practices in NIVEL-PCD, 2009-2016

	Women n/1,000	Men n/1,000	Total n/1,000
2009	0.4	1.4	0.9
2010	0.5	1.6	1.0
2011	0.5	1.4	0.9
2012	0.5	1.8	1.1
2013	0.5	2.5	1.5
2014	0.5	2.5	1.5
2015	0.5	2.3	1.4
2016	0.5	2.4	1.4

7 Genital warts

7.1 Key points

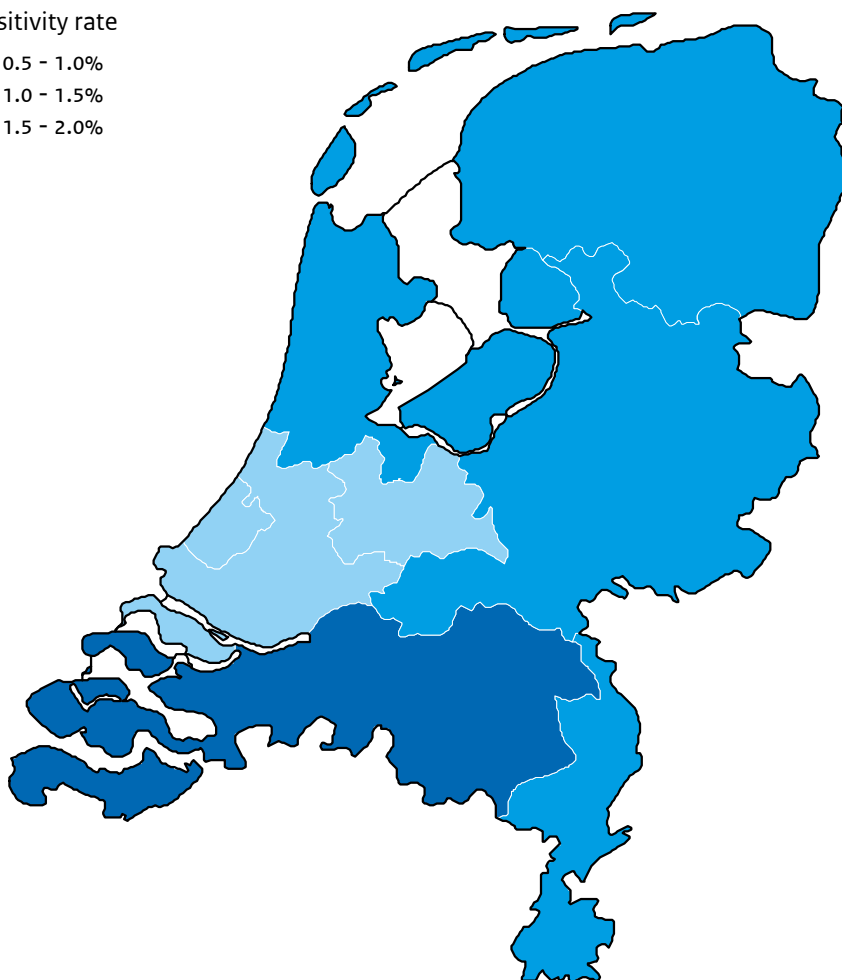
- In 2017, the number of genital warts diagnosed at the SHC was 1,619; 33.7% in women, 46.6% in heterosexual men, and 19.6% in MSM.
- The positivity rate in 2017 was higher among heterosexual men (2.1%) than among women (0.8%) and MSM (0.7%).
- Among women and MSM, the positivity rate has declined since 2008. Among heterosexual men, the positivity rate has been relatively stable since 2013.
- At GPs, the number of genital warts episodes estimated from NIVEL-PCD data was 37,500 in 2016, with a reporting rate of 2.3 per 1,000 population. The reporting rate was higher for men than for women (2.6 versus 1.9/1,000). Among women, the reporting rate was highest in the <25 age group (2.1/1,000) whereas in men it was highest in the ≥25 age group (2.9/1,000).

7.2 Sexual Health Centres: characteristics, risk groups and trends

Figure 7.1 Positivity rates of genital warts by region, the Netherlands, 2017

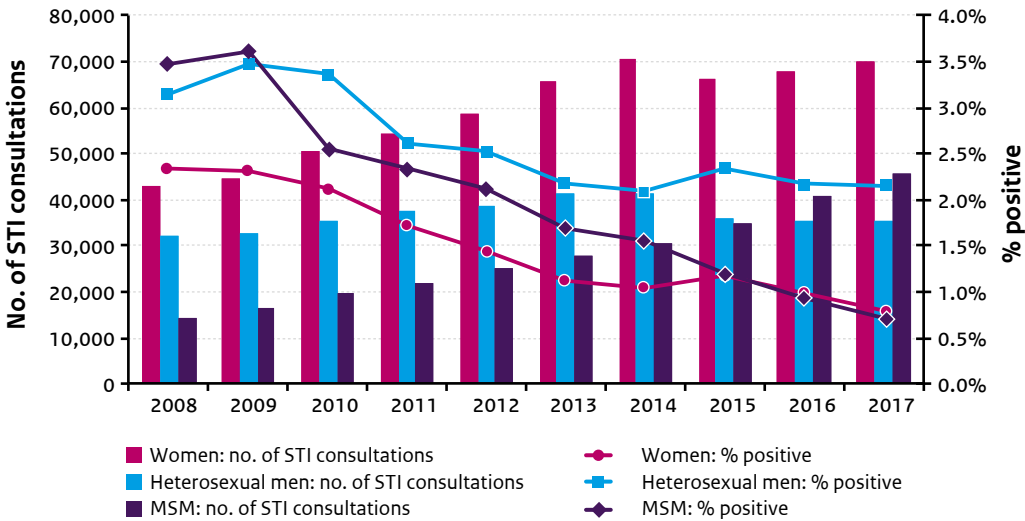
Positivity rate

- 0.5 - 1.0%
- 1.0 - 1.5%
- 1.5 - 2.0%



Footnote: SHC check for genital warts on indication only. Positivity rate was estimated by dividing the number of genital warts diagnoses by the total number of STI consultations.

Figure 7.2 Total number of STI consultations and positivity rate of genital warts by gender and type of sexual contact, 2008-2017



Footnote: SHC check for genital warts on indication only. Positivity rate was estimated by dividing the number of genital warts diagnoses by the total number of STI consultations.

Table 7.1 Number of people diagnosed with genital warts and number of STI consultations by age, gender and type of sexual contact, 2017

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	70/8,592	0.8	30/2,372	1.3	8/1,063	0.8
20-24	334/40,503	0.8	392/18,730	2.1	60/6,560	0.9
25-29	87/11,453	0.8	208/8,073	2.6	82/8,320	1.0
30-34	33/3,457	1.0	62/2,864	2.2	49/6,278	0.8
35-39	6/1,790	0.3	29/1,239	2.3	39/5,333	0.7
40-44	5/1,069	0.5	10/672	1.5	25/4,304	0.6
45-49	4/1,147	0.3	10/544	1.8	17/4,415	0.4
50-54	4/776	0.5	8/324	2.5	15/4,036	0.4
≥ 55	3/588	0.5	6/424	1.4	23/5,243	0.4
Unknown	0/0	0.0	0/0	0.0	0/1	0.0
Total	546/69,375	0.8	755/35,242	2.1	318/45,553	0.7

Footnote: SHC check for genital warts on indication only. Positivity rate was estimated by dividing the number of genital warts diagnoses by the total number of STI consultations.

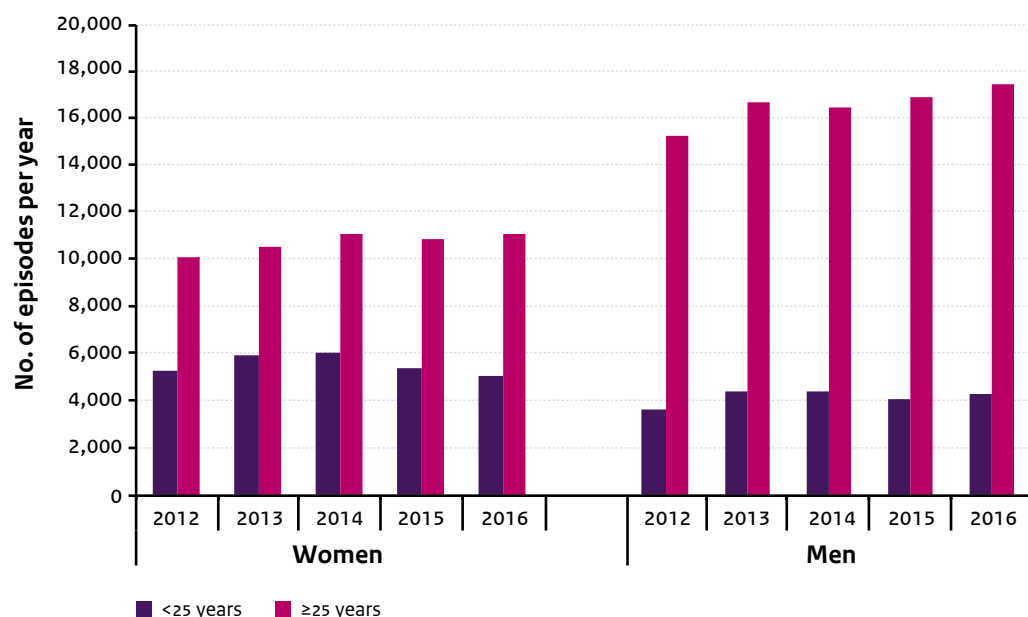
Table 7.2 Number of people diagnosed with genital warts and number of STI consultations by migration background, gender and type of sexual contact, 2017

Migration background	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	420/49,702	0.8	465/21,594	2.2	206/30,947	0.7
Western migrants	53/7,726	0.7	79/3,177	2.5	43/6,715	0.6
First generation non-Western migrants	25/4,292	0.6	78/3,931	2.0	43/5,142	0.8
Second generation non-Western migrants	48/7,623	0.6	132/6,525	2.0	25/2,705	0.9
Unknown	0/32	0.0	1/15	6.7	1/44	2.3
Total	546/69,375	0.8	755/35,242	2.1	318/45,553	0.7

Footnote: SHC check for genital warts on indication only. Positivity rate was estimated by dividing the number of genital warts diagnoses by the total number of STI consultations.

7.3 General practice

Figure 7.3 Estimated annual number of episodes of genital warts at GPs by gender and age group, based on extrapolation from GP practices in NIVEL-PCD, 2012-2016



Footnote: About 70% of the total Dutch population consists of persons aged ≥ 25 years and about 30% consists of persons aged < 25 years.

Table 7.3 Annual reporting rate (number of episodes per 1,000 population) of genital warts at GPs in the Netherlands by gender and age group, based on GP practices in NIVEL-PCD, 2012-2016

	Women n/1,000			Men n/1,000			Total n/1,000		
	All	<25	≥ 25	All	<25	≥ 25	All	<25	≥ 25
2012	1.8	2.2	1.7	2.3	1.4	2.6	2.1	1.8	2.1
2013	1.9	2.4	1.7	2.5	1.7	2.9	2.2	2.1	2.3
2014	2.0	2.5	1.8	2.5	1.7	2.8	2.3	2.1	2.3
2015	1.9	2.2	1.8	2.5	1.6	2.9	2.2	1.9	2.3
2016	1.9	2.1	1.8	2.6	1.7	2.9	2.3	1.9	2.4

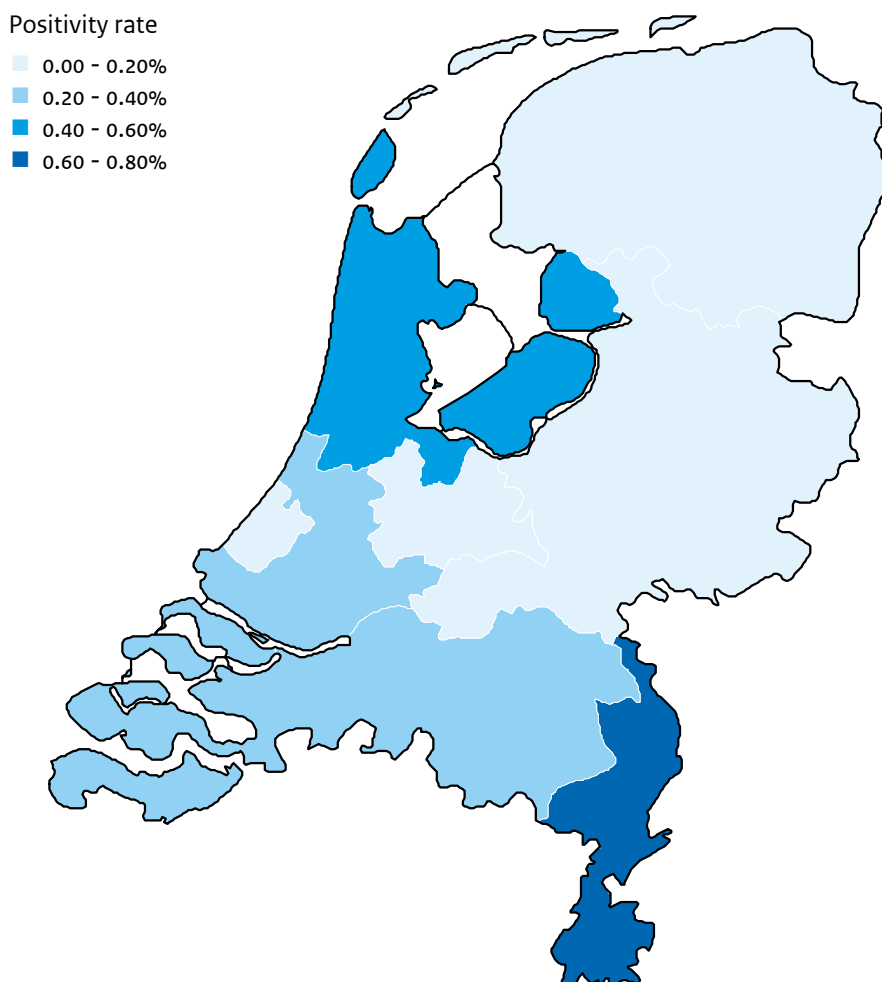
8 Genital herpes

8.1 Key points

- In 2017, the number of genital herpes diagnoses at the SHC was 531 (45.4% women, 30.9% heterosexual men and 23.7% MSM).
- The positivity rate of genital herpes was 0.3% for women and MSM and 0.5% for heterosexual men.
- Among women and MSM, Herpes Simplex Virus 1 (HSV1) primary infection was more common than HSV2 primary infection, while among heterosexual men HSV2 primary infection was more common.
- At GPs, the number of genital herpes episodes estimated from NIVEL-PCD data was 21,500 in 2016, with a reporting rate of 1.3 per 1,000 population. The reporting rate was higher for women than for men (1.8 versus 0.8/1,000). Among men, the reporting rate was higher in the ≥25 age group (1.1/1,000) compared to the <25 age group (0.2/1,000), whereas for women, rates were similar across both age ranges.

8.2 Sexual Health Centres: characteristics, risk groups and trends

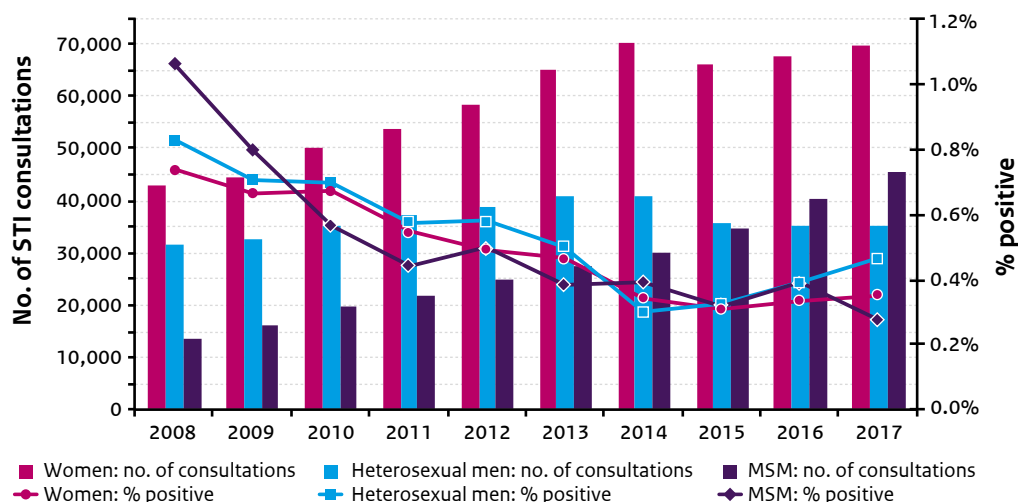
Figure 8.1 Positivity rates of genital herpes by region, the Netherlands, 2017



Footnote 1: SHC check for genital herpes on indication only. Positivity rate was estimated by dividing the number of genital herpes diagnoses by the total number of STI consultations.

Footnote 2: All genital herpes diagnoses at the SHC are included, both lab confirmed and not lab confirmed.

Figure 8.2 Total number of STI consultations and positivity rate of genital herpes by gender and type of sexual contact, 2008-2017



Footnote 1: SHC check for genital herpes on indication only. Positivity rate was estimated by dividing the number of genital herpes diagnoses by the total number of STI consultations.

Footnote 2: All genital herpes diagnoses at the SHC are included, both lab confirmed and not lab confirmed.

Table 8.1 Number of people diagnosed with genital herpes and number of STI consultations by age, gender and type of sexual contact, 2017

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	34/8,592	0.4	7/2,372	0.3	2/1,063	0.2
20-24	129/40,503	0.3	62/18,730	0.3	18/6,560	0.3
25-29	48/11,453	0.4	51/8,073	0.6	24/8,320	0.3
30-34	20/3,457	0.6	15/2,864	0.5	21/6,278	0.3
35-39	0/1,790	0.0	11/1,239	0.9	16/5,333	0.3
40-44	7/1,069	0.7	8/672	1.2	13/4,304	0.3
45-49	2/1,147	0.2	1/544	0.2	9/4,415	0.2
50-54	1/776	0.1	5/324	1.5	15/4,036	0.4
≥ 55	0/588	0.0	4/424	0.9	8/5,243	0.2
Unknown	0/0	0.0	0/0	0.0	0/1	0.0
Total	241/69,375	0.3	164/35,242	0.5	126/45,553	0.3

Footnote 1: SHC test for genital herpes on indication only. Positivity rate was estimated by dividing the number of genital herpes diagnoses by the total number of STI consultations.

Footnote 2: All genital herpes diagnoses at the SHC are included, both lab confirmed and not lab confirmed.

Table 8.2 Number of people diagnosed with genital herpes and number of STI consultations by migration background, gender and type of sexual contact, 2017

Migration background	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	159/49,702	0.3	76/21,594	0.4	77/30,947	0.2
Western migrants	29/7,726	0.4	20/3,177	0.6	29/6,715	0.4
First generation non-Western migrants	19/4,292	0.4	32/3,931	0.8	16/5,142	0.3
Second generation non-Western migrants	33/7,623	0.4	36/6,525	0.6	4/2,705	0.1
Unknown	1/32	3.1	0/15	0.0	0/44	0.0
Total	241/69,375	0.3	164/35,242	0.5	126/45,553	0.3

Footnote 1: SHC test for genital herpes on indication only. Positivity rate was estimated by dividing the number of genital herpes diagnoses by the total number of STI consultations.

Footnote 2: All genital herpes diagnoses at the SHC are included, both lab confirmed and not lab confirmed.

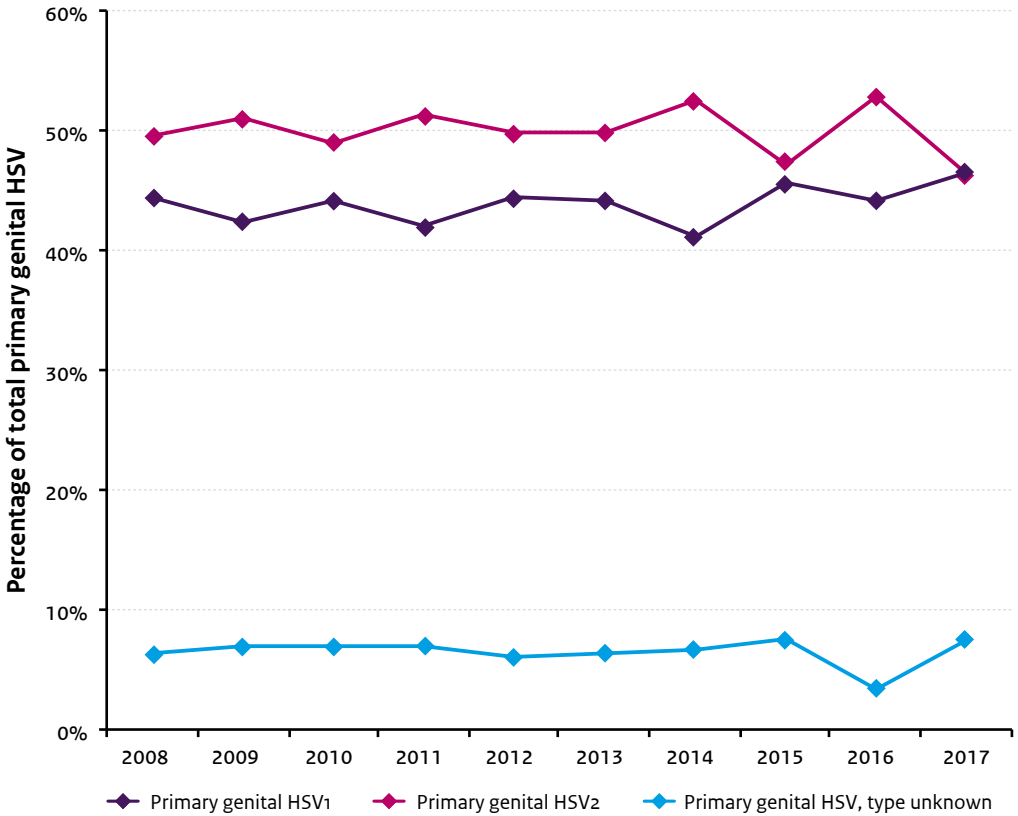
Table 8.3 Number and percentage of genital herpes types by gender and type of sexual contact, 2017

	Women		Heterosexual men		MSM	
	N	%	N	%	N	%
Primary HSV1	118	49.0	51	30.9	69	54.3
Primary HSV2	96	39.8	91	55.2	50	39.4
Primary HSV, type unknown*	19	7.9	15	9.1	4	3.1
Recurrent HSV	8	3.3	8	4.8	4	3.1
Total HSV	241		165		127	

* HSV type is unknown in the absence of a herpes test, or in case of a negative herpes test but with clinical symptoms strongly suggestive of herpes.

Footnote: People can be diagnosed with both HSV1 and HSV2

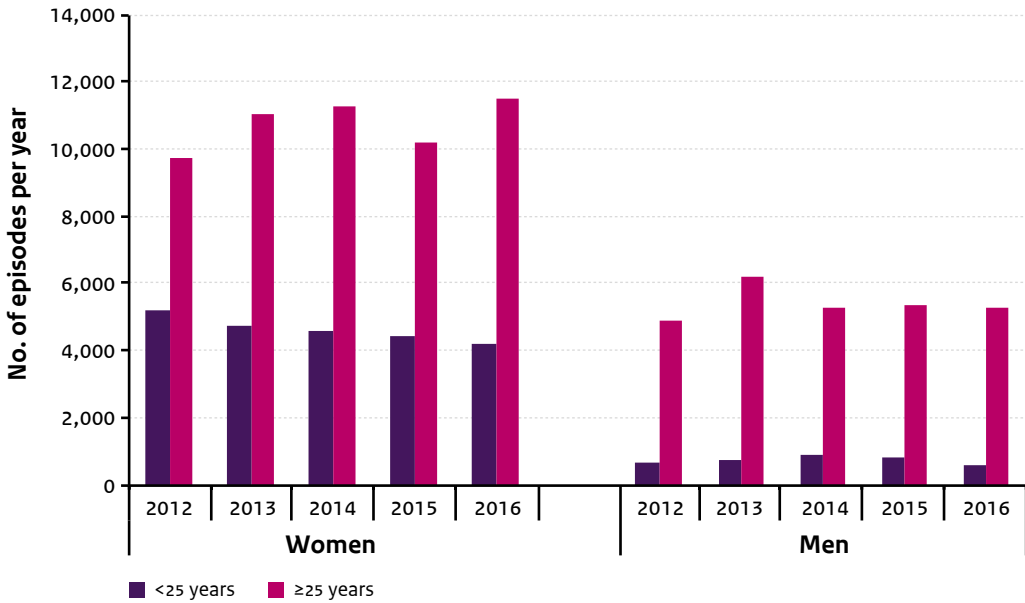
Figure 8.3 Percentage of HSV1, HSV2 and HSV type unknown of all primary genital herpes diagnoses, 2008-2017



Footnote: HSV type is unknown in the absence of a herpes test, or in case of a negative herpes test but with clinical symptoms strongly suggestive of herpes.

8.3 General practice

Figure 8.4 Estimated annual number of episodes of genital herpes at GPs by gender and age group, based on extrapolation from GP practices in NIVEL-PCD, 2012-2016



Footnote: About 70% of the total Dutch population consists of persons aged ≥25 years and about 30% consists of persons aged <25 years.

Table 8.4 Annual reporting rate (number of episodes per 1,000 population) of genital herpes at GPs in the Netherlands by gender and age group, based on GP practices in NIVEL-PCD, 2012-2016

	Women n/1,000			Men n/1,000			Total n/1,000		
	All	<25	≥25	All	<25	≥25	All	<25	≥25
2012	1.8	2.1	1.6	0.7	0.3	0.8	1.3	1.2	1.2
2013	1.9	2.0	1.8	0.8	0.3	1.1	1.4	1.1	1.4
2014	1.9	1.9	1.8	0.7	0.4	0.9	1.3	1.1	1.4
2015	1.7	1.8	1.7	0.7	0.3	0.9	1.2	1.1	1.3
2016	1.8	1.8	1.9	0.8	0.2	1.1	1.3	1.0	1.5

9 Hepatitis B

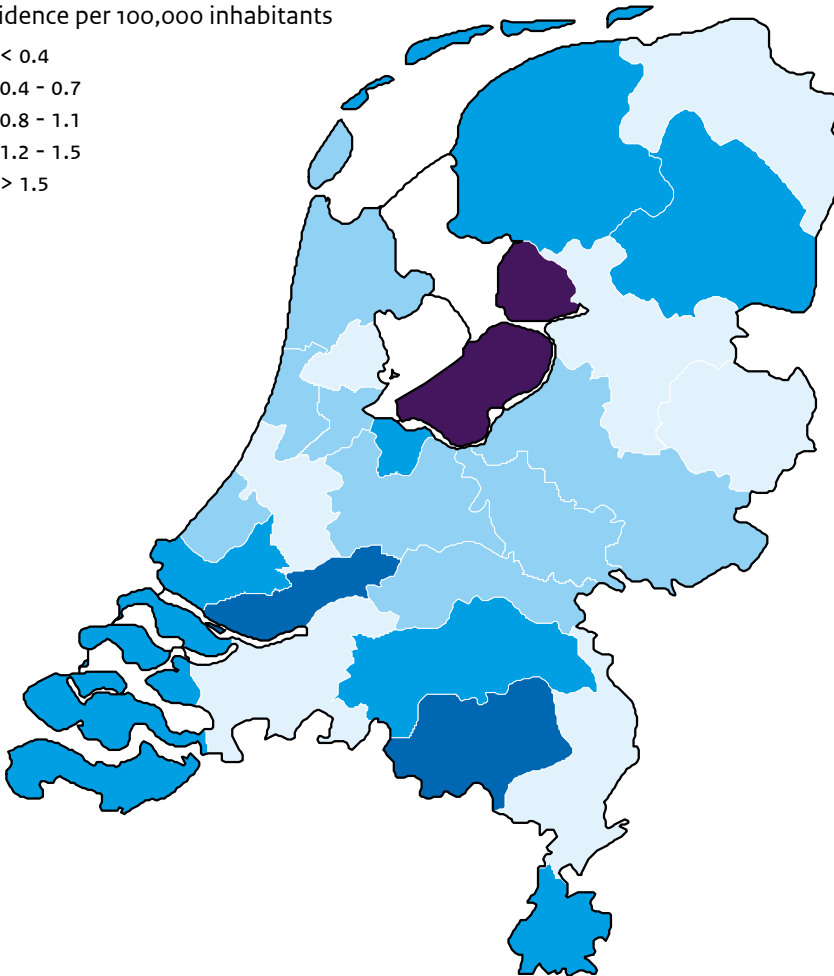
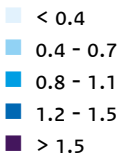
9.1 Key points

- In 2017, there were 114 notified acute hepatitis B cases, comparable to 2016 (111 cases).
- The incidence of notified cases of acute hepatitis B in 2017 was 0.7 per 100,000 inhabitants, and was higher in men (1.1 per 100,000) than in women (0.3 per 100,000).
- Among the notified cases, sexual contact remained the most common transmission route for acute hepatitis B (69%).
- At SHC, 93 infectious hepatitis B cases were diagnosed (43% heterosexual men, 33% MSM, 24% women) in 2017. This was a decrease when compared to 2016 (109 diagnoses).
- At SHC, the positivity rate was higher among first-generation non-Western migrants (0.9%) than among second-generation non-Western migrants (0.2%) or ethnic Dutch (0.1%).
- In 2017, 4,197 MSM and 795 CSW entered the hepatitis B vaccination programme for risk groups. Cumulatively, 58,612 MSM and 22,081 CSW entered the vaccination programme since its start in 2002.

9.2 Notification data: characteristics, risk groups and trends

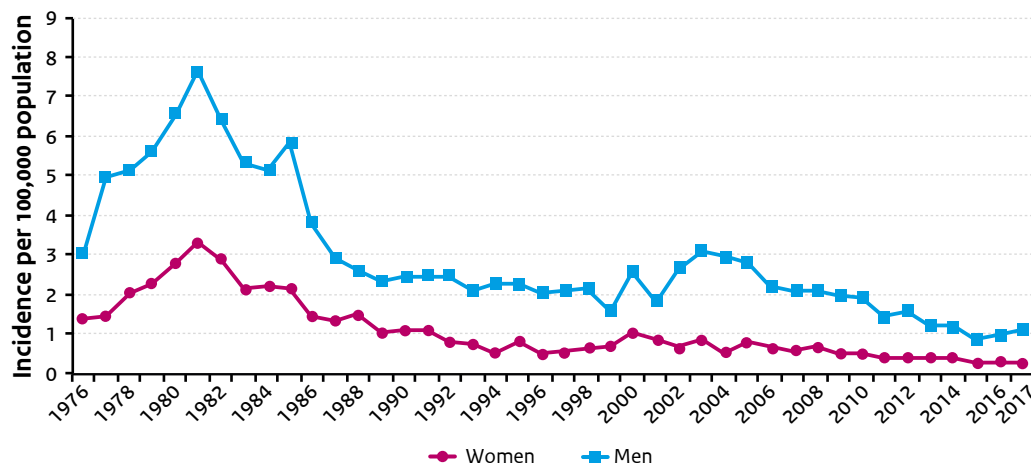
Figure 9.1 Incidence of acute hepatitis B per 100,000 inhabitants by region, the Netherlands, 2017

Incidence per 100,000 inhabitants



(Source: RIVM-OSIRIS, notification data)

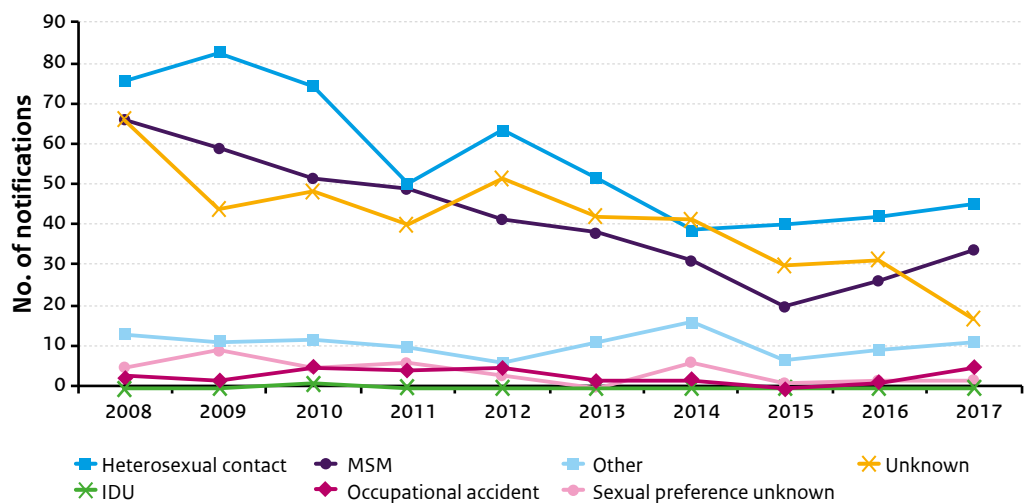
Figure 9.2 Incidence of acute hepatitis B by gender, 1976-2017



(Source: RIVM-OSIRIS, notification data)

Footnote: Data of 2017 might be incomplete, because of reporting delay (data were collected on 14 March 2018)

Figure 9.3 Number of acute hepatitis B infections by route of transmission, 2008-2017



(Source: RIVM-OSIRIS, notification data)

Footnote: Data of 2017 might be incomplete, because of reporting delay (data were collected on 14 March 2018)

Table 9.1 Proportion of acute hepatitis B cases by most common route of transmission, the Netherlands, 2017

	Heterosexual contact (N=47) n (%)*	MSM (N=34) n (%)*	Other (N=33) n (%)*
Infected abroad	9 (19.1)	5 (14.7)	8 (24.2)
Born abroad	9 (19.1)	8 (23.5)	7 (21.2)
Infected by casual partner	31 (66.0)	27 (79.4)	0 (0.0)
Median age (range)	42 (17-69)	48 (20-73)	51 (20-72)

(Source: RIVM-OSIRIS, notification data)

* Proportions per category can overlap, so percentages do not add up to 100%.

Footnote: Data of 2017 might be incomplete, because of reporting delay (data were collected on 14 march 2018)

9.3 Infectious hepatitis B diagnoses at the Sexual Health Centres

Table 9.2 Number of positive tests and persons tested for hepatitis B by age, gender and type of sexual contact, 2017

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	0/802	0.0	1/255	0.4	0/562	0.0
20-24	6/3,216	0.2	8/1,879	0.4	3/2,159	0.1
25-29	6/1,900	0.3	8/1,541	0.5	8/2,160	0.4
30-34	6/928	0.6	6/829	0.7	5/1,439	0.3
35-39	1/486	0.2	5/450	1.1	6/927	0.6
40-44	1/293	0.3	8/252	3.2	1/709	0.1
45-49	1/250	0.4	1/204	0.5	2/687	0.3
50-54	0/148	0.0	2/107	1.9	4/559	0.7
≥ 55	1/118	0.8	1/163	0.6	2/710	0.3
Total	22/8,141	0.3	40/5,680	0.7	31/9,912	0.3

Footnote: Hepatitis B includes both acute and chronic cases.

Table 9.3 Number of positive tests and persons tested for hepatitis B by migration background, gender and type of sexual contact, 2017

Migration background	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	1/3,149	0.0	2/1,515	0.1	8/5,697	0.1
Western migrants	10/1,657	0.6	3/634	0.5	5/1,987	0.3
First generation non-Western migrants	11/2,375	0.5	32/2,681	1.2	15/1,474	1.0
Second generation non-Western migrants	0/941	0.0	3/848	0.4	3/734	0.4
Non-Western, unknown generation	0/19	0.0	0/2	0.0	0/20	0.0
Total	22/8,141	0.3	40/5,680	0.7	31/9,912	0.3

Footnote: Hepatitis B includes both acute and chronic cases.

Table 9.4 Concurrent STI among persons diagnosed with hepatitis B by gender and type of sexual contact, 2017

Concurrent infection	Women (N=22) n (%)	Heterosexual men (N=40) n (%)	MSM (N=31) n (%)
Chlamydia	2 (9.1)	2 (5.0)	4 (12.9)
Gonorrhoea	2 (9.1)	1 (2.5)	4 (12.9)
Syphilis, infectious	0 (0.0)	0 (0.0)	5 (16.1)
HIV newly diagnosed	0 (0.0)	1 (2.5)	3 (9.7)
Genital herpes	0 (0.0)	0 (0.0)	0 (0.0)
Genital warts	0 (0.0)	0 (0.0)	1 (3.2)
Hepatitis C	0 (0.0)	0 (0.0)	0 (0.0)

Footnote 1: Hepatitis B includes both acute and chronic cases.

Footnote 2: SHC check for genital herpes and genital warts on indication only. In addition, clients are not routinely tested on hepatitis C.

9.4 Antenatal screening

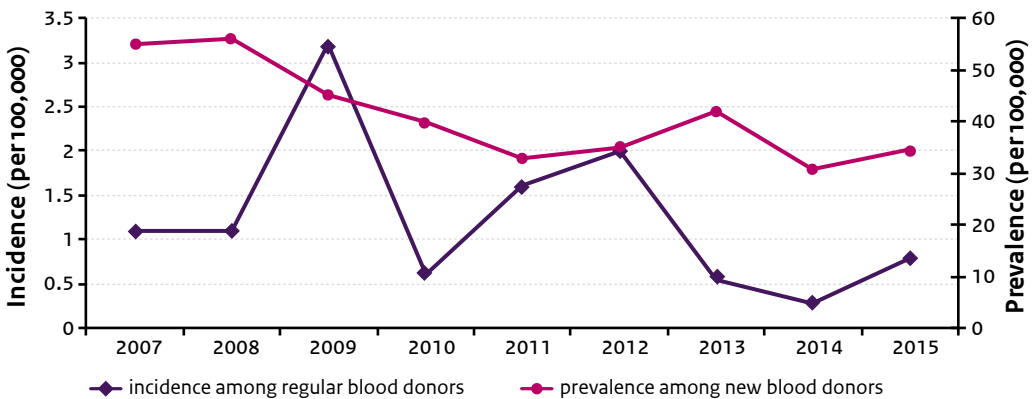
Table 9.5 Hepatitis B prevalence estimates in pregnant women, based on test results of antenatal screening, 2012-2016

Year	No. of women screened	Confirmed positive test results	Prevalence estimate
2012	173,880	536	0.31
2013	176,086	529	0.30
2014	174,646	559	0.32
2015	176,238	506	0.29
2016	172,799	507	0.29

(Sources: C.P.B. van der Ploeg (TNO), Y. Schönbeck (TNO), P. Oomen (RIVM), K. Vos (RIVM). Prenatale Screening Infectieziekten en Erythrocytenimmunisatie (PSIE). Procesmonitor 2016. TNO/RIVM 2018; and earlier monitors)

9.5 Blood donors

Figure 9.4 Hepatitis B incidence and prevalence (per 100,000) among regular and new blood donors in the Netherlands, 2007-2015



(Source: Sanquin)

9.6 Hepatitis B vaccination programme for risk groups

Figure 9.5 Number of persons entering the hepatitis B vaccination programme, 2002-2017

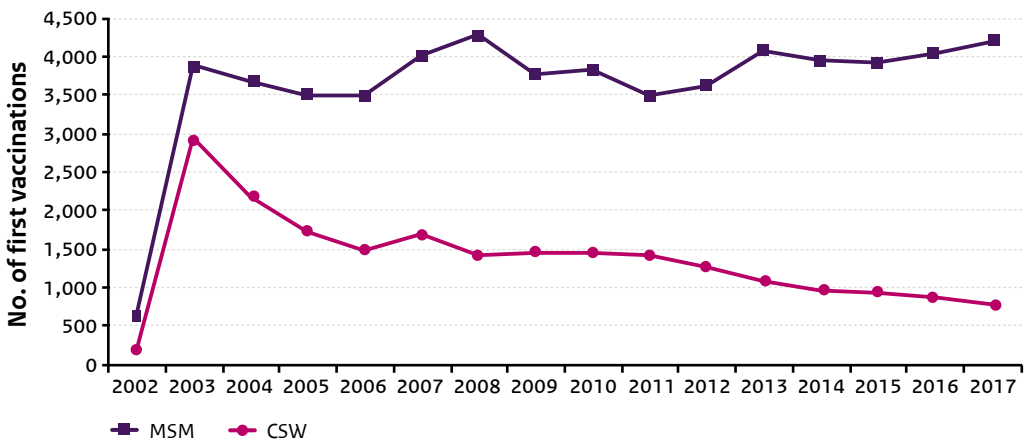


Table 9.6 Number of first, second and third time vaccinated participants of the hepatitis B vaccination programme, 2002-2017

	CSW	MSM
First vaccination	22,081	58,612
Second vaccination	14,299	45,881
Third vaccination	10,052	38,626

Figure 9.6 Percentage of hepatitis B chronically infected and immune participants of the hepatitis B vaccination programme, 2008-2017

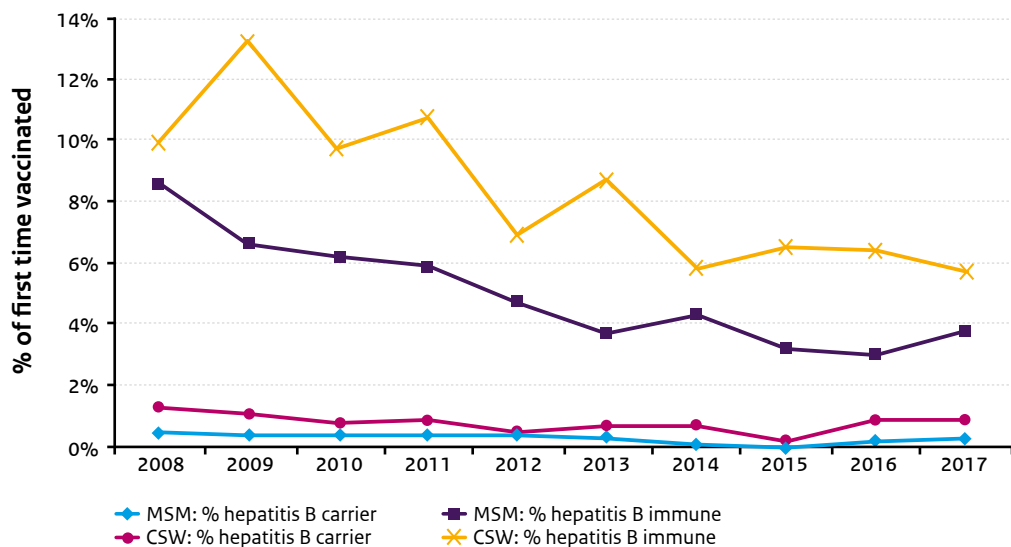
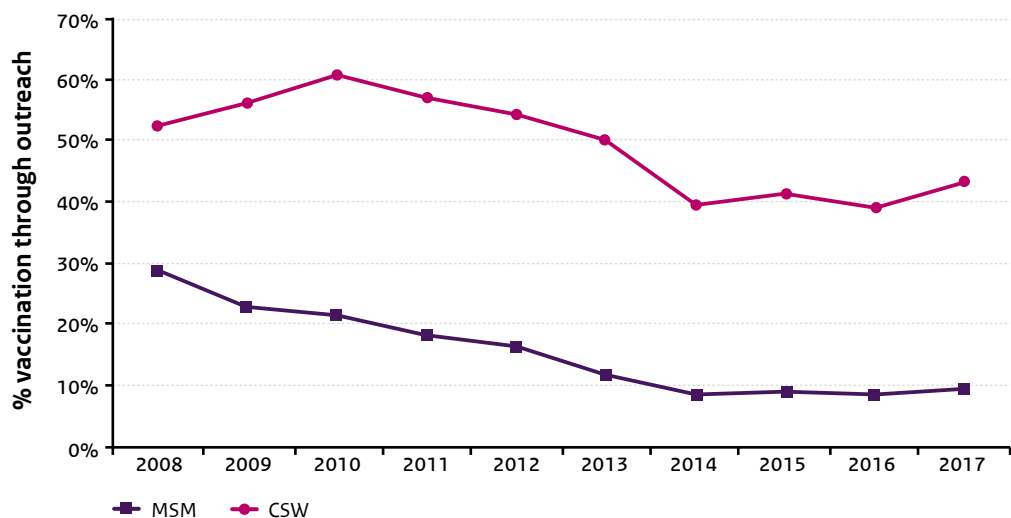


Figure 9.7 Percentage of first hepatitis B vaccinations given at outreach locations* by risk group, 2008-2017



* Outreach locations include penitentiary institutions, MSM locations, drug locations or CSW locations. Non-outreach locations are SHC and Public Health Service locations.

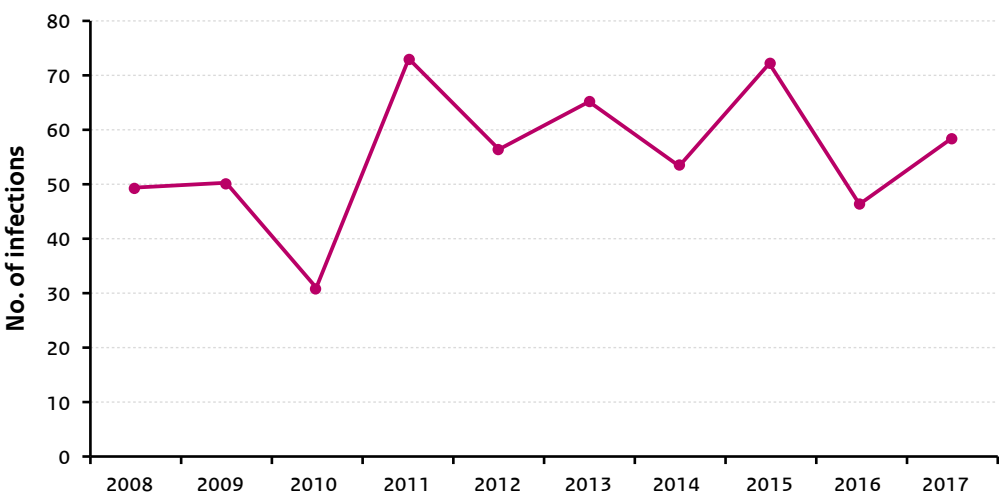
10 Hepatitis C

10.1 Key points

- In 2017, the total number of acute hepatitis C infections (n=58) increased by 26% compared to 2016 (n=46).
- Sexual contact between men remained the most commonly reported transmission route for acute hepatitis C (67%).
- Of all notified hepatitis C infections in MSM in 2017 (n=39), 24 were HIV-positive.
- At the SHC, 3,169 people were tested for hepatitis C, of whom 3,115 were MSM. 50 hepatitis C infections were diagnosed (49 MSM, 1 woman).

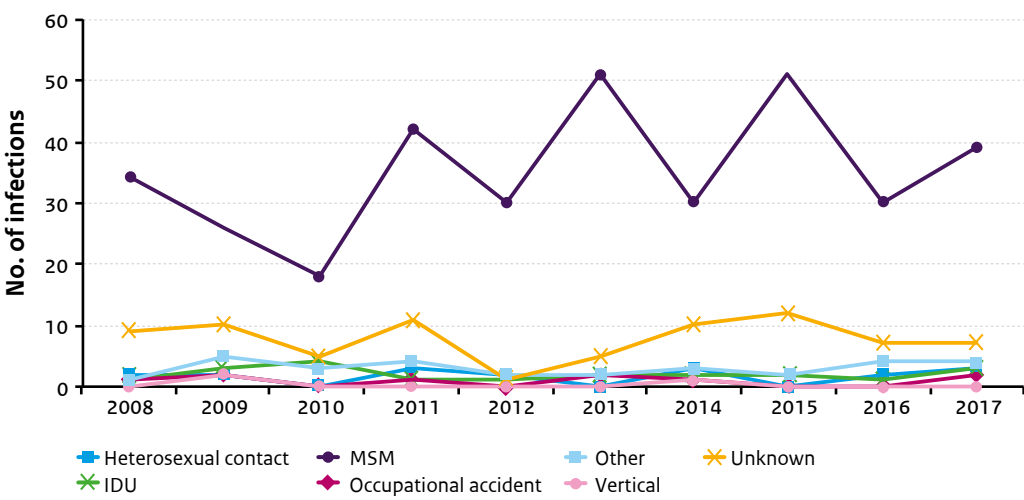
10.2 Notification data: characteristics, risk groups and trends

Figure 10.1 Number of acute hepatitis C infections, 2008-2017



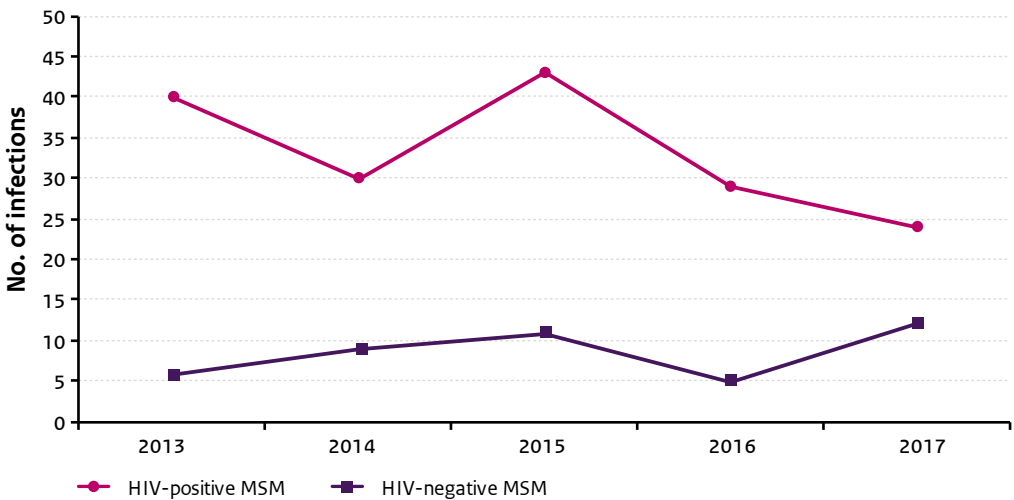
(Source: RIVM-OSIRIS, notification data)

Figure 10.2 Number of acute hepatitis C infections by route of transmission, 2008-2017



(Source: RIVM-OSIRIS, notification data)

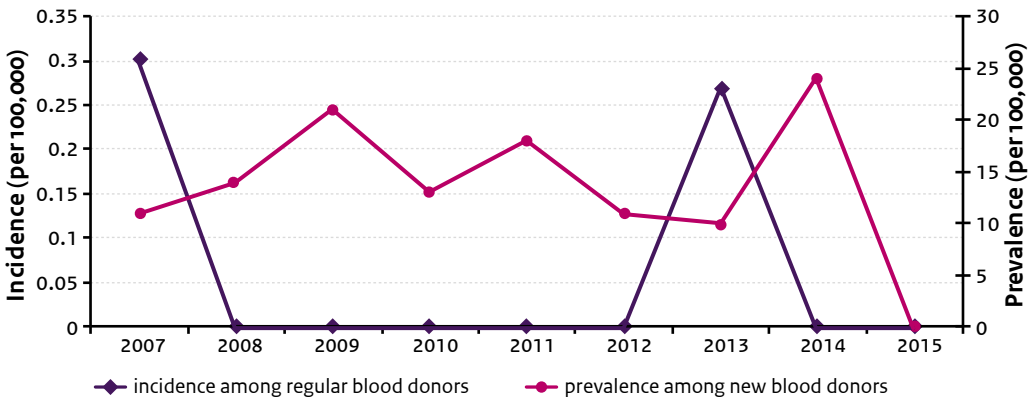
Figure 10.3 Number of acute hepatitis C infections in MSM by HIV status, 2013-2017



(Source: RIVM-OSIRIS, notification data)

10.3 Blood donors

Figure 10.4 Hepatitis C incidence and prevalence (per 100,000) among regular and new blood donors in the Netherlands, 2007-2015



(Source: Sanquin)

11 Conclusions and recommendations

The total number of consultations at SHC increased in 2017 (150,593) compared to 2016 (143,139), but the percentage of persons with a positive STI test diagnosed at SHC (18.4%) remained stable in 2017 compared to 2016. The total number of STI-related episodes recorded at general practices is almost twice that reported at SHC, with an estimated 281,300 episodes in 2016, an increase compared to 2015 (267,400 episodes). This increase was observed mainly among the group aged 25 years and older. The increase of tests at GP could be an indication that people who could not be tested at SHC, especially those aged above 25, went to the GP instead. No data were available for the number of online tests in 2017.

Consultation rates and STI positivity rates differed strongly between the public health service regions in the Netherlands, which can (at least partially) be explained by differences in SHC attendee characteristics. Variation across regions was seen in the percentage of attendees with low/medium education level, age, and the percentage of attendees who were notified or had STI symptoms. Data from the Lifestyle monitor showed that in 2016, 13% of 16-29 year old women, 6% of 16-29 year old heterosexual men, and 30% of 16-29 year old MSM reported having taken an STI test in the last year. These figures are comparable to previous years. Groups that were at high risk of STI, as reflected in their high positivity rates, were those who reported being notified for an STI, having STI related symptoms, having had an STI in the past year, or people who were previously or newly diagnosed with HIV. Among SHC attendees, the proportion of clients reporting not having used a condom at their last sex contact, and having more than three sex partners in the preceding six months, remained unchanged. While this indicates that those at highest risk do find SHC, it also indicates that high-risk behaviour is ongoing. However, other risk reduction strategies and mixing patterns also have an impact on STI prevalence. Further efforts, such as promotion of condom use, repeat testing and more effective (timely and complete) partner notification are needed to ensure that people in high-risk groups effectively reduce the risk of their sexual behaviour, and improve their sexual health and that of their partners. At the same time, testing and treatment strategies need to be optimised to maximise the effect of control efforts and to reach those most in need of care.

Chlamydia remains the most commonly diagnosed bacterial STI, both among high-risk groups at SHC and among people tested at general practice. In SHC, the positivity rate of chlamydia was stable in women and slightly declined in MSM, and only slightly increased among heterosexual men in 2017 compared to 2016. At general practices, the estimated number of chlamydia episodes was fairly stable compared to the previous year. Surveillance of chlamydia at general practices is hampered by lack of a specific ICPC main code for chlamydia. Despite

many efforts, chlamydia rates have not declined¹⁹. Therefore, the one might consider to focus on disease management (i.e. prevention of long term complications of chlamydia) instead of preventing chlamydia infections. In the Netherlands Chlamydia Cohort Study (NECCST), it was estimated that women with a chlamydia history had a higher risk of pelvic inflammatory disease, and tubal factor infertility²⁰. Lymphogranuloma venereum (LGV, an aggressive variant of chlamydia) among MSM remains uncommon, but the number of cases increased again at SHC in 2017, whereas the positivity rate remained stable compared to 2016. Notably, the increase was reported in both HIV positive and HIV negative MSM. The increase in the number of LGV cases can be partially explained by increased rectal chlamydia testing and increased LGV testing of rectal chlamydia positives. Currently, LGV seems to have steadily increased while the testing policy remained unchanged; this increase calls for a stricter adherence to the LGV testing policy. Adherence to the testing policy at SHC improved to 90% in 2017 (i.e. testing on LGV when anal chlamydia is diagnosed), but varied greatly between SHC from 28% to 100%. No data are available for adherence to the LGV testing policy at the GP.

Infections with gonorrhoea mainly occur in MSM. At SHC, the positivity rate remained stable in MSM in 2017 compared to 2016, and was higher than the positivity rate for chlamydia among MSM. The incidence rate of gonorrhoea among men and women in GP surveillance increased, mainly among those aged 25 and older. Close surveillance of gonorrhoea trends is of particular importance, as the threat of drug-resistant gonorrhoea is real; treatment failures with the only available treatment option (third-generation cephalosporins) have been reported in European patients. So far, resistance to ceftriaxone, a third-generation cephalosporin that has been the first-choice medication in the Netherlands since 2006, has not been found at SHC in the Netherlands. Of concern is the increasing resistance to azithromycin to 15% in 2017, based on GRAS surveillance data, as well as the fact that only 38% of the gonorrhoea positive isolates were successfully tested for resistance in diagnostic cultures. We are currently investigating the effect of different sampling techniques and diagnostic methods in samples of SHC and GP patients in order to optimise gonorrhoea antibiotic resistance surveillance.

For syphilis, the number of diagnoses has stabilised and positivity rates have slightly decreased, mainly due to a decreasing rate among HIV positive men. Similarly, decreasing gonorrhoea positivity rates were observed among, mainly HIV positive, MSM. These findings may be explained by enhanced partner notification and/or increased repeat testing, both of which may have led to earlier diagnosis and treatment of STI and consequently, to decreased transmission. However, it remains to be seen whether the positivity rates will continue to decline in the near future.

¹⁹ Heijne JCM, van den Broek IVF, Bruisten S, van Bergen JEAM, van Benthem BHB. National prevalence estimates of Chlamydia and Gonorrhoea in the Netherlands. STI, in press.

²⁰ Hoenderboom BM, van Oeffelen AA, van Benthem BH, van Bergen JE, Dukers-Muijters NH, Götz HM, Hoebe CJ, Hogewoning AA, van der Klis FR, van Baarle D, Land JA, van der Sande MA, van Veen MG, de Vries F, Morré SA, van den Broek IV. The Netherlands Chlamydia cohort study (NECCST) protocol to assess the risk of late complications following *Chlamydia trachomatis* infection in women. BMC Infect Dis. 2017 Apr 11;17(1):264. doi: 10.1186/s12879-017- 2376-y. Epub 2017 Apr 11.

Two thirds of all new HIV diagnoses in the Netherlands occur among MSM. At SHC, the highest positivity rate was found among MSM who were notified for HIV. In addition, one in three MSM newly diagnosed with HIV was notified for STI exposure, which stresses the importance of partner notification in HIV control. The HIV positivity rate at SHC has declined over the past years. The proportion of MSM SHC visitors not tested for HIV prior to their consultation has declined in recent years; however there is still a group of 'undiagnosed' HIV positives who are not yet reached sufficiently or timely. Compared to MSM, heterosexuals are more often diagnosed late ($CD4 < 350/mm^3$ or AIDS), especially heterosexual men (63% in 2017), and those diagnosed at general practices or in hospitals. UNAIDS set the 90-90-90 goals (90% diagnosed, of whom 90% received antiretroviral therapy, of whom 90% have an undetectable viral load) by 2020. The Netherlands are heading towards achieving the first goal (89%), and have reached the two other goals, with 92% of patients who are retained in care on antiretroviral therapy, of whom 95% had an undetectable load in 2016. To increase the percentage of diagnosed HIV positives and to prevent new HIV infections, a multi-sectorial approach is needed, combining innovative biomedical and behavioural interventions for HIV testing uptake, including (peer-led) community-based testing, pro-active testing by GPs, and last but not least, primary prevention by condom use. Stigma reduction for all STI and especially HIV is still necessary. Surveillance of PrEP use and its effects on the occurrence of HIV, STI and changes in sexual behaviour will be important in the near future.

The number of acute hepatitis B notifications was similar to last year, and sexual contact was the most reported transmission route. In contrast, the number of acute hepatitis C notifications has fluctuated in recent years. Similar to HIV, the WHO goals for HBV and HCV state that by 2030, 90% of all HBV- and HCV-infected people should be diagnosed, 90% of those eligible being treated, of whom 90% should have undetectable viral load. Currently, there is no national surveillance system to monitor HBV and HCV infections, and therefore no estimations are available to present the continuum of care for hepatitis B and C. At present, a pilot is ongoing in six hospitals.

National real-time data from SHC, in addition to local alerts, can provide early warning of outbreaks of STI in certain high-risk groups or regions. In 2017, four local alerts were reported in the weekly infectious disease signal report: one on hepatitis A infections among MSM, one on an HIV cluster among MSM, one on the decreasing number of HIV infections in the Netherlands, and one on an increase in the number of LGV diagnoses. Visualising hotspots for specific STIs based on surveillance data will be an additional tool to target local community-based efforts for the prevention and control of STI. Since 2014, it has been possible to anonymously identify clients who repeatedly visit the same SHC in the national database. This gives greater insights in repeated testing behaviour of SHC visitors. To be able to place current surveillance of STIs (general practices, hospitals and laboratories) in perspective and to monitor changes in policy on population prevalence, national prevalence surveys were carried out in 2016/2017. The PIENTER survey will provide a national prevalence estimate for HIV in the Netherlands and the percentage of people unaware of their infection; both form important input for the continuum of care. A survey on sexual behaviour and STI (PECAN) carried out by Rutgers, SANL and RIVM estimated a national prevalence estimate for chlamydia of 2.8%¹⁹.

Repeated prevalence surveys are needed to analyse trends in STI prevalence and to evaluate control policies.

Online testing for STI is gaining popularity, and it is important to coordinate efforts to reach the groups making use of this unsupervised form of testing and provide them with tailored information on sexual health, STI prevention and control, and information on reliable online tests. All these factors have been taken into account in the Advieschat. Incorporating online test use and online test results in STI surveillance via laboratory surveillance is challenging but necessary, since a substantial number of people use these online services.

In 2017, the national Action Plan on STIs, HIV, and Sexual Health for 2017-2022 was developed in cooperation with stakeholders working in the field of sexual health. The action plan presents an integrated approach that enables Dutch residents to make sensible choices about matters of sexual health and access to care if problems relating to their sexual health arise, including STIs and HIV. Surveillance of STIs, HIV and sexual health plus monitoring of the effects of interventions are essential for providing an evidence-based foundation for prevention, the measures taken and for policy-making. The goals for STIs and HIV focus on reducing the burden of disease from chlamydia, halving the numbers of diagnoses of syphilis, gonorrhoea and HIV, and a reduction in the number of acute HBV and HCV infections to zero. In addition, 95% of people with HIV will know their HIV status by 2022, 95% of them will be receiving treatment, and 95% of them will have an undetectable viral load. There will no longer be any deaths in the Netherlands from AIDS. Based on the data presented in this annual report, we have made the following recommendations to achieve these goals:

- Maintain a strong, multi-sectoral basis for STI control to facilitate 1) easy access to care and testing, 2) rapid and reliable results, and 3) effective treatment and prevention.
- Maintain integrated surveillance of STIs and STI risks among high-risk groups as well as keeping track of lower risk groups/the general population.
- Stimulate the systematic culturing of *Neisseria gonorrhoea* to prevent the transmission of pan-drug resistant strains.
- Promote timely and complete partner notification, especially for gonorrhoea, syphilis, LGV and HIV, not only at SHC but also at general practices and HIV treatment centres.
- Stimulate the use of general practitioner guidelines for pro-active testing in high risk groups on HIV and STI, and at the relevant anatomic locations.
- Support efforts to develop a national surveillance system for HBV and HCV to be able to estimate the burden of disease and to present the continuum of care for HBV and HCV.

APPENDICES

Appendix A List of abbreviations

ACS	Amsterdam Cohort Studies
AIDS	Acquired Immune Deficiency Syndrome
ATHENA	AIDS Therapy Evaluation in the Netherlands
CBS	Centraal Bureau voor de Statistiek, Statistics Netherlands
Cib	Centrum Infectieziektebestrijding, Centre for Infectious Disease Control
CSG	Centrum Seksuele Gezondheid
CSW	Commercial Sex Worker
CvB	Centrum voor Bevolkingsonderzoek, Centre for Population Screening
ECDC	European Centre for Disease Prevention and Control
GP	General Practitioner
GRAS	Gonococcal Resistance to Antimicrobials Surveillance programme
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
HSV	Herpes Simplex Virus
ICPC	International Classification of Primary Care
IgM	Immunoglobulin M
IDS	Laboratory for Infectious Disease and Screening
LCI	Landelijke Coördinatie Infectieziektebestrijding, National Coordination Centre for Communicable Diseases Control
LGV	Lymfogranuloma venereum
LSM	Leefstijl Monitor, Lifestyle Monitor
MIC	Minimum Inhibitory Concentration
MSM	Men who have Sex with Men
NIVEL	Nederlands Instituut voor onderzoek van de Gezondheidszorg, Netherlands Institute for Health Services Research
NIVEL-PCD	NIVEL Primary Care Database
PECAN	Prevalentieonderzoek Chlamydia en Gonorrhoe
PHS	Public Health Service
PID	Pelvic Inflammatory Disease
PIENTER	Peiling Immunisatie Effect Nederland Ter Evaluatie van het Rijksvaccinatieprogramma
PrEP	Pre-Exposure Prophylaxis
RITA	Recent Infections Testing Algorithm
RIVM	Rijksinstituut voor Volksgezondheid en Milieu, National Institute for Public Health and the Environment
SANL	Soa Aids Nederland, STI AIDS Netherlands
SHC	Sexual Health Centre
SHM	Stichting HIV Monitoring, HIV Monitoring Foundation
SOA	Seksueel Overdraagbare Aandoeningen
SOAP	Online STI registration system
STI	Sexually Transmitted Infection

TNO
UNAIDS
WHO

Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek
Joint United Nations Programme on HIV/AIDS
World Health Organisation

Appendix B National surveillance of Sexual Health Centres

Coordinating SHC

GGD Amsterdam	A.A. Hogewoning
GGD Haaglanden	M. Keizer
GGD Groningen	F. de Groot
GGD Hart voor Brabant	S. Van Bergen
GGD Gelderland-Zuid	M. Hoff
GGD Rotterdam-Rijnmond	K. Ridder
	A. Wielemaker
GGD Regio Utrecht	B. Boogmans
	V. Sigurdsson
GGD Zuid Limburg	C.J.P.A. Hoebe
	M. Steenbakkers

Regional SHC

GGD Brabant-Zuidoost
GGD Drenthe
GGD Flevoland
GGD Fryslân
GGD Noord- en Oost-Gelderland
GGD Hollands-Midden
GGD Hollands Noorden
GGD Kennemerland
GGD Twente
GGD West-Brabant
GGD IJsselland
GGD Zaanstreek-Waterland
GGD Zeeland
GGD Zuid-Holland Zuid
GGD Zuid Limburg
Veiligheids- en Gezondheidsregio Gelderland-Midden
Veiligheidsregio Limburg Noord

Appendix C Stichting HIV Monitoring

CLINICAL CENTRES

* denotes site coordinating physician

Academic Medical Centre of the University of Amsterdam (AMC-UvA)

HIV treating physicians: M. van der Valk*, S.E. Geerlings, M.H. Godfried, A. Goorhuis, J.W. Hovius, T.W. Kuijpers, F.J.B. Nellen, D. Pajkrt, T. van der Poll, J.M. Prins, P. Reiss, H.J. Scherpbier, M. van Vugt, W.J. Wiersinga, F.W.M.N. Wit.

HIV nurse consultants: M. van Duinen, J. van Eden, A.M.H. van Hes, F.J.J. Pijnappel, A.M. Weijsenfeld.

HIV clinical virologists/chemists: S. Jurriaans, N.K.T. Back, H.L. Zaaijer, B. Berkhout, M.T.E. Cornelissen, C.J. Schinkel, K.C. Wolthers.

Emma Kinderziekenhuis (AMC-UvA)

HIV nurse consultants: A. van der Plas, A.M. Weijsenfeld.

Admiraal De Ruyter Ziekenhuis, Goes

HIV treating physicians: M. van den Berge, A. Stegeman.

HIV nurse consultants: S. Baas, L. Hage de Looff.

HIV clinical virologists/chemists: B. Wintermans, J. Veenemans.

Catharina Ziekenhuis, Eindhoven

HIV treating physicians: M.J.H. Pronk*, H.S.M. Ammerlaan.

HIV nurse consultants: E.S. de Munnik.

HIV clinical virologists/chemists: A.R. Jansz, J. Tjhie, M.C.A. Wegdam, B. Deiman, V. Scharnhorst.

HIV Focus Centrum - DC Klinieken Lairese

HIV treating physicians: A. van Eeden*, M. van der Valk.

HIV nurse consultants: W. Brokking, M. Groot, L.J.M. Elsenburg.

HIV clinical virologists/chemists: M. Damen, I.S. Kwa.

Elisabeth-TweeSteden Ziekenhuis, Tilburg

HIV treating physicians: M.E.E. van Kasteren*, A.E. Brouwer.

HIV nurse consultants: R. van Erve, B.A.F.M. de Kruijf-van de Wiel, S. Keelan-Pfaf, B. van der Ven.

Data collection: B.A.F.M. de Kruijf-van de Wiel, B. van der Ven.

HIV clinical virologists/chemists: A.G.M. Buiting, P.J. Kabel, D. Versteeg.

Erasmus MC, Rotterdam

HIV treating physicians: M.E. van der Ende*, H.I. Bax, E.C.M. van Gorp, J.L. Nouwen, B.J.A. Rijnders, C.A.M. Schurink, A. Verbon, T.E.M.S. de Vries-Sluijs, N.C. de Jong-Peltenburg.

HIV nurse consultants: N. Bassant, J.E.A. van Beek, M. Vriesde, L.M. van Zonneveld.

Data collection: H.J. van den Berg-Cameron, J. de Groot, M. de Zeeuw-de Man.

HIV clinical virologists/chemists: C.A.B. Boucher, M.P.G. Koopmans, J.J.A. van Kampen, S.D. Pas.

Erasmus MC–Sophia, Rotterdam

HIV treating physicians: P.L.A. Fraaij, A.M.C. van Rossum, C.L. Vermont.

HIV nurse consultants: L.C. van der Knaap, E. Visser.

Flevoziekenhuis, Almere

HIV treating physicians: J. Branger*, A. Rijkeboer-Mes.

HIV nurse consultant: C.J.H.M. Duijf-van de Ven.

HagaZiekenhuis, Den Haag

HIV treating physicians: E.F. Schippers*, C. van Nieuwkoop.

HIV nurse consultants: J.M. van IJperen, J. Geilings.

Data collection: G. van der Hut.

HIV clinical virologist/chemist: N.D. van Burgel.

HMC (Haaglanden Medisch Centrum), Den Haag

HIV treating physicians: E.M.S. Leyten*, L.B.S. Gelinck.

HIV nurse consultants: A.Y. van Hartingsveld, C. Meerkerk, G.S. Wildenbeest.

HIV clinical virologists/chemists: E. Heikens.

Isala, Zwolle

HIV treating physicians: P.H.P. Groeneveld*, J.W. Bouwhuis, A.J.J. Lammers.

HIV nurse consultants: S. Kraan, A.G.W. van Hulzen, M.S.M. Kruiper.

Data collection: G.L. van der Bliek, P.C.J. Bor.

HIV clinical virologists/chemists: P. Bloembergen, M.J.H.M. Wolfhagen, G.J.H.M. Ruijs.

Leids Universitair Medisch Centrum, Leiden

HIV treating physicians: F.P. Kroon*, M.G.J. de Boer, H. Scheper, H. Jolink, A.M. Vollaard.

HIV nurse consultants: W. Dorama, N. van Holten.

HIV clinical virologists/chemists: E.C.J. Claas, E. Wessels.

Maasstad Ziekenhuis, Rotterdam

HIV treating physicians: J.G. den Hollander*, K. Pogany, A. Roukens.

HIV nurse consultants: M. Kastelijns, J.V. Smit, E. Smit, D. Struik-Kalkman, C. Tearno.

Data collection: T. van Niekerk.

HIV clinical virologists/chemists: O. Pontesilli.

Maastricht UMC+, Maastricht

HIV treating physicians: S.H. Lowe*, A.M.L. Oude Lashof, D. Posthouwer.

HIV nurse consultants: R.P. Ackens, K. Burgers, J. Schippers.

Data collection: B. Weijenberg-Maes.

HIV clinical virologists/chemists: I.H.M. van Loo, T.R.A. Havenith.

MC Slotervaart, Amsterdam

HIV treating physicians: J.W. Mulder*, S.M.E. Vrouwenraets, F.N. Lauw.

HIV nurse consultants: M.C. van Broekhuizen, D.J. Vlasblom.

HIV clinical virologists/chemists: P.H.M. Smits.

MC Zuiderzee, Lelystad

HIV treating physicians: S. Weijer*, R. El Moussaoui.

HIV nurse consultant: A.S. Bosma.

Medisch Centrum Leeuwarden, Leeuwarden

HIV treating physicians: M.G.A. van Vonderen*, D.P.F. van Houte, L.M. Kampschreur.

HIV nurse consultants: K. Dijkstra, S. Faber.

HIV clinical virologists/chemists: J. Weel.

Medisch Spectrum Twente, Enschede

HIV treating physicians: G.J. Kootstra*, C.E. Delsing.

HIV nurse consultants: M. van der Burg-van de Plas, H. Heins.

Data collection: E. Lucas.

Noordwest Ziekenhuisgroep, Alkmaar

HIV treating physicians: W. Kortmann*, G. van Twillert*, R. Renckens.

HIV nurse consultant and data collection: D. Ruiter-Pronk, F.A. van Truijen-Oud.

HIV clinical virologists/chemists: J.W.T. Cohen Stuart, E.P. IJzerman, R. Jansen, W. Rozemeijer, W. A. van der Reijden.

OLVG, Amsterdam

HIV treating physicians: K. Brinkman*, G.E.L. van den Berk, W.L. Blok, P.H.J. Frissen, K.D. Lettinga, W.E.M. Schouten, J. Veenstra.

HIV nurse consultants: C.J. Brouwer, G.F. Geerders, K. Hoeksema, M.J. Kleene, I.B. van der Meché, M. Spelbrink, A.J.M. Toonen, S. Wijnands.

HIV clinical virologists: D. Kwa.

Data collection: R. Regez (coordinator).

Radboudumc, Nijmegen

HIV treating physicians: R. van Crevel*, M. Keuter, A.J.A.M. van der Ven, H.J.M. ter Hofstede, A.S.M. Dofferhoff, S.S.V. Henriët, M. van de Flier, K. van Aerde, J. Hoogerwerf.

HIV nurse consultants: M. Albers, K.J.T. Grintjes-Huisman, M. de Haan, M. Marneef, A. Hairwassers.

HIV clinical virologists/chemists: J. Rahamat-Langendoen, F.F. Stelma.

HIV clinical pharmacology consultant: D. Burger.

Rijnstate, Arnhem

HIV treating physicians: E.H. Gisolf*, R.J. Hassing, M. Claassen.

HIV nurse consultants: G. ter Beest, P.H.M. van Bentum, N. Langebeek.

HIV clinical virologists/chemists: R. Tiemessen, C.M.A. Swanink.

Spaarne Gasthuis, Haarlem

HIV treating physicians: S.F.L. van Lelyveld*, R. Soetekouw.

HIV nurse consultants: L.M.M. van der Prijt, J. van der Swaluw.

Data collection: N. Bermon.

HIV clinical virologists/chemists: W.A. van der Reijden, R. Jansen, B.L. Herpers, D. Veenendaal.

Medisch Centrum Jan van Goyen, Amsterdam

HIV treating physicians: D.W.M. Verhagen.

HIV nurse consultants: M. van Wijk.

Universitair Medisch Centrum Groningen, Groningen

HIV treating physicians: W.F.W. Bierman*, M. Bakker, J. Kleinnijenhuis, E. Kloeze, E.H. Scholvinck, Y. Stienstra, C.L. Vermont, K.R. Wilting, M. Wouthuyzen-Bakker.

HIV nurse consultants: A. Boonstra, H. de Groot-de Jonge, P.A. van der Meulen, D.A. de Weerd.

HIV clinical virologists/chemists: H.G.M. Niesters, C.C. van Leer-Buter, M. Knoester.

UMC Utrecht, Utrecht

HIV treating physicians: A.I.M. Hoepelman*, J.E. Arends, R.E. Barth, A.H.W. Bruns, P.M. Ellerbroek, T. Mudrikova, J.J. Oosterheert, E.M. Schadd, M.W.M. Wassenberg, M.A.D. van Zoelen.

HIV nurse consultants: K. Aarsman, D.H.M. van Elst-Laurijssen, I. de Kroon, C.S.A.M. van Rooijen.

Data collection: M. van Berkel, C.S.A.M. van Rooijen.

HIV clinical virologists/chemists: R. Schuurman, F. Verduyn-Lunel, A.M.J. Wensing.

VUmc, Amsterdam

HIV treating physicians: E.J.G. Peters*, M.A. van Agtmael, M. Bomers.

HIV nurse consultants: M. Heitmuller, L.M. Laan.

HIV clinical virologists/chemists: C.W. Ang, R. van Houdt, A.M. Pettersson, C.M.J.E. Vandenbroucke-Grauls.

Wilhelmina Kinderziekenhuis, UMC Utrecht, Utrecht

HIV treating physicians: L.J. Bont, S.P.M. Geelen, T.F.W. Wolfs.

HIV nurse consultants: N. Nauta.

Sint Elisabeth Hospitaal, Willemstad, Curaçao

HIV treating physicians: D. van de Wetering, J.F. Schattenkerk, F. Muskiet, R. Voigt.

HIV nurse consultants: I. van der Meer.

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Data collection: L. de Groot-Berndsen, M. van den Akker, Y. Bakker, M. Bezemer, E. Claessen, A. El Berkaoui, J. Geerlinks, J. Koops, E. Kruijne, C. Lodewijk, R. van der Meer, L. Munjishvili, F. Paling, B. Peeck, C. Ree, R. Henstra-Regtop, Y. Ruijs-Tiggelman, M. Schoorl, A. Timmerman, E. Tuijn, L. Veenenberg-Benschop, S. van der Vliet, A. Wisse, E.C. Witte.

Patient registration: B. Tuk-Stuster.

Appendix D NIVEL Primary Care Database (NIVEL-PCD)

Data collection and processing

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Gideon Opperhuizen

Researchers

Dr. Mark Nielen

Dr. Gé Donker

Project management

Dr. Gé Donker

Dr. Joke Korevaar

Dr. Robert Verheij

Prof. Dr. Francois Schellevis

Appendix E STI publications (co-)authored by RIVM employees 2017

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