



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

Sexually transmitted *infections*

including HIV,
in the Netherlands in 2016



Sexually transmitted infections including HIV, in the Netherlands in 2016

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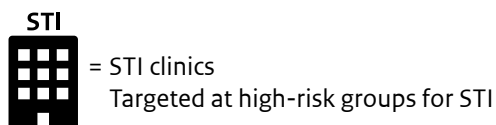
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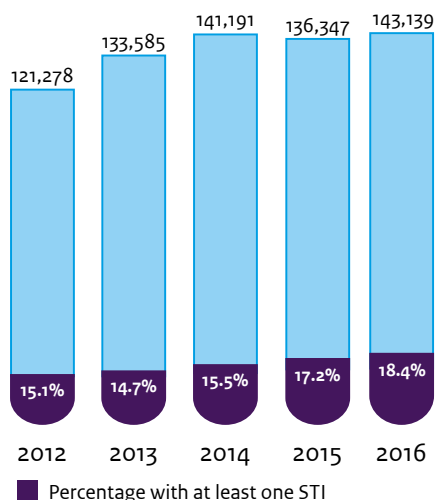
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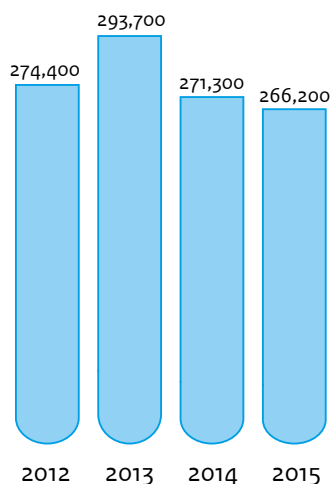
STI registration in the Netherlands 2016



Number of STI clinic consultations

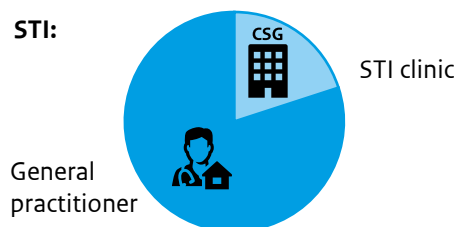


Number of GP consultations

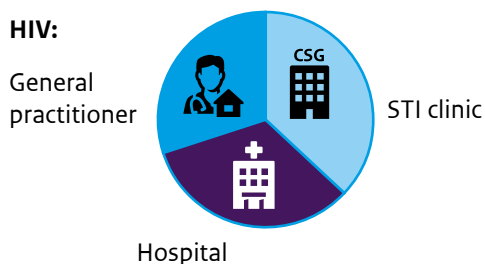


Where are STIs and HIV diagnosed?

STI:

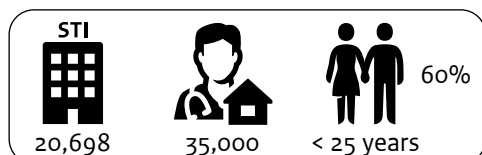


HIV:



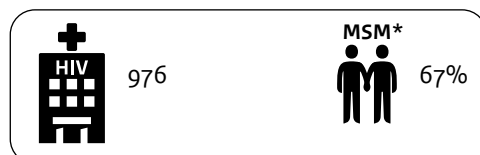
Chlamydia

Number of diagnoses Risk group



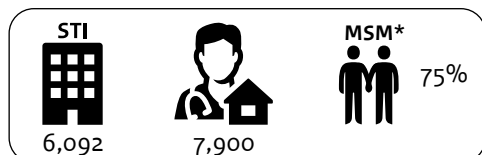
HIV

Patients new in care Risk group



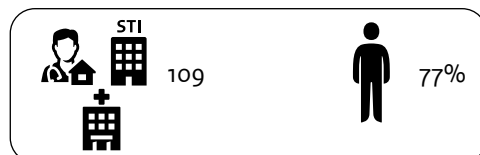
Gonorrhoea

Number of diagnoses Risk group



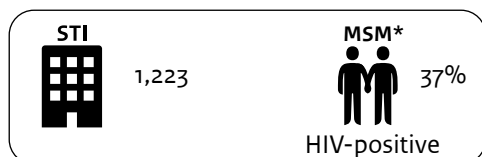
Hepatitis B (acute)

Number of diagnoses Risk group



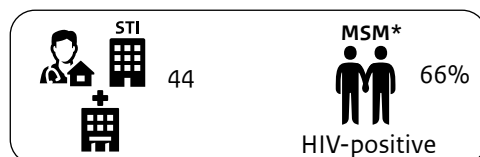
Syphilis

Number of diagnoses Risk group



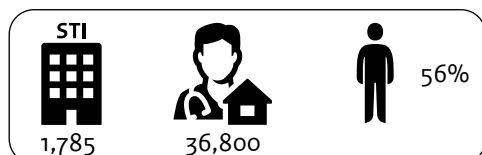
Hepatitis C (acute)

Number of diagnoses Risk group



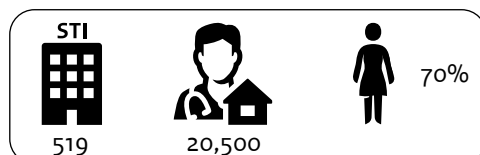
Genital warts

Number of diagnoses Risk group



Herpes

Number of diagnoses Risk group



* Men who have sex with men

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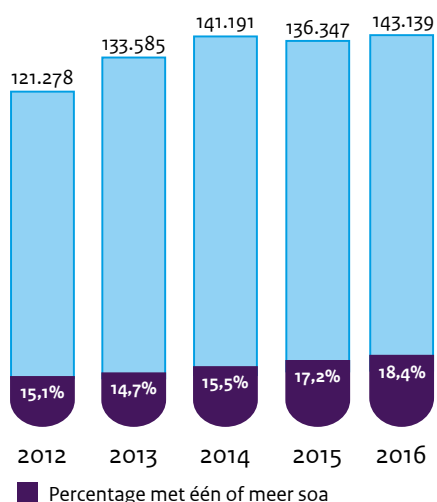
Soa registratie Nederland 2016



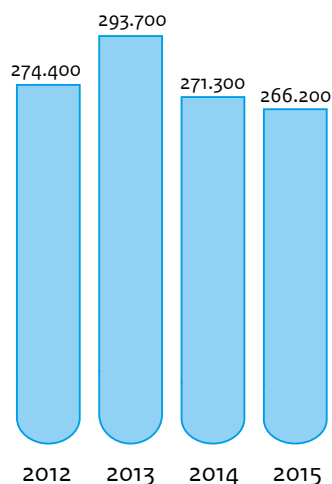
= Centra voor Seksuele Gezondheid
Bedoeld voor groepen die een
hoog risico lopen op soa.



Aantal CSG consulten

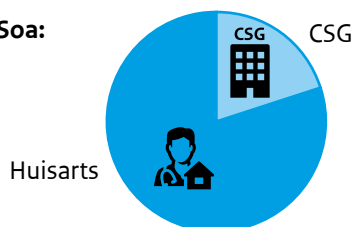


Aantal Huisarts consulten



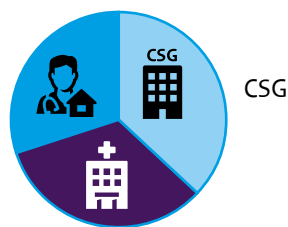
Waar wordt de diagnose gesteld?

Soa:



Hiv:

Huisarts

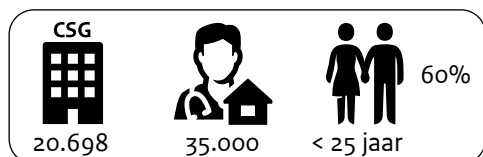


Ziekenhuis

Chlamydia

Aantal diagnoses

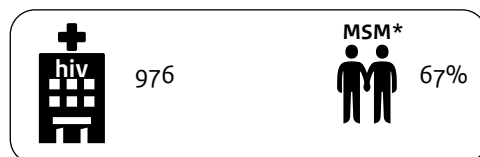
Risicogroep



Hiv

Aantal nieuw in zorg

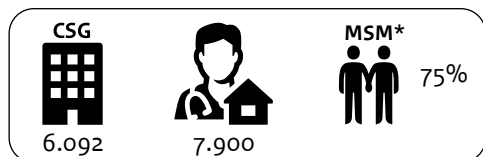
Risicogroep



Gonorrroe

Aantal diagnoses

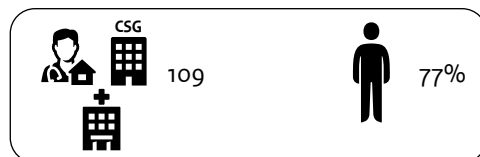
Risicogroep



Hepatitis B (acuut)

Aantal diagnoses

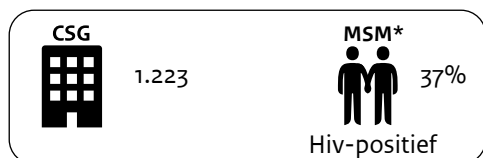
Risicogroep



Syfilis

Aantal diagnoses

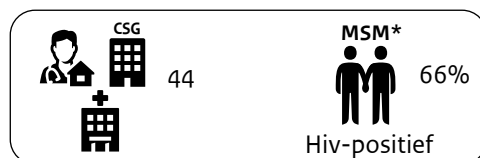
Risicogroep



Hepatitis C (acuut)

Aantal diagnoses

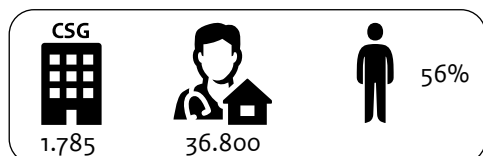
Risicogroep



Genitale watten

Aantal diagnoses

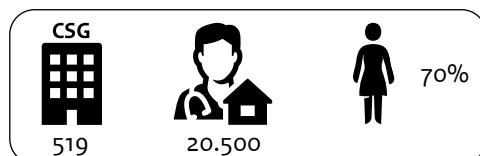
Risicogroep



Herpes

Aantal diagnoses

Risicogroep



* Mannen die seks hebben met mannen

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Synopsis

Sexually transmitted infections, including HIV, in the Netherlands in 2016

In 2016, the number of people who were tested at a Dutch STI clinic for a sexually transmitted infection (STI) increased, after a decrease in 2015. The percentage of people diagnosed with an STI has also increased, to 18.4 percent in 2016. It is estimated that the number of STI consultations at the general practitioner has decreased slightly. Chlamydia remains the most common STI in heterosexuals. Gonorrhoea is more common than chlamydia in men who have sex with men (MSM).

STI clinics offer high-risk groups the opportunity for free STI testing. In 2016, a total of 143,139 consultations were registered at the STI clinics, an increase of 5 percent compared to 2015. The percentage of detected STIs varied per municipal health centre (GGD), ranging from 12.8 to 20.9 percent. Most STIs were detected in people infected with HIV, followed by people who had been notified for an STI.

Chlamydia

In 2016, 14.5 percent of STI clinic attendees were infected with chlamydia (20,698 diagnoses; an increase of 11 percent compared to the previous year). This increase can be explained in part because, since 2015, STI clinics more strictly prioritise people with a high risk of STI. The biggest increase was seen in heterosexual men (from 16.1 in 2015 to 18.0 percent in 2016). In women, the percentage of chlamydia diagnoses increased from 14.2 to 15.4. In MSM, the percentage has been stable around 10 percent for years.

Gonorrhoea

The number of gonorrhoea diagnoses at the STI clinics has risen in the past year with 13 percent, to 6,092 infections. The percentage of positive tests in heterosexual men (1.7 percent) and women (1.4 percent) remained stable, compared to previous years. In MSM, the percentage has increased from 10.7 percent in 2015 to 11.3 percent in 2016. The STI clinics have not yet found cases of gonorrhoea resistant to the first option antibiotic, Ceftriaxone. The number of gonorrhoea infections diagnosed by general practitioners in 2015 saw a slight decline among women, but an increase among men of 20 percent compared to 2014.

Syphilis

In 2016, the number of syphilis diagnoses increased by 30 percent compared to 2015, totalling 1,223 infections. This increase is mainly caused by an increase in the number of diagnoses in MSM, both those with and without HIV. Out of all syphilis infections, 95 percent was diagnosed in MSM. The percentage of positive diagnoses in heterosexual men and women remains very low; 0.19 and 0.07 percent of all consultations that tested for syphilis, respectively.

HIV

In 2016, 285 new HIV diagnoses were detected at the STI clinics, approximately the same number as in 2015 (288); 93 percent was detected in MSM. The percentage of HIV diagnoses in MSM decreased, from 2.8 percent in 2007 to 0.8 percent in 2016. The number of HIV patients that had their 'first care' encounter at a Dutch HIV treatment centre decreased again, from 1,033 cases in 2015 to 976 in 2016. Out of these people, 666 received their diagnosis in 2016.

Keywords: STI, MSM, chlamydia, gonorrhoea, syphilis, HIV, antibiotic resistance, juveniles, monitoring, STI clinic.

Publiekssamenvatting

Seksueel overdraagbare aandoeningen, waaronder hiv, in Nederland in 2016

Het aantal mensen dat zich bij een Centrum Seksuele Gezondheid (CSG) heeft laten testen op een seksueel overdraagbare aandoening (soa) is, na een daling in 2015, in 2016 weer toegenomen. Het percentage bij wie een soa werd vastgesteld is ook gestegen, tot 18,4 procent in 2016. Naar schatting is het aantal soa-consulten bij huisartsen licht gedaald. Chlamydia blijft de meest voorkomende soa onder heteroseksuelen. Onder mannen die seks hebben met mannen (MSM) werd vaker gonorroe dan chlamydia gevonden.

De CSG's bieden hoog-risicogroepen de mogelijkheid om zich gratis te laten testen op soa's. In totaal zijn er in 2016 143.139 consulten geregistreerd bij de CSG's, een stijging van 5 procent ten opzichte van 2015. Het percentage gevonden soa's varieerde tussen de GGD-en; van 12,8 tot 20,9. De meeste soa's zijn gevonden bij mensen met hiv, gevolgd door mensen die waren gewaarschuwd voor een soa.

Chlamydia

In 2016 had 14,5 procent van de CSG-bezoekers een chlamydia-infectie (20.698 diagnoses; een toename van 11 procent ten opzichte van het jaar ervoor). Deze stijging is mogelijk deels te verklaren doordat GGD-en sinds 2015 eerder voorrang verlenen aan personen met hoog risico op soa. De grootste toename was te zien bij heteroseksuele mannen (van 16,1 in 2015 naar 18,0 procent in 2016). Bij vrouwen nam het percentage vastgestelde chlamydia toe van 14,2 naar 15,4. Onder MSM ligt dit percentage al jaren rond 10 procent.

Gonorroe

Het aantal gonorroe-diagnoses bij de CSG is het afgelopen jaar met 13 procent toegenomen tot 6.092 infecties. Het percentage positieven onder heteroseksuele mannen (1,7 procent) en vrouwen (1,4 procent) bleef stabiel ten opzichte van voorgaande jaren. Onder MSM is het percentage toegenomen van 10,7 procent in 2015 naar 11,3 procent in 2016. Bij CSG-bezoekers is nog steeds geen gonorroe resistent gevonden tegen het 'eerstekeus' antibioticum ceftriaxon. Het aantal gonorroe-infecties gediagnosticeerd door huisartsen in 2015 nam licht af onder vrouwen, maar steeg onder mannen met 20 procent ten opzichte van 2014.

Syfilis

In 2016 is het aantal diagnoses van syfilis met 30 procent gestegen ten opzichte van 2015, tot 1.223 infecties. Deze stijging komt voornamelijk door een toename in het aantal diagnoses onder MSM, zowel met als zonder hiv. Van alle syfilis-infecties werd 95 procent bij MSM vastgesteld. Het percentage positieve diagnoses onder heteroseksuele mannen en vrouwen blijft zeer laag; respectievelijk 0,19 en 0,07 procent van alle consulten waarin getest werd op syfilis.

Hiv

In 2016 zijn 285 nieuwe diagnoses van hiv gesteld bij de CSG, vrijwel evenveel als in 2015 (288). Drieënnegentig procent daarvan werd bij MSM vastgesteld. Het percentage hiv-diagnoses bij MSM is gedaald van 2,8 procent in 2007 tot 0,8 procent in 2016. Het aantal hiv-patiënten dat voor het eerst 'in zorg' was bij de Nederlandse hiv-behandelcentra daalde opnieuw, van 1.033 gevallen in 2015 tot 976 in 2016. Van hen hadden 666 personen de diagnose in 2016 gekregen.

Kernwoorden: soa, MSM, chlamydia, gonorroe, syfilis, hiv, antibioticaresistentie, jongeren, 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 2016. Data presented are derived from the national STI surveillance database in addition to data from other sources registering STI and HIV in the Netherlands, such as the general practitioner, the antenatal screening programme, HIV treatment centres, and notification data. For every STI, a summary of recent trends ('key points') is presented, 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 hope that this report will contribute to further awareness of the distributions 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.

Acknowledgements

We gratefully acknowledge the cooperation of a large number of physicians, public health doctors and nurses, microbiologists, epidemiologists, dermatologists, behavioural scientists, prevention workers and other professionals working in the field of STI and HIV. We would like to thank the following organisations for their continuing collaboration in data collection: the STI clinics (STI clinics and public health services), Stichting HIV monitoring (SHM) and GGD Nederland. We also thank SOA AIDS Nederland, Rutgers, HIV vereniging, Netherlands Institute for Health Services Research (NIVEL), general practitioners participating in the NIVEL Primary Care Database, Dutch Working Group on Clinical Virology, as well as the other units at the Centre for Infectious Disease Control: Laboratory for Infectious Disease and Screening (CIb/IDS), and the Preparedness and Response Unit (CIb/LCI) for their support. We especially thank Dr J. van Bergen (SOA AIDS Nederland) and Dr H. de Vries, who are liaised to the RIVM as external STI experts. Furthermore, we would like to thank Kitty van der Ploeg and Yvonne Schönbeck from TNO, Frithjofna Abbink, Kim Vos and Petra Oomen for the data on pregnant women (Praeventis), Mark Nielen, Sabine de Hoon, Gé Donker, Gideon Opperhuizen and Rodrigo Davids for NIVEL-PCD data and analysis, and Anouk Urbanus and Annemarie Meiberg for the data on participants in the HBV vaccination programme. Also, we thank Daan Notermans, Audrey King (all CIb/IDS) and Silke David (CIb/LCI) for their contributions.

Comments

Any comments or suggestions can be sent to soahiv@rivm.nl.

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Summary

In 2016, a total of 143,139 consultations were performed at Dutch STI clinics, an increase of 5 per cent compared with 2015. This increase was highest among MSM (+17.1 per cent), and less strong among women (+2.4 per cent). Among heterosexual men the number of consultations declined (-1.8 per cent). Of all STI clinic visitors, 16 per cent had two or more registered visits in 2016. This percentage was highest among MSM (32 per cent), and lower among heterosexual men (9 per cent) and women (12 per cent). Comparable to previous years, half of the visitors were younger than 25 years old (52 per cent).

The percentage of people with a positive STI test (chlamydia, gonorrhoea, infectious syphilis, HIV or infectious hepatitis B) increased from 17.2 per cent in 2015 to 18.4 per cent in 2016. This increase was most visible in women and heterosexual men, but also among MSM the percentage testing positive increased over the past years: from 19.4 per cent in 2010 to 21.2 per cent in 2016. Positivity rates were, similar to previous years, highest in HIV-positive visitors (34.6 per cent) and in persons who were notified for an STI (31.7 per cent). Also among persons with an STI in the past year (25.7 per cent) and persons with STI symptoms (24.6 per cent) the percentage testing positive was relatively high. Overall STI positivity rates differed between STI clinic regions, and varied between 12.8 and 20.9 per cent.

The total number of STI-related episodes recorded at general practices (based on a selection of 416 general practices in the Netherlands and extrapolated to the total Dutch population) is twice the number reported at STI clinics, with an estimation of 266,000 STI-related episodes (STI infections and 'fear of STI/HIV') in 2015. This number decreased slightly compared with 2014. Furthermore, after a decrease in the past years, the percentage of consultations in which an STI- or HIV-test was requested increased in 2016 in the 45 sentinel practices where STI/HIV consultations are monitored in more detail.

Bacterial STI

In 2016, chlamydia was diagnosed 20,698 times in the STI centres, an increase of 11 per cent compared to 2015. The overall chlamydia positivity rate increased from 13.7 per cent in 2015 to 14.5 per cent in 2016. This increase was largest among women and heterosexual men (14.2 to 15.4 per cent and 16.1 to 18.4 per cent, respectively). Among MSM, the chlamydia positivity rate has been stable around 10 per cent for years. Most chlamydia infections were diagnosed in persons younger than 25 years of age (64 per cent). Chlamydia was diagnosed in one out of three women and heterosexual men who came to the STI clinic because they were notified for chlamydia. A noteworthy finding is the large increase of *lymphogranuloma venereum* (LGV, an aggressive strain of chlamydia) diagnoses among HIV-negative MSM; from 65 in 2015 to 109 in 2016, an increase of 68 per cent. The percentage LGV positives among MSM with anorectal chlamydia increased to 9.2 per cent in 2016, compared to 6.7 per cent in 2013. The estimated number of chlamydia episodes reported in general practice slightly increased among both women and men (19,400 in 2014 versus 20,500 in 2015 and 14,400 in 2014 versus 14,900 in 2015, respectively).

The number of gonorrhoea diagnoses at the STI clinics increased in 2016 with 13 per cent to 6,092 infections. The percentage testing positive mainly increased among MSM; from 10.7 per cent in 2015 to 11.3 per cent in 2016. An increase was seen in both HIV-positive and HIV-negative MSM. Notably, since 2015, the gonorrhoea positivity rate among MSM has been higher than the chlamydia positivity rate. The positivity rates among heterosexual men (1.7 per cent) and women (1.4) remained stable compared to previous years. The number of estimated gonorrhoea-episodes at general practices slightly decreased among women compared to 2014: from 2,700 to 2,400. Among men, the estimated number of episodes at the GP increased from 4,500 in 2014 to 5,400 in 2015. So far, no resistance against ceftriaxone, the first choice antibiotic for gonorrhoea treatment, has been reported among STI clinic visitors. Resistance levels against cefotaxime remained low (1.3 per cent), while resistance to azithromycin continued to increase (from 11.0 per cent in 2015 to 13.8 per cent in 2016). Antibiotic resistance was successfully measured in 38 per cent of gonorrhoea isolates from STI clinic visitors.

In 2016, the number of syphilis diagnoses at STI clinics increased with 30 per cent compared with 2015 (1,223 infections). Ninety five per cent of all cases were diagnosed in MSM. The positivity rate among MSM increased from 2.0 per cent in 2011 to 2.9 per cent in 2016. This was mainly due to an increase in HIV-positive MSM: from 4.5 per cent in 2011 to 8.4 per cent in 2016. However, in the past years, syphilis positivity rates have also increased among HIV-negative MSM (1.4 per cent in 2013 to 2.0 per cent in 2016). Positivity rates among women and heterosexual men remain low (0.07 and 0.19 per cent, respectively).

Viral STI

In 2016, 976 HIV patients were newly registered in care in the national database of the HIV treatment centres of the HIV monitoring foundation (SHM) (1,033 in 2015). Of them, 666 were diagnosed in 2016, less than in previous years (number can still increase due to reporting delay). Sixty seven per cent newly diagnosed HIV patients were MSM. Forty six per cent of patients diagnosed in 2016 presented late for care ($CD4 < 350/mm^3$ or AIDS). In 2015, an estimated 88 per cent of all persons with HIV was diagnosed and linked to care. Of these persons, 88 per cent had started treatment, and of them, 93 per cent had a suppressed viral load. At the STI clinics, 285 new HIV infections were diagnosed in 2016, almost the same as in 2015 (288). Ninety three per cent of HIV diagnoses at the STI clinics were in MSM. The HIV positivity rate among MSM continues to decline, from 2.8 per cent in 2007 to 0.8 per cent in 2016. The percentage testing positive was highest in MSM who were notified for an HIV infection (3.9 per cent).

For genital warts and genital herpes, by far the largest proportion of cases is registered at the general practice. In 2015, an estimated 36,800 diagnoses of genital warts and 20,500 diagnoses of genital herpes were made. GPs reported genital warts more often in men than in women (56 per cent), while genital herpes was most often diagnosed in women (70 per cent). The number of diagnoses of genital warts and genital herpes at STI clinics in 2016 was 1,785 and 519 respectively (2,000 and 428 in 2015).

The number of reported acute hepatitis B cases in the notification data was similar to last year (109 in 2016 versus 105 in 2015). Unprotected sexual contact was the most important transmission route for hepatitis B (64 per cent). The number of reported hepatitis C cases decreased by 34 per cent compared with 2015, from 67 to 44 cases. The main transmission route for hepatitis C was unprotected sexual contact between men.

In conclusion, after a decrease in 2015, the number of STI consultations increased again in 2016 and is now back at the level of 2014. The percentage STI clinic visitors with an STI increased to 18.4 per cent. Both the number of chlamydia, gonorrhoea and syphilis diagnoses increased at STI clinics, while the number of HIV diagnoses remained stable compared with 2015. The increase in the number of STIs and the percentage testing positive among heterosexual men and women could be due to stricter prioritization of persons at high risk of STI at the STI clinics. Worrisome trends are the increasing positivity rates for gonorrhoea and syphilis among MSM, but also the increase in the number of LGV diagnoses. Noteworthy next to these increasing trends, is the stable chlamydia positivity rate among MSM. Relatively many cases were diagnosed in people who were notified for STI by their (ex)partner, people with symptoms, and people who had an STI in the past year. Similar to previous years, about two thirds of all STIs were diagnosed in the general practice. This applies particularly to chlamydia, genital warts, and genital herpes. More efforts in STI prevention are needed, such as promotion of condom use, timely testing and treatment after risky sexual behaviour, and timely and complete partner notification of both the current- and ex-partners, to limit STI transmission.

Samenvatting

In 2016 zijn bij de Centra Seksuele Gezondheid (CSG) in totaal 143.139 consulten geregistreerd, een toename van 5 procent ten opzichte van 2015. Deze toename was het grootst bij MSM (+17,1 procent), gevolgd door de toename bij vrouwen (+2,4 procent). Bij heteroseksuele mannen nam het aantal consulten af (-1,8 procent). Van alle CSG bezoekers had 16 procent meer dan één consult in 2016. Dit percentage was het hoogst onder MSM (32 procent), en lager onder heteroseksuele mannen (9 procent) en vrouwen (12 procent). Vergelijkbaar met voorgaande jaren was ongeveer de helft van de bezoekers jonger dan 25 jaar (52,1 procent).

Het percentage personen met een positieve soa-test (chlamydia, gonorrroe, infectieuze syfilis, hiv of infectieuze hepatitis B) is toegenomen van 17,2 procent in 2015 naar 18,4 procent in 2016. Deze stijging was het sterkst bij heteroseksuele mannen en vrouwen. Maar ook onder MSM is het vindpercentage langzaam toegenomen in de afgelopen jaren: van 19,4 procent in 2010 naar 21,2 procent in 2016. Het vindpercentage was, net als in voorgaande jaren, het hoogst onder hiv-positieve personen (34,6 procent) en bij personen die gewaarschuwd waren voor een soa (31,7 procent). Ook bij personen met een soa in het afgelopen jaar (25,7 procent) en personen met klachten (24,6 procent) was het vindpercentage relatief hoog. Het vindpercentage varieerde tussen GGD-en: van 12,8 tot 20,9 procent.

Het totaal aantal soa-gerelateerde consulten dat bij de huisarts wordt geregistreerd is ongeveer dubbel zo groot als het aantal bij de CSG's, met naar schatting 266.000 soa-gerelateerde episodes in 2015 (gebaseerd op een selectie van 416 huisartsenpraktijken en geëxtrapoleerd naar de Nederlandse populatie). Dit is een lichte daling ten opzichte van 2014. Na een daling in de afgelopen jaren, is het percentage soa-consulten waarbij een soa- of hiv-test werd aangevraagd het afgelopen jaar weer gestegen in de 45 praktijken waar soa/hiv-consulten in meer detail worden gemonitord.

Bacteriële soa

In 2016 werden er bij de CSG's in totaal 20.698 chlamydia diagnoses gesteld, een toename van 11 procent ten opzichte van 2015. Het vindpercentage steeg van 13,7 procent in 2015 naar 14,5 procent in 2016. Deze stijging was vooral te zien bij vrouwen en heteroseksuele mannen (respectievelijk van 14,2 naar 15,4 procent en van 16,1 naar 18,4 procent). Bij MSM ligt het vindpercentage al jaren stabiel rond de 10 procent. De meeste chlamydia-infecties werden bij jongeren onder de 25 jaar gediagnosticeerd (64 procent). Bij één op de drie vrouwen en heteroseksuele mannen die waren gewaarschuwd voor chlamydia, werd chlamydia geconstateerd. Opvallend is de grote stijging van het aantal diagnoses van *lymfogranuloma venereum* (LGV, een agressieve variant van chlamydia) onder hiv-negatieve MSM: van 65 in 2015 naar 109 in 2016, een toename van 68 procent. Het percentage LGV positieven onder de geteste MSM met anale chlamydia nam toe tot 9,2 procent in 2016, vergeleken met 6,7 procent in 2013. Het geschatte aantal chlamydia-episodes bij de huisarts nam zowel bij vrouwen als mannen licht toe vergeleken met het afgelopen jaar (respectievelijk van 19.400 in 2014 naar 20.500 in 2015, en van 14.400 in 2014 naar 14.900 in 2015).

Het aantal gonorroe-diagnoses bij de CSG is in 2016 met 13 procent toegenomen tot 6.092 infecties. Onder MSM steeg het percentage gevonden infecties: van 10,7 procent in 2015 naar 11,3 procent in 2016. Deze stijging werd gezien bij zowel hiv-positieve als hiv-negatieve MSM. Opmerkelijk is dat het gonorroe vindpercentage onder MSM sinds 2015 hoger is dan het chlamydia vindpercentage. Het vindpercentage onder heteroseksuele mannen (1,7 procent) en vrouwen (1,4 procent) bleef stabiel ten opzichte van voorgaande jaren. Het aantal geschatte gonorroe-episodes bij de huisarts nam in 2015 iets af bij vrouwen vergeleken met 2014, van 2.700 naar 2.400. Bij mannen steeg het aantal geschatte gonorroe-episodes bij de huisarts van 4.500 in 2014 naar 5.400 in 2015. Tot nu toe is er bij de CSG's geen resistentie gevonden voor ceftriaxon, het huidige eerstekeus antibioticum voor de behandeling van gonorroe. Resistentie tegen cefotaxim bleef laag (1,3 procent), terwijl resistentie tegen azitromycine bleef stijgen (van 11,0 procent in 2015 naar 13,8 procent in 2016). Bij 38 procent van de personen met gonorroe op de CSG's was succesvol getest op antibioticaresistentie.

In 2016 is het aantal syfilis diagnoses bij de CSG gestegen met 30 procent ten opzichte van 2015 (1.223 infecties). Van alle syfilis diagnoses werd 95 procent vastgesteld bij MSM. Het vindpercentage onder MSM is toegenomen van 2,0 procent in 2011 tot 2,9 procent in 2016. Deze stijging is vooral te zien onder hiv-positieve MSM: van 4,5 procent in 2011 naar 8,4 procent in 2016. Echter, de laatste jaren neemt ook het percentage syfilisdiagnoses onder hiv-negatieve MSM langzaam toe (van 1,4 procent in 2013 naar 2,0 procent in 2016). Vindpercentages onder vrouwen en heteroseksuele mannen blijven onveranderd laag (respectievelijk 0,07 en 0,19 procent).

Virale soa

In 2016 zijn 976 patiënten nieuw aangemeld in zorg bij de Stichting HIV Monitoring (SHM) (1.033 in 2015). Van deze personen waren er 666 nieuw gediagnosticeerd in 2016, minder dan in voorgaande jaren (aantal kan nog oplopen door rapportagevertraging). Zevenenzestig procent van alle diagnoses werden bij MSM vastgesteld. Zesenvertig procent van de patiënten gediagnosticeerd in 2016 presenteerde zich laat in zorg (met $CD4 < 350/mm^3$ of aids). Naar schatting waren in 2015 88 procent van alle personen met hiv gediagnosticeerd en in zorg. Van hen was 88 procent gestart met behandeling, en daarvan had 93 procent een onderdrukte virale lading. Bij de CSG's zijn in 2016 285 nieuwe hiv-diagnoses vastgesteld, vrijwel evenveel als in 2015 (288). Drieënnegentig procent van alle hiv diagnoses bij de CSG's werd bij MSM vastgesteld. Het percentage positieve diagnoses bij MSM daalt al jaren, van 2,8 procent in 2007 tot 0,8 procent in 2016. Hiv vindpercentages waren het hoogst bij MSM gewaarschuwd voor hiv (3,9 procent).

Veruit het grootste deel van de genitale wratten en -herpes diagnoses werd gesteld bij de huisarts. In 2015 waren er bij huisartsen naar schatting 36.800 diagnoses van genitale wratten en 20.500 diagnoses van genitale herpes. De huisarts rapporteerde vaker genitale wratten bij mannen (56 procent versus 44 procent), terwijl genitale herpes het meest bij vrouwen werd gevonden (70 procent). Het aantal diagnoses van genitale wratten en -herpes bij de CSG's was in 2016 respectievelijk 1.785 en 519 (2.000 en 428 in 2014).

Het aantal meldingen van acute hepatitis B in de aangiftecijfers was in 2016 nagenoeg gelijk aan dat in 2015 (109 in 2016 versus 105 in 2015). Onbeschermd seksueel contact was de belangrijkste transmissieroute voor hepatitis B (64 procent). Het aantal hepatitis C meldingen daalde met 34 procent ten opzichte van 2015, van 67 naar 44. De belangrijkste transmissieroute voor hepatitis C was onbeschermd seksueel contact tussen mannen (68 procent).

Concluderend, het aantal soa-consulten bij de CSG's is na een daling in 2015, in 2016 weer toegenomen naar het niveau van 2014. Het percentage consulten onder hoog risicogroepen waarbij een soa werd gediagnosticeerd nam toe tot 18,4 procent. Bij de CSG's namen zowel het aantal opgespoorde chlamydia, gonorroe en syfilis diagnoses toe, terwijl het aantal hiv diagnoses stabiel bleef ten opzichte van 2015. De stijging in het aantal soa en het vindpercentage bij heteroseksuele mannen en vrouwen is mogelijk te verklaren door sterkere prioritering van hoog risicogroepen bij de CSG's. Zorgelijke trends zijn de stijgende vindpercentages van gonorroe en syfilis bij MSM, maar ook de toename in het aantal LGV diagnoses. Opvallend naast deze stijgende trends, is het stabiele chlamydia vindpercentage bij MSM. Relatief veel diagnoses werden gesteld bij mensen die gewaarschuwd zijn voor een soa door hun (ex)-partner, mensen met klachten en mensen waarbij al eerder een soa is vastgesteld. Vergelijkbaar met vorige jaren werd ongeveer tweederde van de alle soa's gediagnosticeerd in de huisartspraktijk. Dit geldt met name voor chlamydia, genitale wratten en genitale herpes. Meer inzet op preventie van soa's, zoals het promoten van condoomgebruik, het tijdig testen en behandelen na risicovolle seks en het tijdig en volledig waarschuwen van huidige- en ex-partners, is nodig om soa transmissie te verminderen.

Introduction

This report summarizes 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 STI clinics, Stichting HIV monitoring (SHM), public health laboratories, general practitioners participating in the NIVEL Primary Care Database, and other health care providers.

The data systematically collected among high-risk groups by the nationwide network of STI clinics under the responsibility of the Public Health Services, are the backbone of the Dutch STI surveillance on STI trends and risk factors. Other available STI data from surveys, screening programmes, national registries, cohort studies and other surveillance system are included where possible. Together they provide an overview of the status of STI, including HIV, in the Netherlands. Preliminary data have been presented in the Thermometer Seksuele Gezondheid (April 2017).

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 STI clinic attendees and data from sexual health consultations among young people (Sense) in 2016 are presented. Data from general practitioners and the Lifestyle monitor (CBS) are also shown. 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, and hepatitis B and 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 STI clinics. Data from general practitioners, who perform the bulk of STI consultations, are extrapolated from 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 STI clinics

Since 1995, 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 organized in eight regions. One of the STI clinics in each region is responsible for the coordination of STI surveillance (Figure 1.1). In total, 24 STI clinics, mostly within the Public Health Services as part of the Centres for Sexual Health, 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 testing, (3) MSM, (4) originating from an HIV/STI endemic area, (5) reporting a partner from one of these risk groups, (6) aged below 25 years, (7) commercial sex worker (CSW), or (8) victims of sexual violence. Since 2015, the previous criteria: 'client of CSW' and 'reporting three or more sexual partners in the previous six months' are no sufficient as single criterion. Since 2015, the STI clinics more strongly prioritise 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.

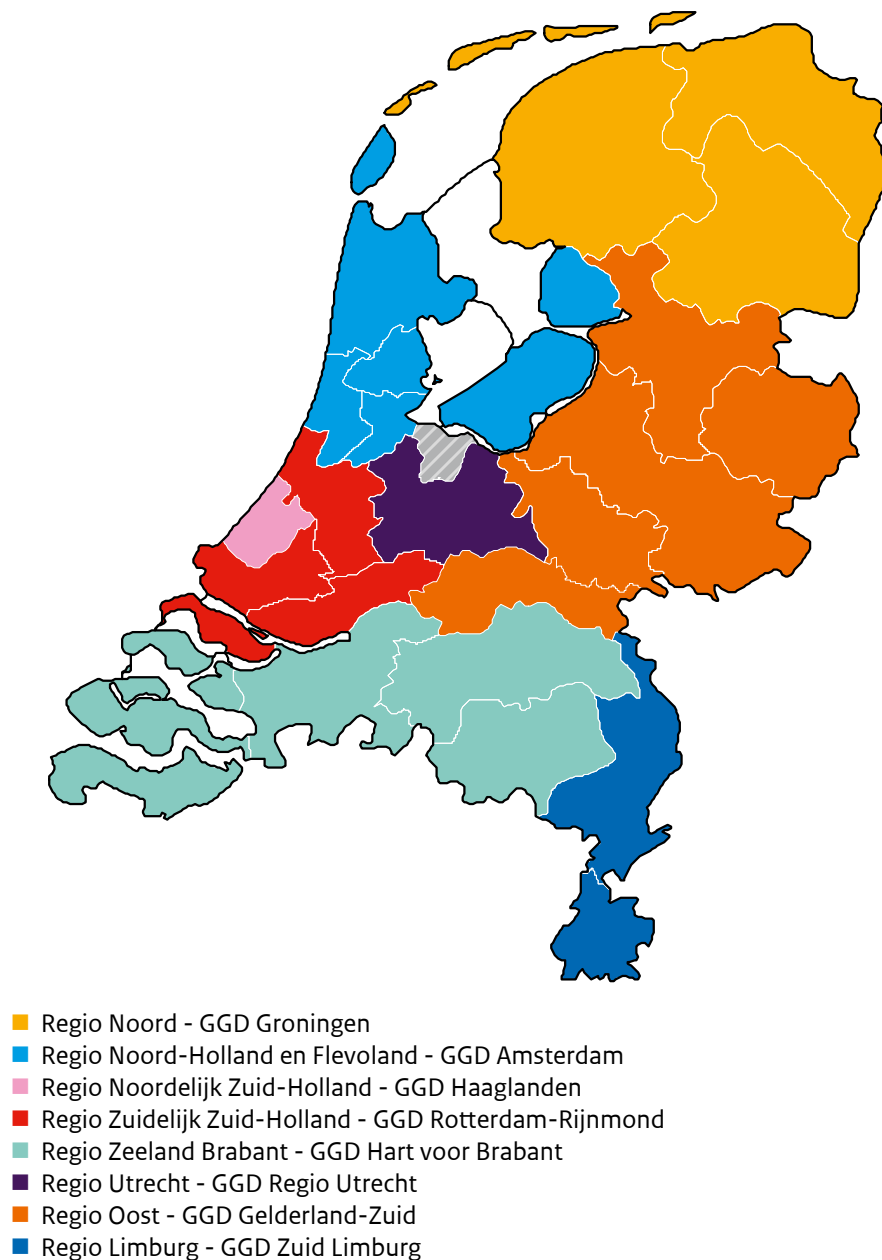
Until 2011, attendees were routinely tested for chlamydia, gonorrhoea and syphilis, with an opt-out policy for HIV testing. Between 2012 and 2014, attendees below the age of 25 years with no other indication criteria were tested for chlamydia only. If the chlamydia test result was positive, further testing for gonorrhoea, syphilis and HIV took place. From 2015, attendees below the age of 25 years were all tested for chlamydia and gonorrhoea (because of the commonly used combitest, testing both chlamydia and gonorrhoea), and additionally tested 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 one of these risk groups and (8) victims of sexual violence. The testing policy for attendees older than 25 years of age did not change: routine testing for chlamydia, gonorrhoea and syphilis, and there is 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, ethnicity is based on the country of birth of the client and client's parents (foreign background when at least one parent was born abroad), as opposed to self-reported ethnicity 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 definitions of CBS²). 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 national surveillance of STI clinics 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 the STI clinics under national surveillance from 2007 to 2016. Where data were not complete for a specific period or STI clinic, 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 origin ('Herkomstgroepering'), see Definitions Statistics Netherlands ('Begrippen CBS'): <https://www.cbs.nl/en-gb/our-services/methods/definitions?tab=o#id=origin>

Figure 1.1 Eight regions with coordinating STI clinic indicated



Footnote: GGD Gooi en Vechtstreek (grey striped region) does not have an STI clinic. 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 STI clinics. Young adults can anonymously and free of charge contact these Sense locations 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 has been collected in the 'LeefStijl Monitor' (LSM), i.e. smoking, drinking habits, drugs use, healthy lifestyle (sports, diet) and sexual health. For each of these topics, a standard set of indicators is collected annually³. Every four years, including 2016, a more detailed survey on sexual health is performed by CBS, in cooperation with Rutgers, STI AIDS Netherlands and RIVM (results expected in 2017). The 2016 data were collected for a total of 3,511 men and 3,820 women aged between 16 and 85. In the current report, a selection of the results from 2016 and combined results from 2014-2016 are shown, 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, NIVEL Zorgregistraties eerste lijn)^{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 first version of the International Classification of Primary Care (ICPC-1). 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 2015 are included in this annual report. This is restricted to data from practices with good quality morbidity data, which comprised 312 practices in

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

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

⁵ Verheij RA, Koppes LLJ. Over NIVEL Zorgregistraties. Uit: NIVEL Zorgregistraties eerste lijn [internet]. 2017 [Laatst gewijzigd op 03-10-2016; geraadpleegd op 06-04-2017]. URL: www.nivel.nl/node/4282

2012, 356 in 2013, 372 in 2014 and 416 in 2015. Incidence rates were calculated based on the number of reported episodes per 1,000 persons⁶. 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 also⁷).

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 (412 practices in 2015)
- or: a positive chlamydia laboratory result. Because only a part of practices has sufficient laboratory reports (156 practices in 2015), 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 peilstations). Since 2008, the 45 GP practices participating in this specific sentinel network fill in 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 ethnicity, sexual preference and sexual behaviour⁸. We report the main results on patients' profiles, testing rates and positivity, as well as trends from 2008 to 2015. 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.

⁶ 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]. 2017 [Laatst gewijzigd op 18-01-2017; geraadpleegd op 06-04-2017]. URL: www.nivel.nl/node/4296

⁷ 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.

⁸ 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 known precisely, but the laboratories are spread over the whole country and the coverage has been shown sufficient to provide accurate and timely trends for (virological) infections and chlamydia⁹. There is overlap between the laboratories reporting in this system and the laboratories connected to the STI clinics.

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 2002¹⁰. Because the results demonstrated the need for systematic nationwide surveillance of gonococcal antimicrobial resistance, the Gonococcal Resistance to Antimicrobials Surveillance (GRAS) was implemented in the Netherlands in 2006. This surveillance consists of the systematic collection of data on gonorrhoea, and resistance patterns linked with epidemiological data. Almost 80 per cent of the STI clinics participate. 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 resistance¹¹.

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 diseases screening programme (0.05 per cent refused HIV-tests in 2014)¹². The screening programme is coordinated by the Centre for Population Screening (CvB) at the RIVM.

⁹ See website: http://www.rivm.nl/Onderwerpen/S/Surveillance_van_infectieziekten/Virologische_weekstaten

¹⁰ 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].

¹¹ The European Committee on Antimicrobial Susceptibility Testing. Breakpoint tables for interpretation of MICs and zone diameters. Version 7.1, 2017. <http://www.eucast.org>

¹² Van der Ploeg CPB, Schönbeck Y, Hirschberg H, Oomen P. Procesmonitor PSIE 2014. Belangrijkste resultaten Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE) over 2014. TNO/RIVM 2016.

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. In this report, national results from 1997-2016 are presented.

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. Longitudinal data of all newly registered HIV-positive individuals are collected by Stichting HIV monitoring (SHM; www.hiv-monitoring.nl). The goal of SHM is to monitor HIV-positive individuals registered in 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, who were diagnosed prior to the start of SHM, were included in the cohort retrospectively. HIV cases diagnosed before 1996 only 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 CIB at the RIVM¹³. The number of people living with HIV in the Netherlands in 2015 was estimated by using the European Centre for Disease Prevention and Control (ECDC) HIV Modelling Tool¹⁴.

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 STI clinics (Recent Infections Testing Algorithm, RITA surveillance¹⁵). In 1984, the Amsterdam Cohort Studies (ACS) 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 epidemiology and natural history of blood-borne and sexually transmitted infections (STI) other than HIV. The collaborating institutes within the ACS framework are Sanquin Blood

¹³ van Sighem A.I., Boender T.S., Wit F.W.N.M., Smit C., Matser A., Reiss P. Monitoring Report 2016. Human Immunodeficiency Virus (HIV) Infection in the Netherlands. Amsterdam: Stichting HIV Monitoring, 2016. Available online at www.hiv-monitoring.nl

¹⁴ 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>

¹⁵ E. Op de Coul, B. Hogema, J. Sane, T. Heijman, H. Fennema, G. Murphy, M. Koot. 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.

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 Stichting HIV monitoring (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 Netherlands¹⁶, in this report only data on acute HBV and acute HCV infections are included.

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 STI clinics 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 the 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, which provides good information on the prevalence and incidence of these infections in a low-risk population. Data from 1998 onwards are reported (www.sanquin.nl).

¹⁶ The National Immunisation Programme in the Netherlands, Surveillance and developments in 2015-2016. RIVM report 2016-0141. Available from: http://www.rivm.nl/Documenten_en_publicaties/Wetenschappelijk/Rapporten/2016/November/The_National_Immunisation_Programme_in_the_Netherlands_Surveillance_and_developments_in_2015_2016

2 Sexual health, STI and Sense consultations

2.1 Key points

2.1.1 STI clinics

- In 2016, 143,139 new consultations were registered by STI clinics under national surveillance; an increase of 5 per cent compared with 2015. This increase was highest among MSM (+17.1 per cent), while the number of consultations among heterosexual men decreased (-1.8 per cent). The number of young individuals visiting the STI clinic (<25 years) also increased (+4.4 per cent).
- Key characteristics of attendees were similar to previous years: young age (52.1 per cent <25 years), Dutch origin (68.2 per cent), female (47.3 per cent), ≥3 sexual partners in the previous 6 months (57.2 per cent), previously tested for HIV (51.5 per cent), STI/HIV-related symptoms (31.6 per cent), and no condom use at last casual sex contact (65.8 per cent).
- The overall percentage of clients with at least one STI increased from 17.2 per cent in 2015 to 18.4 per cent in 2016. This increase was highest in heterosexuals, especially among men (17.3 per cent in 2015 and 19.2 per cent in 2016). Among MSM, STI positivity has increased slowly over the past years, from 19.4 per cent in 2010 to 21.2 per cent in 2016.
- The STI positivity was highest in clients with a previous HIV diagnosis (34.6 per cent) or previous STI diagnosis (25.7 per cent), persons notified (31.7 per cent), or with STI/HIV-related symptoms (24.6 per cent).
- The percentage of STI clinic attendees who reported being notified by a partner increased from 10.8 per cent in 2010 to 21.7 per cent in 2016. In 2016, this was highest among heterosexual men: 28.9 per cent versus 21.4 per cent in MSM and 18.1 per cent in women.
- Among heterosexual men diagnosed with an STI, 44.7 per cent were detected through partner notification. This proportion increased over time (31.7 per cent in 2010). A similar increase was observed in MSM and women, although the proportions STI that were detected through partner notification were lower: 34.2 and 35.2 per cent respectively. Among MSM, almost one third of all newly diagnosed HIV infections were attributable to clients who were notified.
- Of all unique MSM who tested at the STI clinics in 2016, 32.3 per cent had multiple consultations. Among heterosexual men and women, this was 8.6 and 12.0 per cent respectively.
- In 2016, 8,231 clients were tested for chlamydia/gonorrhoea using a home sampling kit provided by the STI clinic (5.8 per cent of all tests).
- Compared to 2015, the number of Sense consultations increased with 32 per cent to 11,251, of which 72 per cent were among women. Among both men and women, the most common topic was sexuality. Among women, birth control was also a common topic.

2.1.2 General practice

- In 2015, 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 266,200 in the Netherlands, a slight decrease compared to 2014.
- In about 47 per cent of the STI-related consultations, an STI diagnosis was registered (chlamydia, gonorrhoea, syphilis, HIV, trichomonas, genital herpes, genital warts or non-specific urethritis).
- The more detailed data from questionnaires (Sentinel practices from NIVEL PCD) show that both the STI- and the HIV-test request rate in the GP-network increased in 2016 compared to 2015.

2.1.3 Lifestyle monitor

- Over the years 2014-2016, the proportion of persons tested for STI or HIV in the past year was highest among MSM (16 per cent). Among heterosexual men and women, this proportion was approximately 3 and 6 per cent, respectively.

2.1.4 Regional surveillance

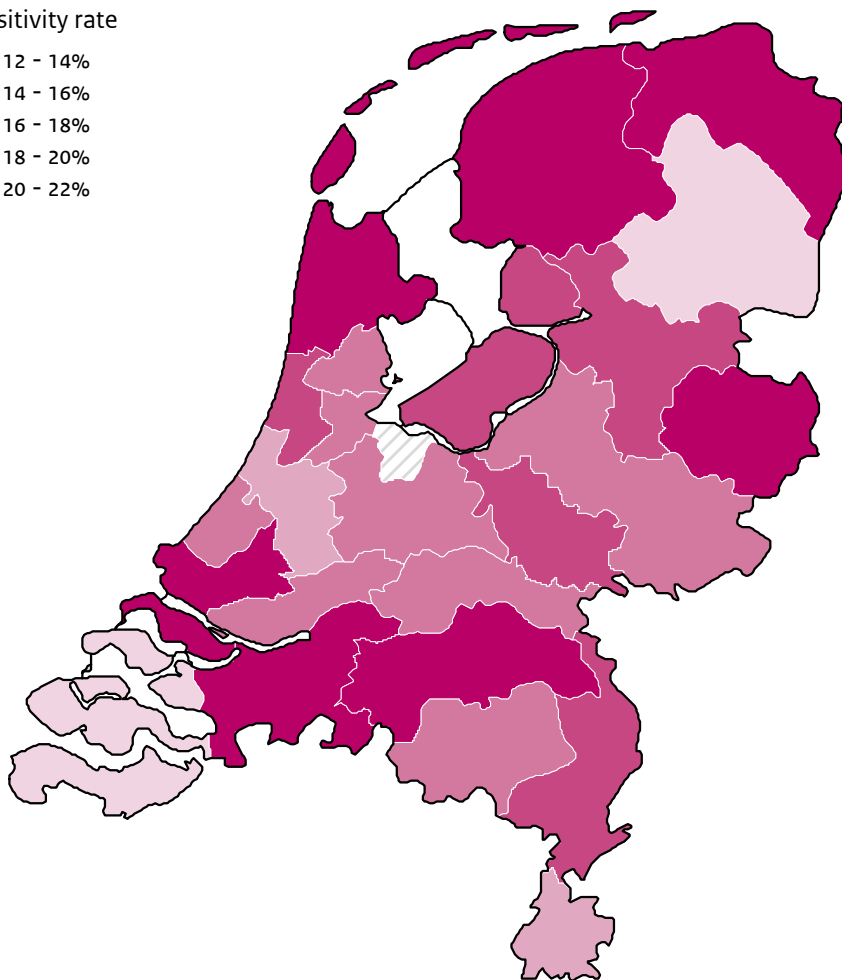
- The number of STI consultations per 1,000 inhabitants of 15-65 years of age was by far the highest in Amsterdam (44.8 consultations per 1,000) in 2016. For other regions, this number ranged between 2.8 in Drenthe to 14.5 consultations in Flevoland.
- STI positivity rates ranged between 14.6 and 22.1 per cent. Among MSM, the percentage of positive STI tests was highest in the region of Noord-Holland/Flevoland (22.1 per cent). Among heterosexuals, positivity rates were highest in Noord-Nederland (18.9 per cent in women and 22.1 per cent in men).
- The differing positivity rates by region could be explained by differences in STI clinic attendee characteristics. Variability between the regions was seen in percentage of attendees with low/medium education level, in age distribution, and in percentage of attendees who were notified or had STI symptoms.

2.2 Consultations and characteristics of STI clinic attendees

Figure 2.1 Positivity rates of STI by region, the Netherlands, 2016

Positivity rate

- 12 - 14%
- 14 - 16%
- 16 - 18%
- 18 - 20%
- 20 - 22%



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

Figure 2.2 Number of consultations and percentage of positive STI tests in the national STI surveillance in the Netherlands, 1995-2016



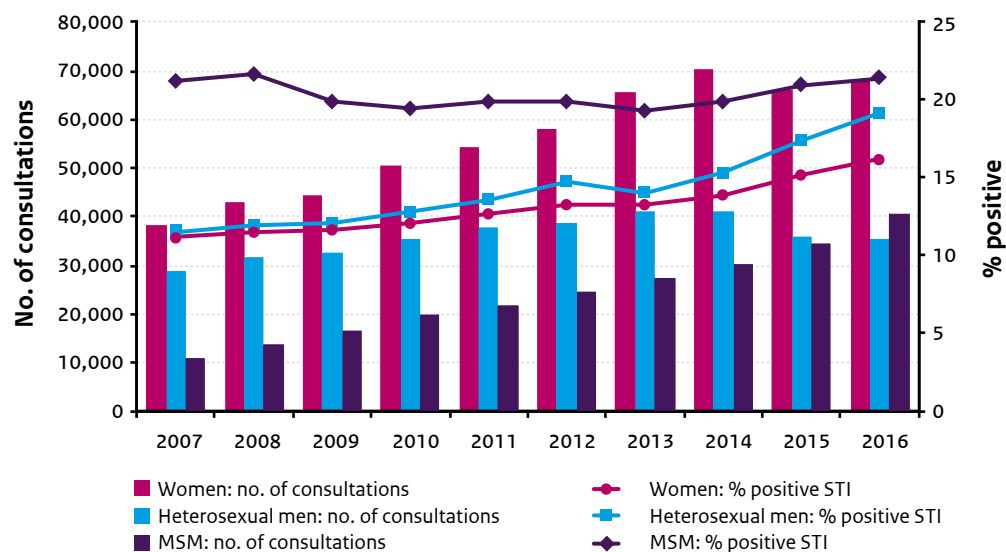
Footnote 1: 1995-2002: STI registration; 2000: STI clinic Erasmus Medical Centre Rotterdam was included; 2003: Implementation of STI sentinel surveillance network; 2004-2016: National STI surveillance network.
Footnote 2: STI include: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Table 2.1 Number of consultations by gender and type of sexual contact, 2011-2016

Gender and type of sexual contact	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)
Women	53,849 (47.6)	58,040 (47.9)	65,104 (48.7)	70,219 (49.7)	65,991 (48.4)	67,600 (47.2)
Heterosexual men	37,434 (33.1)	38,516 (31.8)	40,872 (30.6)	40,856 (28.9)	35,719 (26.2)	35,065 (24.5)
MSM	21,783 (19.2)	24,640 (20.3)	27,497 (20.6)	29,939 (21.2)	34,442 (25.3)	40,340 (28.2)
Transgender*	46 (0.04)	42 (0.03)	54 (0.04)	59 (0.04)	50 (0.04)	56 (0.04)
Unknown*	68 (0.06)	40 (0.03)	58 (0.04)	118 (0.08)	145 (0.11)	78 (0.05)
Total	113,180	121,278	133,585	141,191	136,347	143,139

* 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, 2007-2016

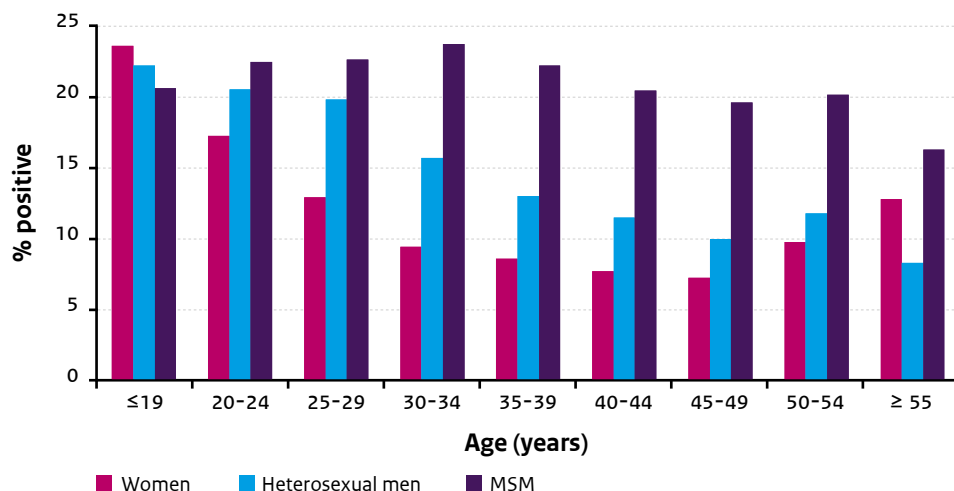


Footnote: STI include: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Table 2.2 Number of consultations by age, gender and type of sexual contact, 2016

Age (years)	Women n (%)	Heterosexual men n (%)	MSM n (%)
≤ 19	8,383 (12.4)	2,307 (6.6)	886 (2.2)
20-24	38,829 (57.4)	18,070 (51.5)	5,980 (14.8)
25-29	11,349 (16.8)	8,086 (23.1)	7,042 (17.5)
30-34	3,510 (5.2)	2,998 (8.5)	5,336 (13.2)
35-39	1,773 (2.6)	1,339 (3.8)	4,827 (12.0)
40-44	1,236 (1.8)	749 (2.1)	4,038 (10.0)
45-49	1,183 (1.8)	632 (1.8)	4,131 (10.2)
50-54	789 (1.2)	399 (1.1)	3,562 (8.8)
≥ 55	548 (0.8)	485 (1.4)	4,537 (11.2)
Unknown	0 (0.0)	0 (0.0)	1 (0.0)
Total	67,600	35,065	40,340

Figure 2.4 Percentage of positive STI tests by age, gender and type of sexual contact, 2016



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

Table 2.3 Number of consultations by ethnicity, generation, gender and type of sexual contact, 2016

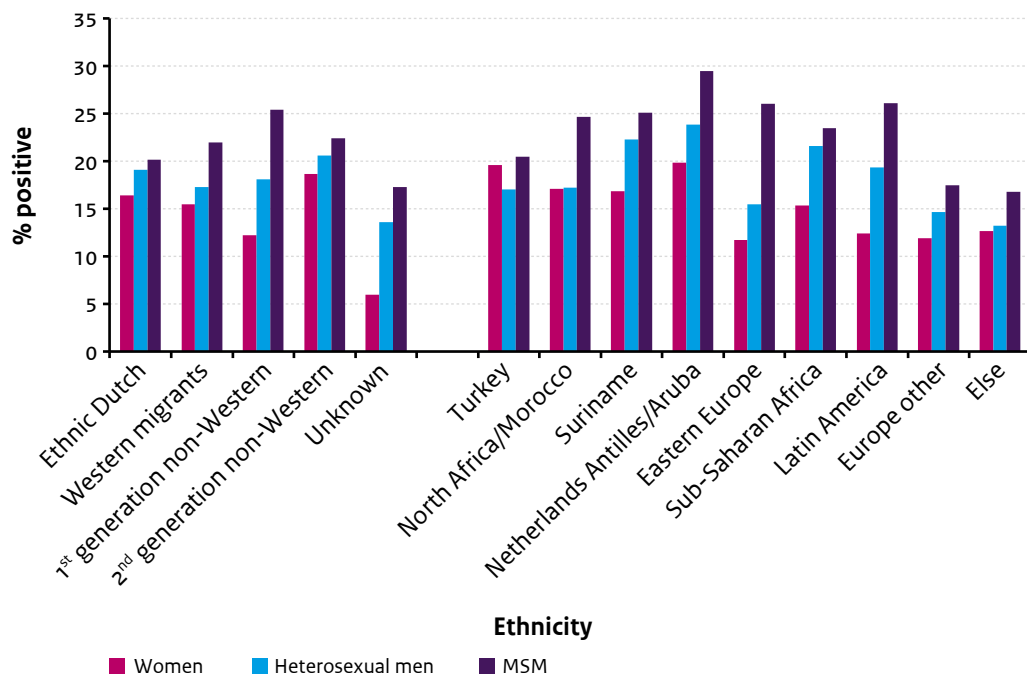
Ethnicity	Women n (%)	Heterosexual men n (%)	MSM n (%)
The Netherlands	48,194 (71.3)	21,569 (61.5)	27,776 (68.9)
Turkey	708 (1.0)	1,039 (3.0)	576 (1.4)
First generation migrants	92 (13.0)	203 (19.5)	210 (36.5)
Second generation migrants	615 (86.9)	836 (80.5)	364 (63.2)
North Africa/Morocco	1,155 (1.7)	1,548 (4.4)	600 (1.5)
First generation migrants	160 (13.9)	294 (19.0)	260 (43.3)
Second generation migrants	994 (86.1)	1,252 (80.9)	340 (56.7)
Suriname	3,408 (5.0)	2,831 (8.1)	1,291 (3.2)
First generation migrants	765 (22.4)	822 (29.0)	586 (45.4)
Second generation migrants	2,642 (77.5)	2,009 (71.0)	705 (54.6)
Netherlands Antilles/Aruba	1,680 (2.5)	1,444 (4.1)	933 (2.3)
First generation migrants	745 (44.3)	785 (54.4)	725 (77.7)
Second generation migrants	935 (55.7)	659 (45.6)	203 (21.8)

Table 2.3 (continued) Number of consultations by ethnicity, generation, gender and type of sexual contact, 2016

Ethnicity	Women n (%)	Heterosexual men n (%)	MSM n (%)
Eastern Europe	2,488 (3.7)	569 (1.6)	944 (2.3)
First generation migrants	2,181 (87.7)	420 (73.8)	852 (90.3)
Second generation migrants	306 (12.3)	149 (26.2)	91 (9.6)
Sub-Saharan Africa	1,537 (2.3)	1,430 (4.1)	456 (1.1)
First generation migrants	686 (44.6)	714 (49.9)	314 (68.9)
Second generation migrants	850 (55.3)	715 (50.0)	142 (31.1)
Latin America	1,591 (2.4)	594 (1.7)	1,381 (3.4)
First generation migrants	1,067 (67.1)	337 (56.7)	1,235 (89.4)
Second generation migrants	523 (32.9)	257 (43.3)	144 (10.4)
Europe other	3,301 (4.9)	1,904 (5.4)	3,180 (7.9)
First generation migrants	1,425 (43.2)	970 (50.9)	2,366 (74.4)
Second generation migrants	1,873 (56.7)	931 (48.9)	805 (25.3)
Asia	2,808 (4.2)	1,820 (5.2)	2,545 (6.3)
First generation migrants	1,037 (36.9)	904 (49.7)	1,477 (58.0)
Second generation migrants	1,768 (63.0)	931 (51.2)	1,065 (41.8)
Else	680 (1.0)	295 (0.8)	554 (1.4)
First generation migrants	256 (37.6)	148 (50.2)	462 (83.4)
Second generation migrants	424 (62.4)	147 (49.8)	92 (16.6)
Unknown	50 (0.1)	22 (0.1)	104 (0.3)
Total	67,600	35,065	40,340

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 ethnicity (left side: aggregated data; right side: region of origin of non-Western migrants), gender and type of sexual contact, 2016



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

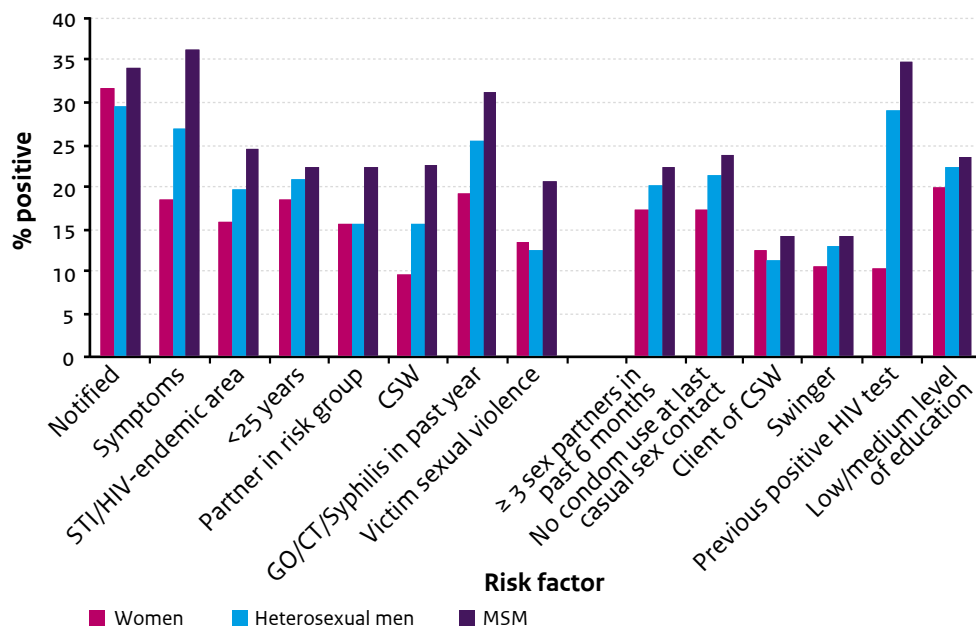
Table 2.4 Reported triage indication by gender and type of sexual contact, 2016

	Women n (%)	Heterosexual men n (%)	MSM n (%)
Notified			
No	55,179 (81.6)	24,844 (70.9)	31,652 (78.5)
Yes	12,204 (18.1)	10,123 (28.9)	8,635 (21.4)
Unknown	217 (0.3)	98 (0.3)	53 (0.1)
Symptoms			
No	44,514 (65.8)	22,041 (62.9)	30,808 (76.4)
Yes	22,827 (33.8)	12,939 (36.9)	9,460 (23.5)
Unknown	259 (0.4)	85 (0.2)	72 (0.2)

Table 2.4 (continued) Reported triage indication by gender and type of sexual contact, 2016

	Women n (%)	Heterosexual men n (%)	MSM n (%)
STI/HIV-endemic area			
No	52,225 (77.3)	23,790 (67.8)	31,614 (78.4)
Yes	15,375 (22.7)	11,275 (32.2)	8,726 (21.6)
<25 years			
No	20,388 (30.2)	14,688 (41.9)	33,474 (83.0)
Yes	47,212 (69.8)	20,377 (58.1)	6,866 (17.0)
Partner in risk group			
No	47,223 (69.9)	24,220 (69.1)	
Yes	19,024 (28.1)	10,381 (29.6)	
Unknown	1,353 (2.0)	464 (1.3)	
Commercial sex worker			
No	61,449 (90.9)	34,564 (98.6)	39,190 (97.1)
Yes, in past 6 months	5,832 (8.6)	211 (0.6)	824 (2.0)
Unknown	319 (0.5)	290 (0.8)	326 (0.8)
Gonorrhoea/chlamydia/syphilis in past year			
Not tested	41,684 (61.7)	25,527 (72.8)	13,187 (32.7)
Tested, negative	17,241 (25.5)	5,988 (17.1)	14,817 (36.7)
Tested, positive	7,664 (11.3)	3,176 (9.1)	9,477 (23.5)
Tested, unknown	260 (0.4)	81 (0.2)	408 (1.0)
Unknown	751 (1.1)	293 (0.8)	2,451 (6.1)
Victim sexual violence			
No	62,490 (92.4)	33,178 (94.6)	35,056 (86.9)
Yes	995 (1.5)	88 (0.3)	156 (0.4)
Unknown	686 (1.0)	283 (0.8)	3,766 (9.3)
At least one indication (including MSM)			
No	1,911 (2.8)	1,147 (3.3)	0 (0.0)
Yes	65,689 (97.2)	33,918 (96.7)	40,340 (100.0)

Figure 2.6 Percentage of positive STI tests by risk factor, gender and type of sexual contact, 2016



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, 2016

	Women n (%)	Heterosexual men n (%)	MSM n (%)
Socioeconomic status			
High	20,988 (31.0)	10,160 (29.0)	13,130 (32.5)
Medium	14,590 (21.6)	7,355 (21.0)	8,489 (21.0)
Low	27,910 (41.3)	16,333 (46.6)	16,932 (42.0)
Unknown	4,112 (6.1)	1,217 (3.5)	1,789 (4.4)
Educational level #			
High	42,092 (62.3)	20,866 (59.5)	25,774 (63.9)
Low/medium	21,217 (31.4)	12,550 (35.8)	11,082 (27.5)
Unknown	4,291 (6.3)	1,649 (4.7)	3,484 (8.6)
Number of partners in past 6 months			
0 partners	411 (0.6)	157 (0.4)	201 (0.5)
1 partner	17,982 (26.6)	6,291 (17.9)	3,431 (8.5)
2 partners	17,680 (26.2)	7,284 (20.8)	4,334 (10.7)
3 or more partners	29,253 (43.3)	21,081 (60.1)	31,513 (78.1)
Unknown	2,274 (3.4)	252 (0.7)	861 (2.1)

Table 2.5 (continued) Number of consultations by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2016

	Women n (%)	Heterosexual men n (%)	MSM n (%)
Condom use if last sexual contact was steady*			
No	21,671 (82.1)	9,970 (79.2)	9,889 (75.9)
Yes	4,385 (16.6)	2,487 (19.8)	2,854 (21.9)
Unknown	349 (1.3)	132 (1.0)	283 (2.2)
Condom use if last sexual contact was casual*			
No	28,765 (71.1)	15,834 (71.5)	14,133 (53.0)
Yes	11,044 (27.3)	5,936 (26.8)	11,795 (44.3)
Unknown	663 (1.6)	372 (1.7)	723 (2.7)
Anal sex, in past 6 months			
No	57,007 (84.3)		7,945 (19.7)
Yes, insertive			7,192 (17.8)
Yes, receptive	10,593 (15.7)		4,325 (10.7)
Yes, insertive and receptive			20,878 (51.8)
Receptive oral sex with a man, in past 6 months			
No	9,838 (14.6)		1,302 (3.2)
Yes	48,660 (72.0)		37,095 (92.0)
Unknown	9,102 (13.5)		1,943 (4.8)
Client of commercial sex worker			
No	67,052 (99.2)	31,882 (90.9)	38,830 (96.3)
Yes, in past 6 months	203 (0.3)	2,896 (8.3)	1,174 (2.9)
Unknown	345 (0.5)	287 (0.8)	336 (0.8)
Swinger**			
No	9,342 (91.4)	5,442 (96.1)	5,780 (86.9)
Yes	836 (8.2)	200 (3.5)	837 (12.6)
Unknown	47 (0.5)	21 (0.4)	31 (0.5)
Previous HIV test			
No	41,031 (60.7)	21,692 (61.9)	4,588 (11.4)
Yes, positive	49 (0.1)	31 (0.1)	5,235 (13.0)
Yes, negative	25,142 (37.2)	12,675 (36.1)	30,260 (75.0)
Yes, result unknown	153 (0.2)	42 (0.1)	70 (0.2)
Unknown	1,225 (1.8)	625 (1.8)	187 (0.5)

* Type of sexual contact was missing for 1% (n=1,720).

** Voluntary question, answered by 16% (n=22,536).

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 2.6 Number of consultations and percentage of positive tests by age, level of education, gender and type of sexual contact, 2016

Age group (years)	Women		Heterosexual men		MSM	
	Low / medium level of education ¹ n (%)	High level of education ² n (%)	Low/ medium level of education ¹ n (%)	High level of education ² n (%)	Low/ medium level of education ¹ n (%)	High level of education ² n (%)
≤ 19	4,164 (26.8)	4,026 (20.2)	1,348 (23.2)	900 (21.0)	398 (25.1)	444 (16.7)
20-24	10,693 (21.4)	27,124 (15.6)	6,047 (24.3)	11,580 (18.5)	1,772 (27.4)	3,913 (20.2)
25-34	4,194 (14.4)	9,215 (11.1)	3,838 (21.8)	6,631 (17.0)	3,179 (25.7)	8,272 (22.0)
≥35	2,166 (9.1)	1,727 (9.1)	1,317 (13.7)	1,755 (10.4)	5,733 (21.2)	13,144 (19.2)
Total	21,217 (19.8)	42,092 (14.8)	12,550 (22.3)	20,866 (17.5)	11,082 (23.6)	25,774 (20.2)

¹ Low/medium level of education: no education, elementary school, lbo, mavo, vmbo, mbo.

² High level of education: havo, vwo, university of applied sciences, university.

Footnote: level of education, gender and type of sexual contact was missing for 7% (n=9,424).

Table 2.7a Number of 'big five' STI diagnoses and percentage of positive tests by gender and type of sexual contact, 2016

Diagnosis	Women n (%)	Heterosexual men n (%)	MSM n (%)
Chlamydia	10,363 (15.3)	6,296 (18.0)	4,039 (10.0)
Gonorrhoea	931 (1.4)	607 (1.7)	4,554 (11.3)
Syphilis, infectious*	21 (0.1)	37 (0.2)	1165 (2.9)
HIV	10 (0.0)	11 (0.1)	264 (0.8)
Hepatitis B, infectious	32 (0.4)	41 (0.7)	36 (0.4)

* 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, 2016

Laboratory-confirmed diagnoses	Women	Heterosexual men	MSM
Syphilis, non-infectious or not specified			
latens tarda	21 (0.1)	15 (0.1)	142 (0.4)
not specified	11 (0.0)	10 (0.1)	89 (0.2)
Hepatitis B, recovered	290 (3.5)	252 (4.3)	500 (5.4)
Hepatitis C	0 (0.0)	0 (0.0)	7 (0.7)
<i>Lymphogranuloma venereum</i>			242 (9.2)
Other syndromes/clinical diagnoses			
Trichomoniasis*	98	10	1
Genital herpes			
primary: HSV1**	104	42	73
primary: HSV2**	101	87	73
primary: HSV unknown	8	5	4
recurrent	13	2	7
Genital warts	653	761	371
Non-specified urethritis	792	567	0
Proctitis	1	1	164
Candidiasis	405	110	51
Bacterial vaginosis	1,231	0	0
Scabies	5	21	36
Pubic Lice	0	0	7
Ulcer e.c.i.	3	13	14

* 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 STI clinic

Table 2.8 Number and percentage of unique clients visiting the STI clinic repeatedly and the percentage of positive STI tests at each visit by gender and type of sexual contact, 2016

No. of consultation	Women		Heterosexual men		MSM	
	n (%)	% STI	n (%)	% STI	n (%)	% STI
1 st	59,057 (100.0)	16.3	31,939 (100.0)	18.9	26,885 (100.0)	20.1
2 nd	7,072 (12.0)	16.5	2,741 (8.6)	21.3	8,695 (32.3)	21.6
3 rd	1,179 (2.0)	12.0	321 (1.0)	22.4	2,981 (11.1)	25.4
4 th	238 (0.4)	10.9	53 (0.2)	22.6	1,188 (4.4)	27.7

Footnote: Number of visits reach up to 11 in MSM and 6 in women and 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, 2016

	Women n (%)	Heterosexual men n (%)	MSM n (%)
Notified for STI/HIV			
1 st	10,676 (18.1)	9,089 (28.5)	5,630 (20.9)
2 nd	1,339 (18.9)	910 (33.2)	1,878 (21.6)
3 rd	166 (14.1)	109 (34.0)	691 (23.2)
STI-related symptoms			
1 st	19,687 (33.3)	11,458 (35.9)	6,154 (22.9)
2 nd	2,669 (37.7)	1,274 (46.5)	2,055 (23.6)
3 rd	395 (33.5)	168 (52.3)	766 (25.7)
STI/HIV-endemic area			
1 st	12,787 (21.7)	9,980 (31.2)	5,685 (21.1)
2 nd	1,987 (28.1)	1,105 (40.3)	1,899 (21.8)
3 rd	467 (39.6)	155 (48.3)	727 (24.4)
Age <25 years			
1 st	41,894 (70.9)	18,534 (58.0)	5,072 (18.9)
2 nd	4,620 (65.3)	1,631 (59.5)	1,289 (14.8)
3 rd	590 (50.0)	180 (56.1)	343 (11.5)
Partner in risk group			
1 st	15,783 (26.7)	9,304 (29.1)	
2 nd	2,509 (35.5)	920 (33.6)	
3 rd	563 (47.8)	128 (39.9)	

Table 2.9 (continued) Characteristics of unique clients at each consultation by gender and type of sexual contact, 2016

	Women n (%)	Heterosexual men n (%)	MSM n (%)
CSW			
1 st	3,809 (6.4)	168 (0.5)	517 (1.9)
2 nd	1,311 (18.5)	32 (1.2)	183 (2.1)
3 rd	517 (43.9)	6 (1.9)	80 (2.7)
Gonorrhoea/chlamydia/syphilis in past year			
1 st	5,041 (8.5)	2,053 (6.4)	3,957 (14.7)
2 nd	2,046 (28.9)	919 (33.5)	2,879 (33.1)
3 rd	456 (38.7)	165 (51.4)	1,490 (50.0)
≥3 sexual contacts in the past 6 months			
1 st	24,873 (42.1)	18,847 (59.0)	20,212 (75.2)
2 nd	3,520 (49.8)	1,959 (71.5)	7,114 (81.8)
3 rd	680 (57.7)	227 (70.7)	2,582 (86.6)
Casual partner at last sexual contact			
1 st	34,972 (59.2)	19,982 (62.6)	17,310 (64.4)
2 nd	4,473 (63.2)	1,899 (69.3)	5,920 (68.1)
3 rd	806 (68.4)	225 (70.1)	2,135 (71.6)
No condom use at last casual contact			
1 st	25,566 (73.1)	14,313 (71.6)	9,116 (52.7)
2 nd	2,774 (62.0)	1,335 (70.3)	3,063 (51.7)
3 rd	361 (44.8)	159 (70.7)	1,174 (55.0)
Client of CSW			
1 st	153 (0.3)	2,642 (8.3)	892 (3.3)
2 nd	37 (0.5)	219 (8.0)	193 (2.2)
3 rd	9 (0.8)	28 (8.7)	63 (2.1)
Known HIV positive			
1 st	37 (0.1)	27 (0.1)	2,806 (10.4)
2 nd	6 (0.1)	3 (0.1)	1,333 (15.3)
3 rd	5 (0.4)	1 (0.3)	622 (20.9)
Low/medium level of education*			
1 st	18,100 (30.6)	11,332 (35.5)	7,454 (27.7)
2 nd	2,513 (35.5)	1,036 (37.8)	2,440 (28.1)
3 rd	470 (39.9)	148 (46.1)	797 (26.7)

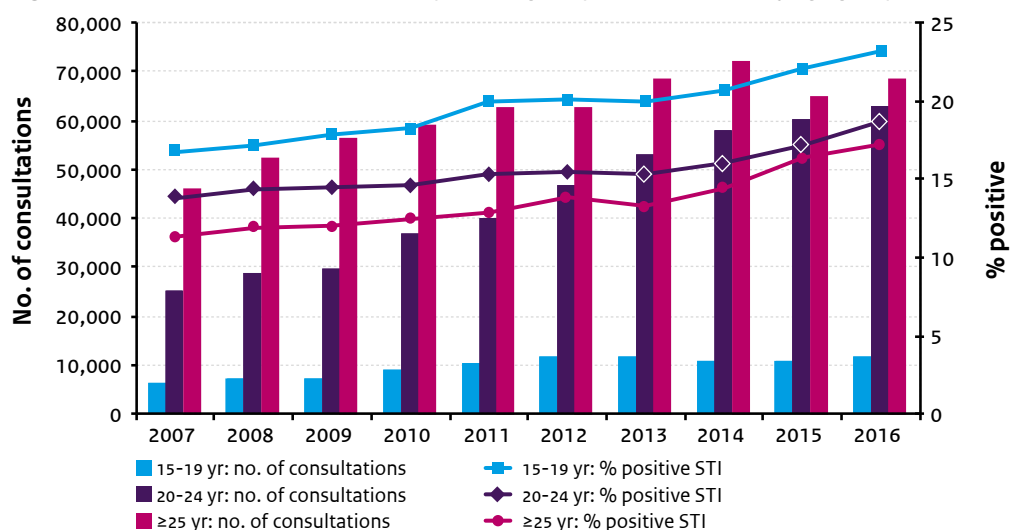
Footnote: Number of visits reach up to 11 in MSM and 6 in women and heterosexual men. 4th-11th consultation not shown because of low numbers.

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

2.4 Trends in STI clinic consultations

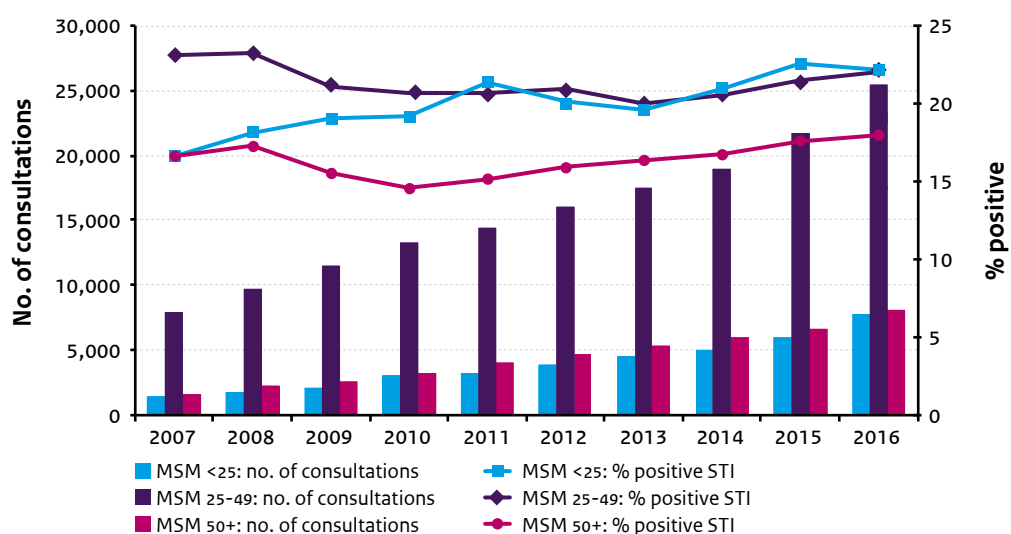
2.4.1 Trends in specific risk groups

Figure 2.7 Number of consultations and percentage of positive STI tests by age group, 2007-2016



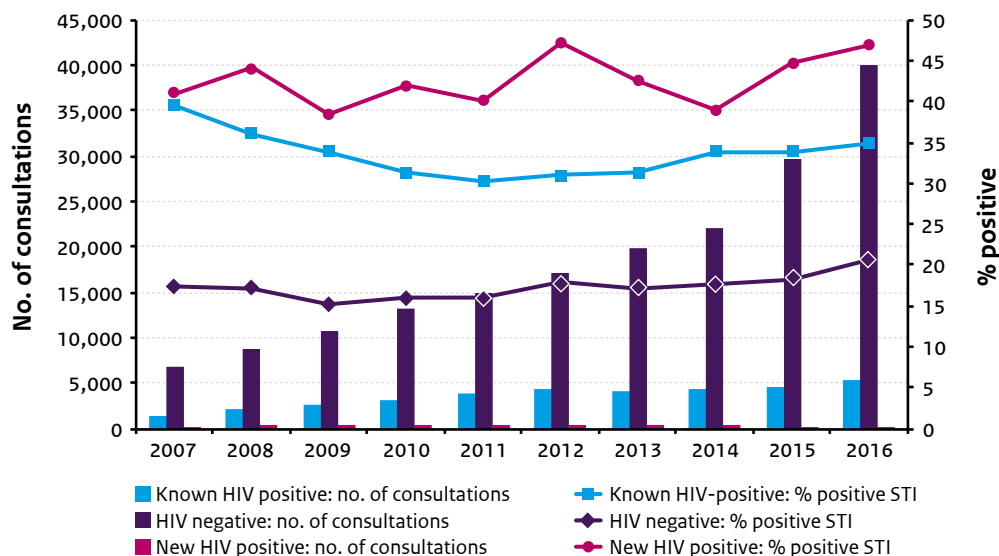
Footnote: STI includes: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Figure 2.8 Number of consultations (left axis) and percentage of positive STI tests (right axis) among MSM by age group, 2007-2016



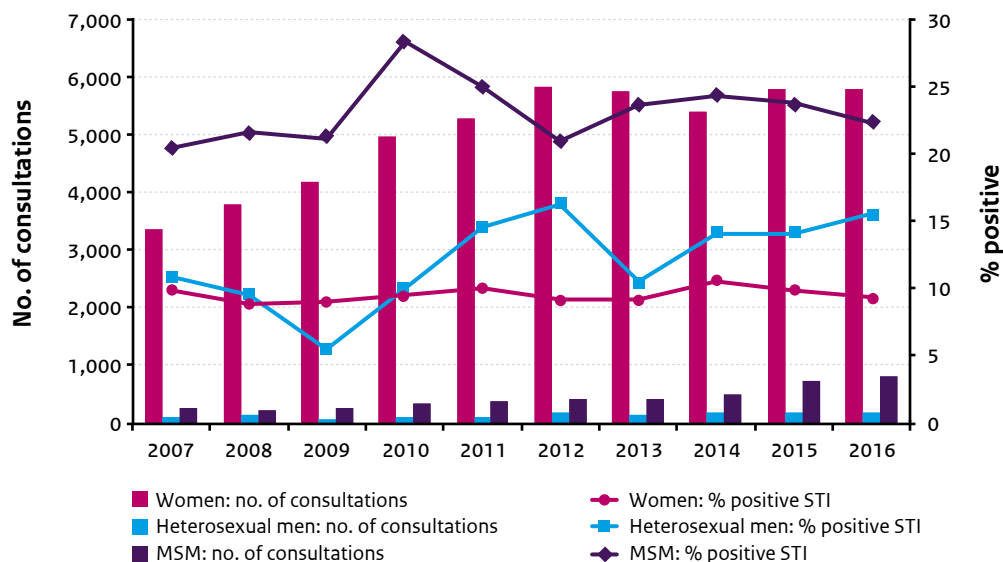
Footnote: STI includes: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Figure 2.9 Number of consultations and percentage of positive STI tests among MSM by HIV status, 2007-2016



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

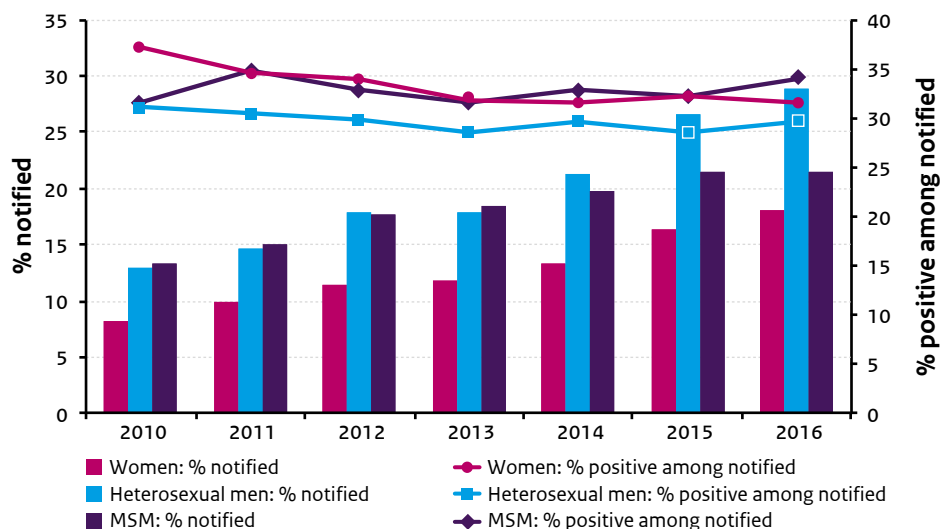
Figure 2.10 Number of consultations and percentage of positive STI tests among commercial sex workers by gender and type of sexual contact, 2007-2016



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

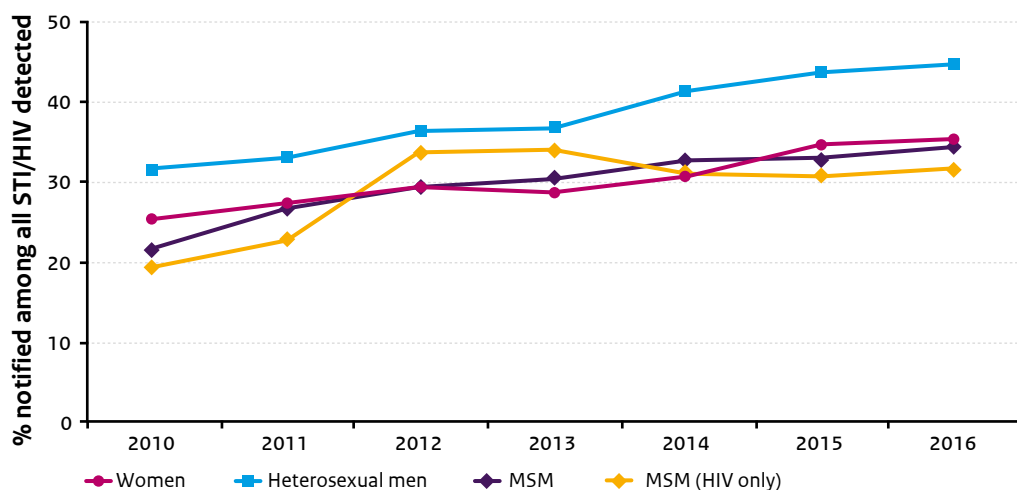
2.4.2 Partner notification trends

Figure 2.11 Percentage of STI clinic 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, 2010-2016



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

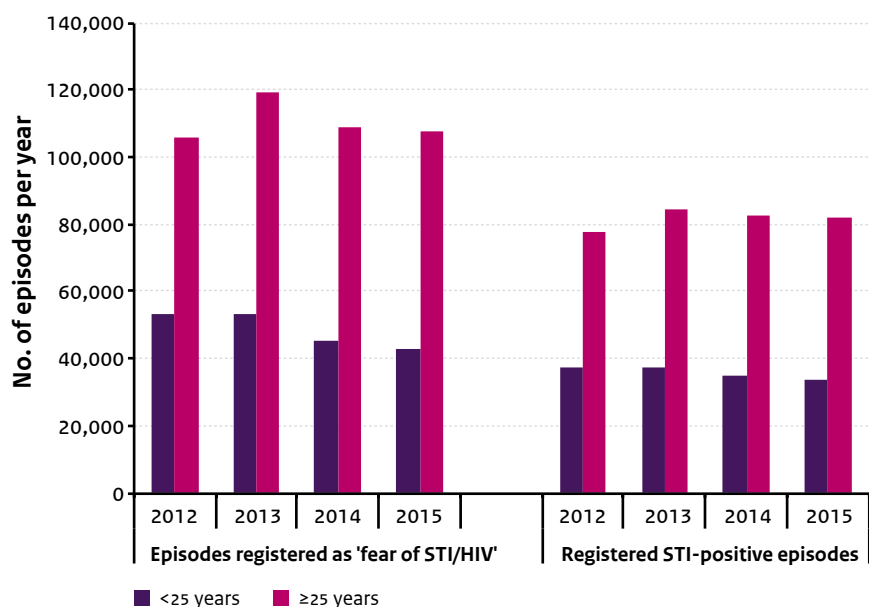
Figure 2.12 Percentage of STI detected through partner notification among heterosexual men, MSM and women, and the percentage of HIV detected through partner notification among MSM, 2010-2016



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

2.5 General practice

Figure 2.13 Estimated annual number of recorded episodes of fear of STI/HIV and positive STI diagnoses at GPs by age-group, based on extrapolation from GP practices in NIVEL-PCD, 2012-2015



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 persons) 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, 2012-2015

	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

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 2012-2016

	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)
Gender and sexual preference					
Women	318 (57)	328 (61)	324 (55)	268 (57)	232 (53)
Heterosexual men	179 (32)	197 (36)	210 (35)	151 (32)	156 (36)
MSM	28 (5)	14 (3)	33 (6)	21 (4)	31 (7)
Men, unknown preference	20 (4)	1 (0)	22 (4)	30 (6)	18 (4)
Ethnic background					
Dutch	437 (78)	430 (80)	498 (84)	390 (83)	374 (86)
Non-Dutch non-Western	93 (17)	84 (16)	78 (13)	64 (14)	43 (10)
Non-Dutch Western	0 (0)	4 (1)	4 (1)	10 (2)	10 (2)
Unknown	15 (3)	22 (4)	12 (2)	6 (1)	10 (2)
Age group					
< 25 years	186 (33)	210 (39)	198 (33)	169 (36)	149 (34)
≥ 25 years	373 (67)	330 (61)	393 (66)	301 (64)	288 (66)
Recent sexual contacts*					
Steady partner	279 (50)	246 (46)	247 (42)	197 (42)	171 (39)
Casual partner(s)	214 (38)	214 (40)	231 (39)	186 (40)	161 (37)
Paid sex contacts	5 (1)	4 (1)	10 (2)	6 (1)	1 (0)
Unknown	78 (14)	76 (14)	104 (18)	81 (17)	104 (24)
Reason for STI-consultation*					
STI-related complaints	246 (44)	280 (52)	368 (62)	248 (53)	331 (76)
Notified	75 (13)	70 (13)	76 (13)	3 (1)	4 (1)
Check-up	86 (15)	80 (15)	41 (7)	20 (4)	26 (6)
Recent risk	76 (14)	58 (11)	47 (8)	33 (7)	31 (7)
Fear for STI	16 (3)	10 (2)	14 (2)	3 (1)	3 (1)
Other/unknown	60 (11)	42 (8)	46 (8)	163 (35)	42 (10)
Total	559	540	592	470	437

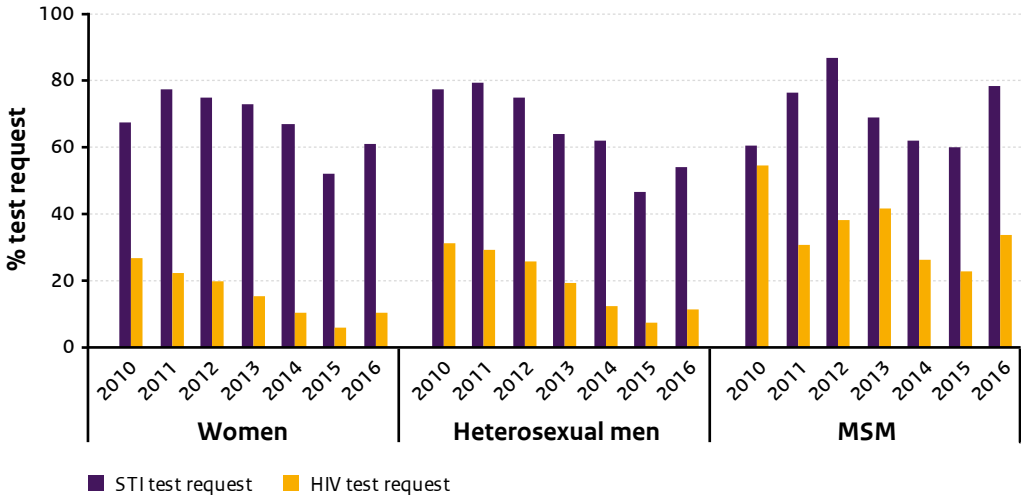
*Some patients in period 2012-2014 are included in more than one category.

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), 2016

	STI test		HIV test#
	n tests (% tested)	n pos (% pos)	n tests (% tested)
Gender and sexual preference			
Women	146 (63)	70 (48)	26 (11)
Heterosexual men	88 (56)	31 (35)	18 (12)
MSM	25 (81)	14 (56)	11 (35)
Men, unknown preference	10 (56)	5 (50)	3 (17)
Ethnic background			
Dutch	229 (61)	101 (44)	46 (12)
Non-Dutch non-Western	25 (58)	13 (52)	6 (14)
Non-Dutch Western	7 (70)	4 (57)	3 (30)
Unknown	8 (80)	2 (25)	3 (30)
Age group			
< 25 years	89 (60)	51 (57)	12 (8)
≥ 25 years	180 (63)	69 (38)	46 (16)
Recent sexual contacts			
Steady partner	87 (51)	34 (39)	15 (9)
Casual partner(s)	120 (75)	55 (46)	29 (18)
Paid sex contacts	1 (100)	0 (0)	1 (100)
Unknown	61 (59)	31 (51)	13 (13)
Reason for STI-consultation			
STI-related complaints	198 (60)	98 (49)	36 (11)
Notified	4 (100)	4 (100)	0 (0)
Check-up	20 (77)	7 (35)	9 (35)
Recent risk	27 (87)	5 (19)	8 (26)
Fear for STI	1 (33)	0 (0)	0 (0)
Other/unknown	20 (48)	6 (30)	5 (12)
Total	269 (62)	120 (45)	58 (13)

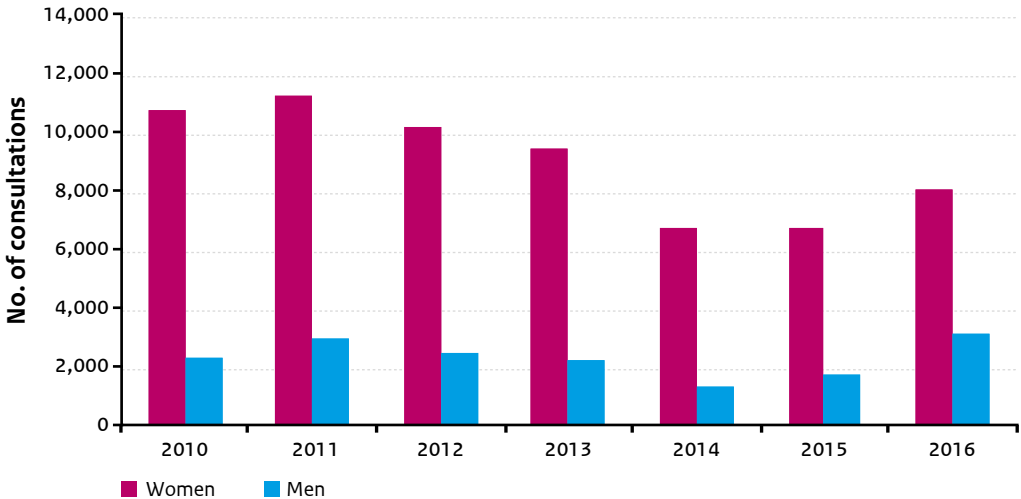
One hiv-test was positive (MSM)

Figure 2.14 Testing rate for STI (chlamydia, gonorrhoea, syphilis, HepB) and HIV during STI-related consultations in the Sentinel Practices of NIVEL-PCD, 2010-2016



2.6 Sense

Figure 2.15 Number of Sense consultations by gender, 2010-2016



Footnote: Nine transgenders were excluded from the analyses.

Table 2.13 Number of Sense consultations by age and gender, 2016

Age (years)	Women n (%)	Men n (%)
≤ 14	332 (4.1)	39 (1.2)
15-19	3,687 (45.6)	1,036 (32.7)
20-24	3,668 (45.4)	1,611 (50.9)
≥ 25	399 (4.9)	479 (15.1)
Total	8,086	3,165

Footnote: Nine transgenders were excluded from the analyses.

Table 2.14 Number of Sense consultations by ethnicity and gender, 2016

Country of birth	Women n (%)	Men n (%)
The Netherlands	5,204 (64.4)	1,792 (56.6)
Netherlands Antilles	312 (3.9)	162 (5.1)
Suriname	516 (6.4)	200 (6.3)
Noth Africa/Morocco	197 (2.4)	152 (4.8)
Turkey	131 (1.6)	127 (4.0)
Eastern Europe	310 (3.8)	55 (1.7)
Sub-Saharan Africa	249 (3.1)	105 (3.3)
Latin America	204 (2.5)	89 (2.8)
Asia	375 (4.6)	243 (7.7)
Else	588 (7.3)	240 (7.6)
Total	8,086	3,165

Footnote: Nine transgenders were excluded from the analyses.

Table 2.15 Subjects discussed during Sense consultations by gender, 2016

Subjects	Women n (%)	Men n (%)
STI	291 (3.2)	241 (7.3)
Sexuality	3,227 (36.0)	2,257 (68.2)
Birth control	3,173 (35.4)	20 (0.6)
Unwanted sexual behaviour/sexual violence	572 (6.4)	62 (1.9)
Unintended pregnancy	665 (7.4)	9 (0.3)
Else	1,032 (11.5)	721 (21.8)
Total	8,960	3,310

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

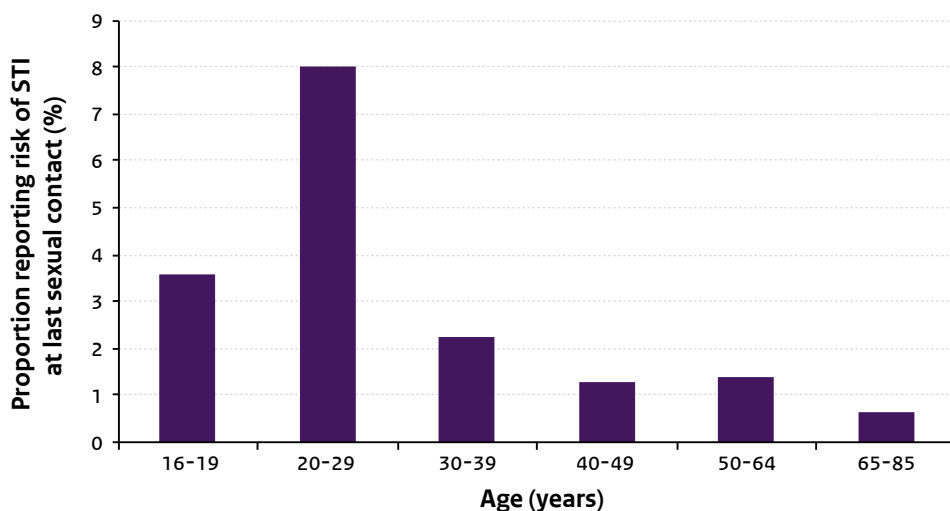
Table 2.16 Sexuality topics discussed during Sense consultations by gender, 2016

Questions/problems related to:	Women n (%)	Men n (%)
Human body	458 (13.9)	191 (8.3)
Sexual dysfunction	981 (29.7)	438 (19.0)
Sexual orientation	27 (0.8)	78 (3.4)
Gender identity	2 (0.1)	3 (0.1)
Sexual behaviour/sex techniques	1,542 (46.7)	1,332 (57.8)
Unknown/other	289 (8.8)	264 (11.4)
Total	3,299	2,306

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 Lifestyle monitor

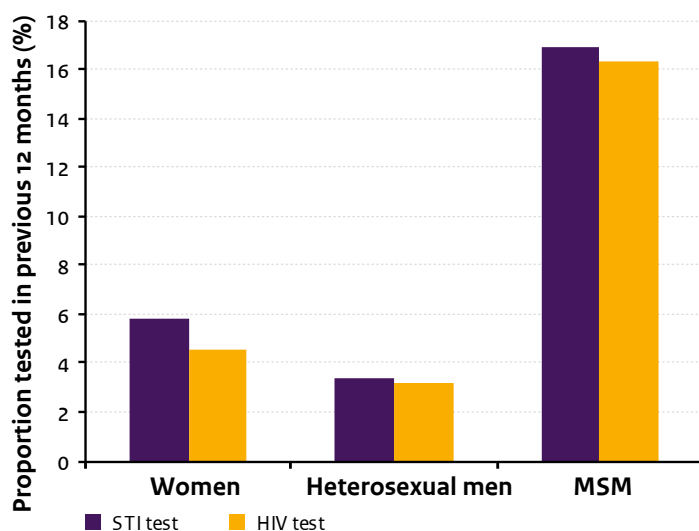
Figure 2.16 Percentage of people reporting risk of STI at last sexual contact by age group, Lifestyle monitor, 2016



Footnote: Risk of STI at last sexual contact was defined as unprotected (condomless) sex with a casual partner or commercial sex worker at last contact.

Source: LSM 2014-2016 (CBS in cooperation with Rutgers/SANL/RIVM)

Figure 2.17 Percentage tested for STI and HIV in the previous year by gender and sexual preference, Lifestyle monitor, 2014-2016



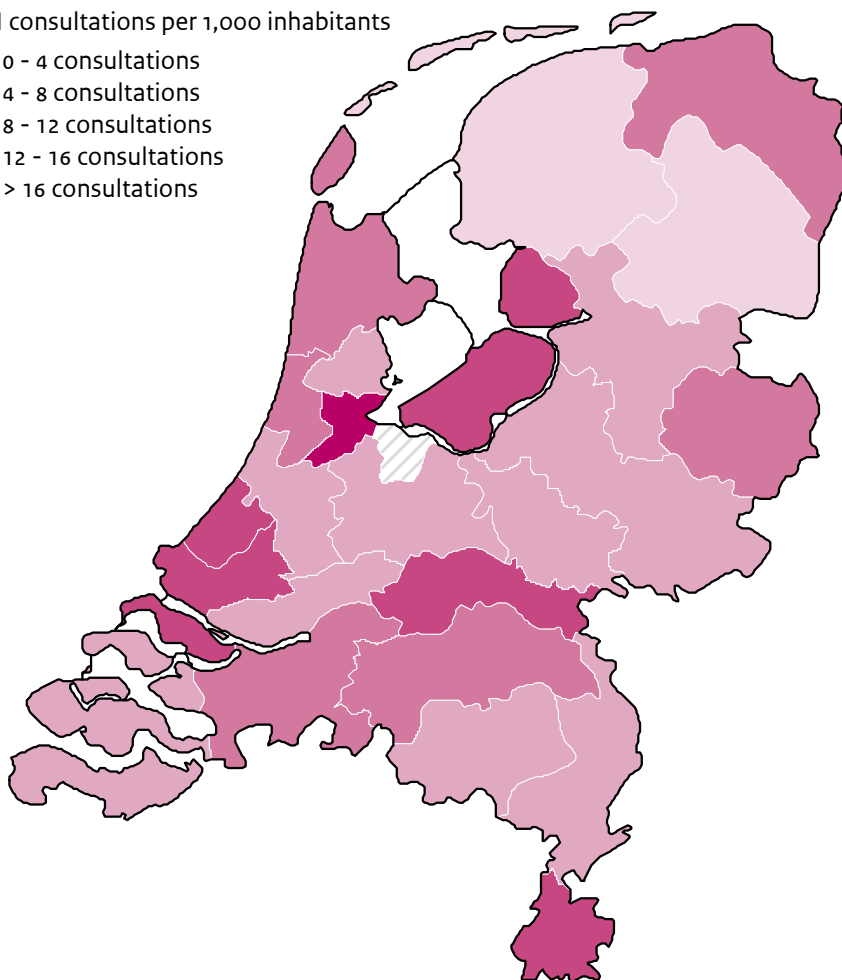
Source: LSM 2014-2016 (CBS in cooperation with Rutgers/SANL/RIVM)

2.8 Consultations and characteristics of STI clinic attendees by region

Figure 2.18 Number of persons with at least one STI clinic consultation per 1,000 inhabitants of 15-65 years of age by region, 2016

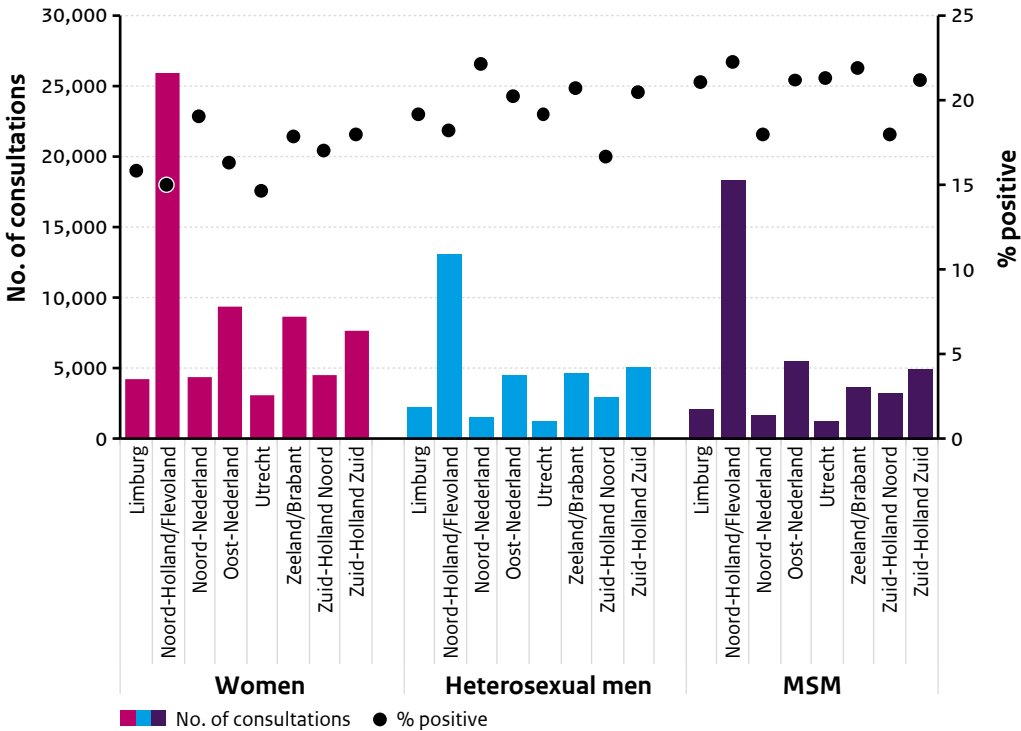
STI consultations per 1,000 inhabitants

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



Footnote: GGD Amsterdam = 44.8 per 1,000 inhabitants

Figure 2.19 Number of consultations and percentage of positive STI tests by region, gender and type of sexual contact, 2016



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

Figure 2.20 Distribution of age and type of sexual contact of all STI clinic consultations by region, 2016

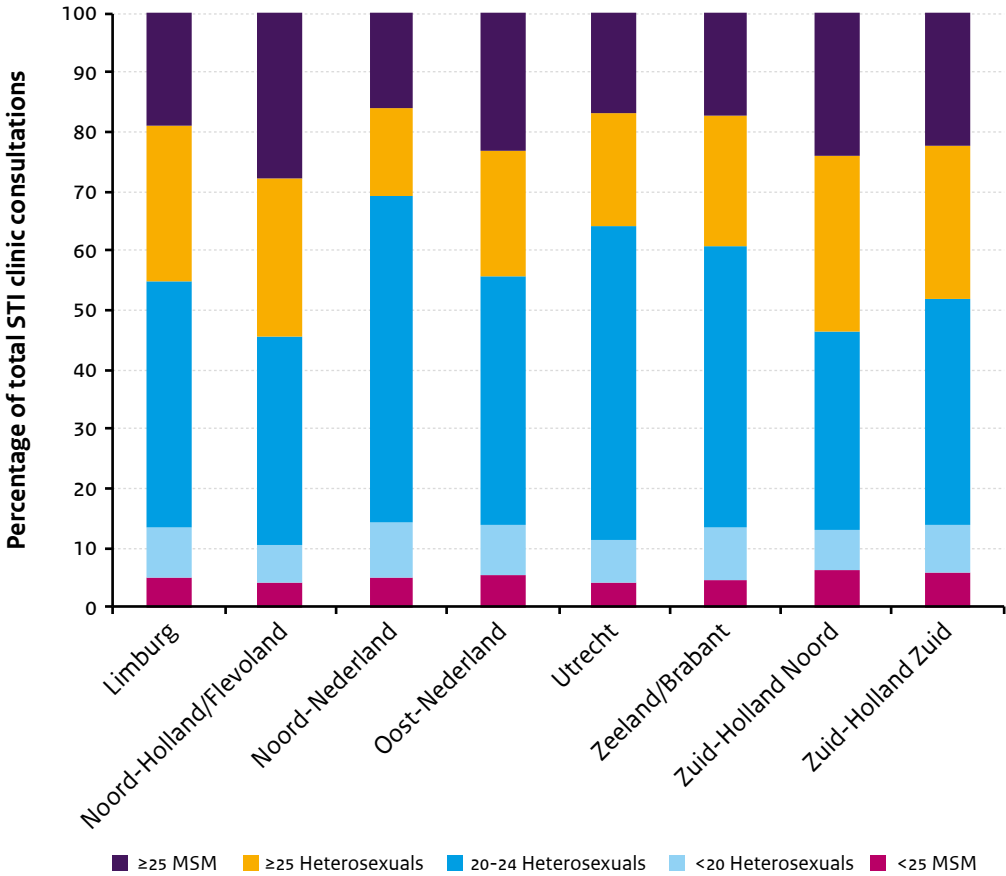


Figure 2.21 Distribution of notified consultations and/or consultations with symptoms of all STI clinic consultations among heterosexuals ≥ 25 years by region, 2016

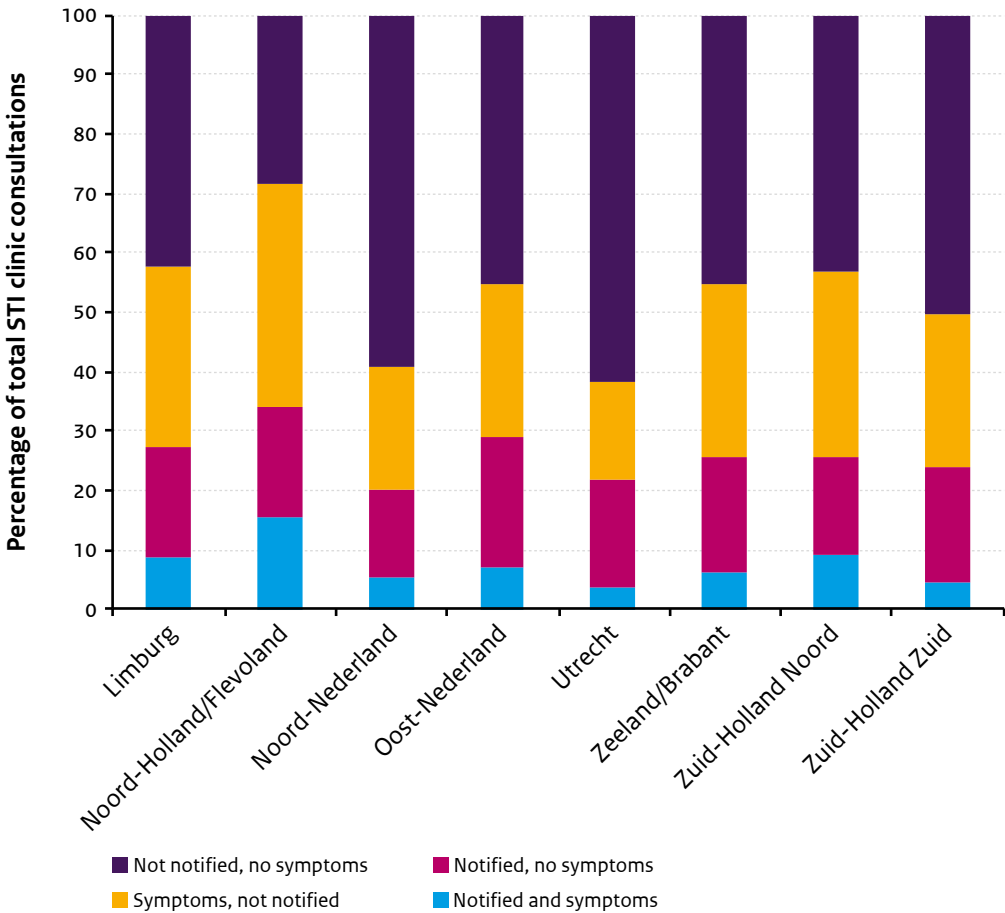
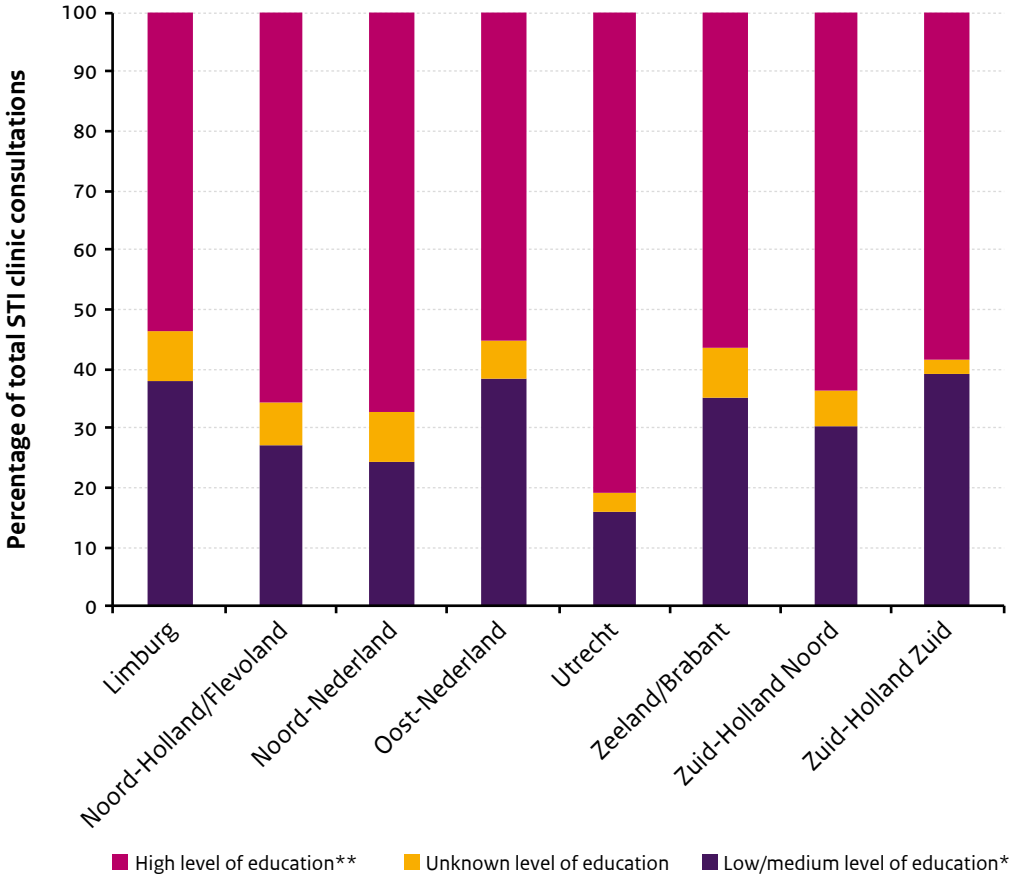


Figure 2.22 Distribution of level of education of all STI clinic consultations by region, 2016



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

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

BACTERIAL STI

3 Chlamydia, including lymphogranuloma venereum

3.1 Key points

- Chlamydia remains the most commonly detected STI in the Netherlands: chlamydia was diagnosed in one out of 7 STI clinic consultations in 2016 and one in 8 GP patients at STI related consultations in 2015. In total, 20,698 chlamydia infections were diagnosed at STI clinics and an estimated 35,000 in the general practice.
- Among STI clinic visitors, the number of chlamydia infections increased with 11.4 per cent in 2016 compared to 2015, more than the increase of 5.0 per cent in the number of consultations.
- In women, the positivity rate increased from 14.2 per cent in 2015 to 15.3 per cent in 2016 and in heterosexual men from 16.1 per cent to 18.0 per cent; it has shown a steady rise since 2013 (12.2 and 12.8 per cent positive in women and men in 2013). In MSM, the positivity rate remained stable at 10.0 per cent.
- The highest positivity rates were found in persons notified for chlamydia (34.8 per cent in women, 32.7 per cent in heterosexual men and 22.0 per cent in MSM). A considerable proportion of all clinic visitors, i.e. 17 per cent, indicated to have been notified for chlamydia.
- High positivity rates were also seen among adolescents (22.7 per cent among girls and 21.2 per cent among boys aged 15-19 years), heterosexual men and women from Antillean/Aruban origin (20.8), women originating from Turkey (18.4), heterosexual men with symptoms (24.3) or an STI history (23.3), and lower-educated women and heterosexual men (18.4 and 20.3 per cent, respectively).
- Almost 19 per cent of MSM with chlamydia was co-infected with gonorrhoea, 4.6 per cent with syphilis and 1.8 per cent 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 15,000 episodes in 2015) and remained around 21,000 in women in 2014 and 2015. The annual reporting rate in women was higher in young women under 25 (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 substantially from 179 in 2015 to 242 in 2016. The positivity rate increased from 7.9 to 9.2 per cent. LGV was tested in 2,568 of the 2,962 MSM infected with anorectal chlamydia (86.7 per cent). Of the LGV positives, 54 per cent was known HIV positive.
- The increase in LGV cases was primarily among HIV negative MSM. The percentage of HIV negative MSM among LGV positives substantially increased from 20 per cent in 2013 to 46 per cent in 2016.

3.2 STI clinics: characteristics, risk groups and trends

Figure 3.1 Positivity rates of chlamydia by region, the Netherlands, 2016

Positivity rate

- 9 - 11%
- 11 - 13%
- 13 - 15%
- 15 - 17%
- 17 - 19%

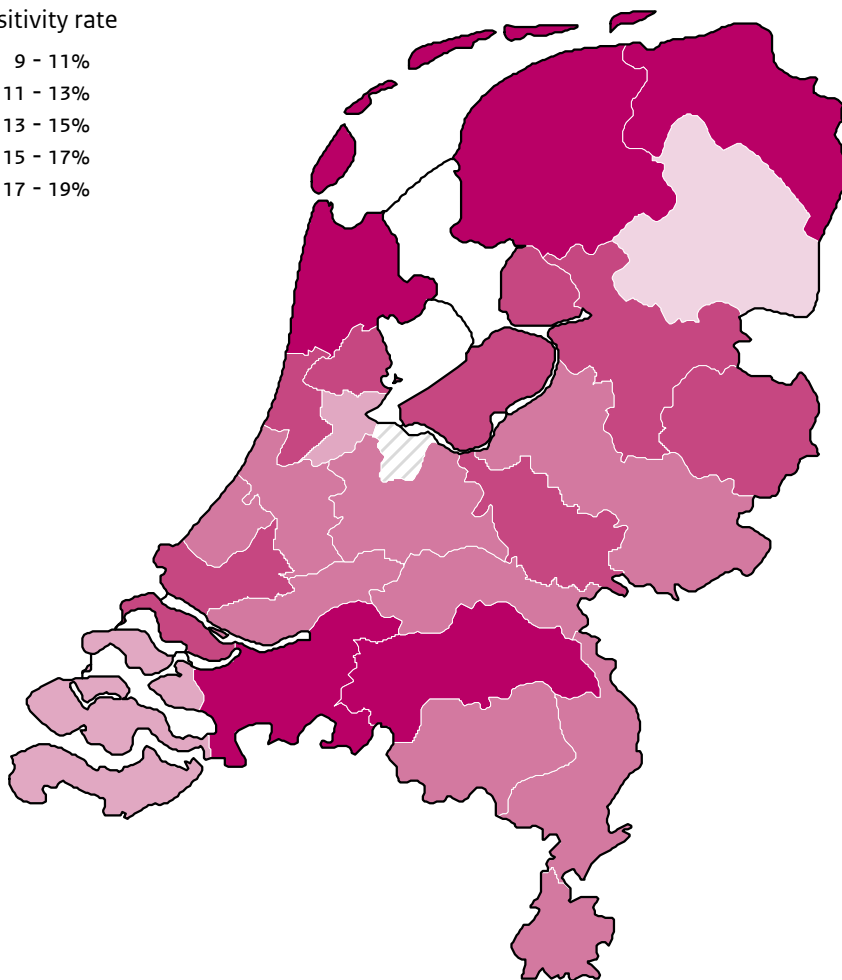


Figure 3.2 Number of chlamydia tests and percentage of chlamydia positives by region, gender and type of sexual contact, 2016

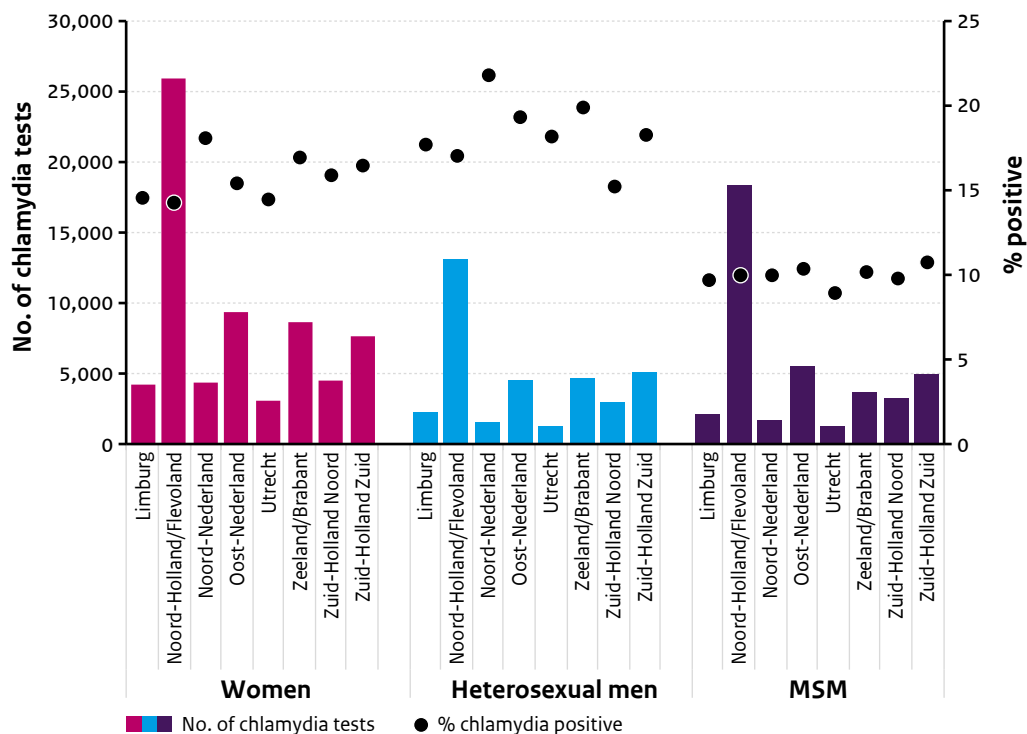


Figure 3.3 Total number of tests and positivity rate of chlamydia by gender and type of sexual contact, 2007-2016

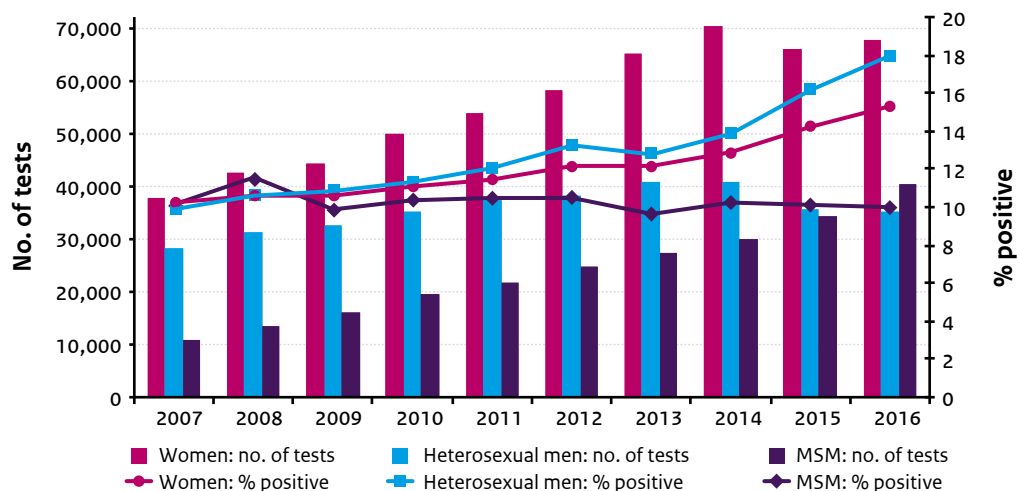


Table 3.1 Number of positive tests and persons tested for chlamydia by age, gender and type of sexual contact, 2016

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	1,899/8,376	22.7	488/2,306	21.2	87/882	9.9
20-24	6,480/38,804	16.7	3,568/18,050	19.8	643/5,959	10.8
25-29	1,367/11,336	12.1	1,518/8,067	18.8	742/7,019	10.6
30-34	278/3,505	7.9	417/2,991	13.9	585/5,322	11.0
35-39	115/1,770	6.5	145/1,332	10.9	498/4,807	10.4
40-44	69/1,234	5.6	63/745	8.5	374/4,027	9.3
45-49	57/1,177	4.8	48/630	7.6	355/4,123	8.6
50-54	51/786	6.5	29/397	7.3	362/3,553	10.2
≥ 55	47/545	8.6	20/484	4.1	393/4,525	8.7
Unknown	0/0	0	0/0	0	0/1	0.0
Total	10,363/67,533	15.3	6,296/35,002	18.0	4,039/40,218	10.0

Figure 3.4 Trends in positivity rate for chlamydia in women and heterosexual men by age group, 2007-2016

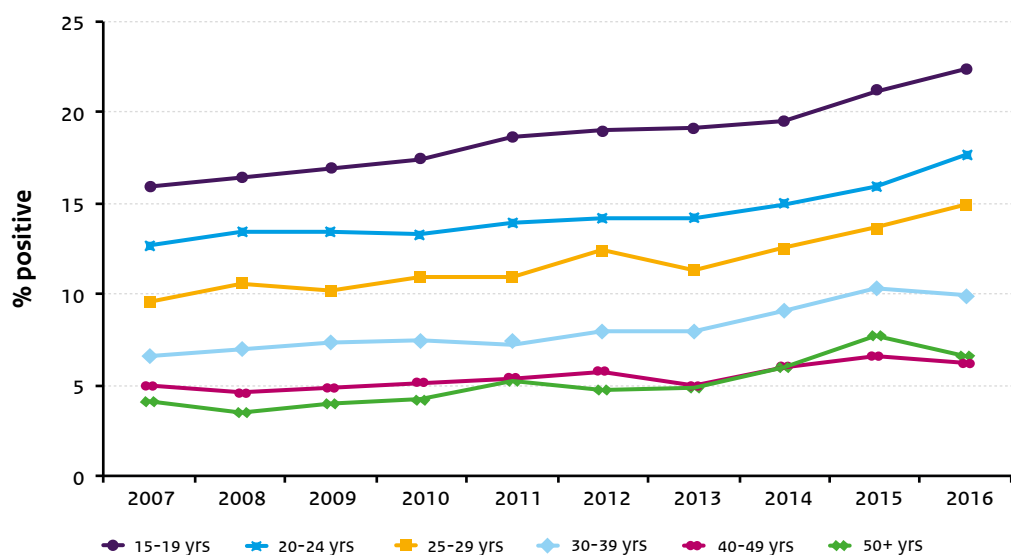


Table 3.2a Number of positive tests and persons tested for chlamydia by ethnicity, gender and type of sexual contact, 2016

Ethnicity	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	7,607/48,147	15.8	3,987/21,536	18.5	2,696/27,689	9.7
Western migrants	579/3,980	14.5	365/2,196	16.6	357/3,729	9.6
First generation non-Western migrants	695/6,722	10.3	686/4,467	15.4	649/5,641	11.5
Second generation non-Western migrants	1,480/8,628	17.2	1,255/6,779	18.5	329/3,042	10.8
Non-Western, generation unknown	0/9	0.0	0/6	0.0	1/13	7.7
Unknown	2/47	4.3	3/18	16.7	7/104	6.7
Total	10,363/67,533	15.3	6,296/35,002	18.0	4,039/40,218	10.0

Table 3.2b Number of positive tests and persons tested for chlamydia among first and second generation non-Western migrants by region of origin, gender and type of sexual contact, 2016

Region of origin	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Turkey	130/707	18.4	156/1,037	15.0	51/571	8.9
North Africa/Morocco	181/1,153	15.7	220/1,544	14.2	74/599	12.4
Suriname	513/3,407	15.1	558/2,827	19.7	139/1,287	10.8
Netherlands Antilles/Aruba	288/1,680	17.1	300/1,442	20.8	126/930	13.5
Sub-Saharan Africa	212/1,533	13.8	271/1,429	19.0	51/453	11.3
Eastern Europe	243/2,485	9.8	76/567	13.4	115/941	12.2
Latin America	171/1,589	10.8	107/594	18.0	159/1,379	11.5
Asia	437/2,805	15.6	253/1,812	14.0	264/2,536	10.4
Total	2,175/15,359	14.2	1,941/11,252	17.3	979/8,696	11.3

Table 3.3a Number of positive tests and persons tested for chlamydia by triage indication, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Notified						
Not notified	6,649/55,119	12.1	3,375/24,803	13.6	2,703/31,560	8.6
Notified for chlamydia	3,335/9,589	34.8	2,694/8,228	32.7	722/3,282	22.0
Notified for other STI/HIV	76/817	9.3	50/606	8.3	518/4,713	11.0
Unknown	303/2,008	15.1	177/1,365	13.0	96/663	14.5
Symptoms						
No	6,348/44,465	14.3	3,140/22,013	14.3	2,574/30,719	8.4
Yes	3,986/22,810	17.5	3,142/12,912	24.3	1,456/9,437	15.4
Unknown	29/258	11.2	14/77	18.2	9/62	14.5
STI/HIV endemic area						
No	8,188/52,174	15.7	4,355/23,750	18.3	3,060/31,522	9.7
Yes	2,175/15,359	14.2	1,941/11,252	17.3	979/8,696	11.3
Age <25 years						
No	1,984/20,353	9.7	2,240/14,646	15.3	3,309/33,377	9.9
Yes	8,379/20,353	17.8	4,056/20,356	19.9	730/6,841	10.7
Partner in risk group						
No	7,573/47,199	16.0	4,800/24,186	19.8		
Yes	2,654/19,000	14.0	1,431/10,363	13.8		
Unknown	136/1,334	10.2	65/453	14.3		
CSW						
No	9,927/61,397	16.2	6,229/34,508	18.1	3,903/39,082	10.0
Yes, in past 6 months	402/5,826	6.9	31/211	14.7	99/821	12.1
Unknown	34/310	11.0	36/283	12.7	37/315	11.7
Gonorrhoea/chlamydia/syphilis in past year						
Not tested	6,642/41,659	15.9	4,495/25,500	17.6	1,309/13,161	9.9
Tested, negative	2,259/17,222	13.1	996/5,973	16.7	1,173/14,772	7.9
Tested, positive	1,349/7,657	17.6	739/3,167	23.3	1,328/9,457	14.0
Tested, unknown	26/258	10.1	16/80	20.0	38/403	9.4
Unknown	87/737	11.8	50/282	17.7	191/2,425	7.9

Table 3.3b Number of positive tests and persons tested for chlamydia by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Socioeconomic status						
High	3,188/20,971	15.2	1,699/10,143	16.8	1,261/13,101	9.6
Medium	2,308/14,573	15.8	1,318/7,347	17.9	862/8,457	10.2
Low	4,439/27,885	15.9	3,077/16,302	18.9	1,747/16,882	10.3
Unknown	428/4,104	10.4	202/1,210	16.7	169/1,778	9.5
Educational level#						
High	6,041/42,060	14.4	3,515/20,840	16.9	2,401/25,709	9.3
Low/medium	3,910/21,199	18.4	2,541/12,532	20.3	1,302/11,053	11.8
Unknown	412/4,274	9.6	240/1,630	14.7	336/3,456	9.7
Number of partners in past 6 months						
0 partners	24/396	6.1	11/156	7.1	12/196	6.1
1 partner	2,578/17,958	14.4	996/6,268	15.9	246/3,412	7.2
2 partners	2,852/17,675	16.1	1,251/7,272	17.2	371/4,321	8.6
3 or more partners	4,753/29,235	16.3	4,001/21,063	19.0	3,313/31,446	10.5
Unknown	156/2,269	6.9	37/243	15.2	97/843	11.5
Condom use if last sexual contact was casual*						
No	4,790/28,744	16.7	3,159/15,813	20.0	1,614/14,096	11.5
Yes	1,263/11,035	11.4	824/5,929	13.9	1,059/11,779	9.0
Unknown	88/661	13.3	64/370	17.3	79/717	11.0
Anal sex, in past 6 months						
No	8,751/56,949	15.4			511/7,896	6.5
Yes, insertive					544/7,177	7.6
Yes, receptive	1,612/10,584	15.2			428/4,312	9.9
Yes, insertive and receptive					2,556/20,833	12.3
Receptive oral sex with a man, in past 6 months						
No	1,676/9,830	17.0			90/1,284	7.0
Yes	7,427/48,631	15.3			3,816/37,020	10.3
Unknown	1,260/9,072	13.9			133/1,914	6.9

Table 3.3b (continued) Number of positive tests and persons tested for chlamydia by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW						
No	10,308/66,995	15.4	5,999/31,833	18.8	3,907/38,723	10.1
Yes, in past 6 months	23/202	11.4	265/2,889	9.2	99/1,172	8.4
Unknown	32/336	9.5	32/280	11.4	33/323	10.2
Previous HIV test						
No	7,142/40,998	17.4	4,188/21,672	19.3	447/4,566	9.8
Yes, positive	1/48	2.1	4/30	13.3	802/5,229	15.3
Yes, negative	3,051/25,111	12.2	2,003/12,642	15.8	2,766/30,177	9.2
Yes, result unknown	10/152	6.6	6/41	14.6	10/68	14.7
Unknown	159/1,224	13.0	95/617	15.4	14/178	7.9

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 36.4% (n=51,931) and missing for 1.2% (n=1,678) of persons tested for chlamydia.

Table 3.4 Concurrent STI by gender and type of sexual contact among persons diagnosed with chlamydia, 2016

Concurrent infection	Women (N=10,363) n (%)	Heterosexual men (N=6,296) n (%)	MSM (N=4,039) n (%)
Gonorrhoea	373 (3.6)	257 (4.1)	997 (24.7)
Syphilis, infectious	6 (0.1)	6 (0.1)	234 (5.8)
HIV newly diagnosed	2 (0.0)	1 (0.0)	65 (1.6)
Genital herpes	32 (0.3)	14 (0.2)	20 (0.5)
Genital warts	87 (0.8)	105 (1.7)	37 (0.9)
Hepatitis B, infectious	4 (0.0)	6 (0.1)	8 (0.2)
Hepatitis C	0 (0.0)	0 (0.0)	0 (0.0)

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

Table 3.5 Anatomic location of chlamydia infection by gender and type of sexual contact, 2016

Location	Women (N=10,363) n (%)	Heterosexual men (N=6,296) n (%)	MSM (N=4,039) n (%)
Urogenital only	7,175 (69.2)	6,272 (99.6)	882 (21.8)
Anorectal only	439 (4.2)	3 (0.0)	2,342 (58.0)
Oral only	124 (1.2)	2 (0.0)	174 (4.3)
Urogenital and anorectal	2,134 (20.6)	11 (0.2)	385 (9.5)
Urogenital and oral	209 (2.0)	0 (0.0)	16 (0.4)
Anorectal and oral	33 (0.3)	0 (0.0)	191 (4.7)
Urogenital and anorectal and oral	246 (2.4)	0 (0.0)	33 (0.8)
Pooled samples*	3 (0.0)	8 (0.1)	16 (0.4)

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

Table 3.6 Number and percentage of positive tests for chlamydia by anatomic location, gender and type of sexual contact, 2016

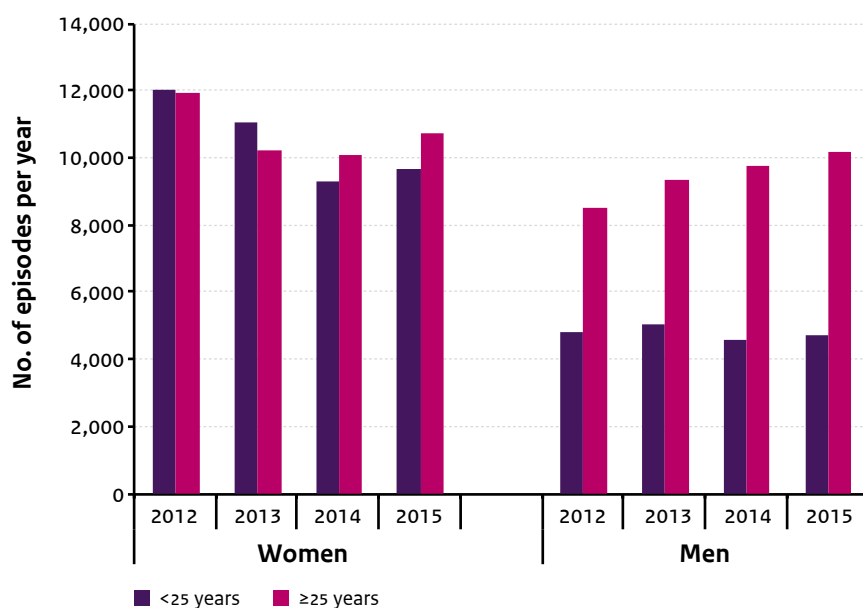
Location	Women n positive (%)	Heterosexual men n positive (%)	MSM n positive (%)
Urogenital	9,764 (14.5)	6,283 (18.0)	1,316 (3.3)
Anorectal	2,850 (13.4)	13 (5.5)	2,949 (7.7)
Oral	611 (2.6)	2 (0.5)	414 (1.1)

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.

3.3 General practice

Figure 3.5 Estimated annual number of reported episodes of chlamydia at GPs by gender and age group, based on extrapolation from GP practices in NIVEL-PCD, 2012-2015



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 persons) of chlamydia at GPs in the Netherlands by gender and age group, based on GP practices in NIVEL-PCD, 2012-2015

	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

3.4 Laboratory surveillance

Figure 3.6 Number of positive tests for *Chlamydia trachomatis* from 21 medical microbiology laboratories, 2005-2016



(Source: 'Virologische weekstaten')

3.5 Lymphogranuloma venereum

Figure 3.7 Number of tests for Lymphogranuloma venereum and positivity rate in the STI clinics among MSM, 2007-2016

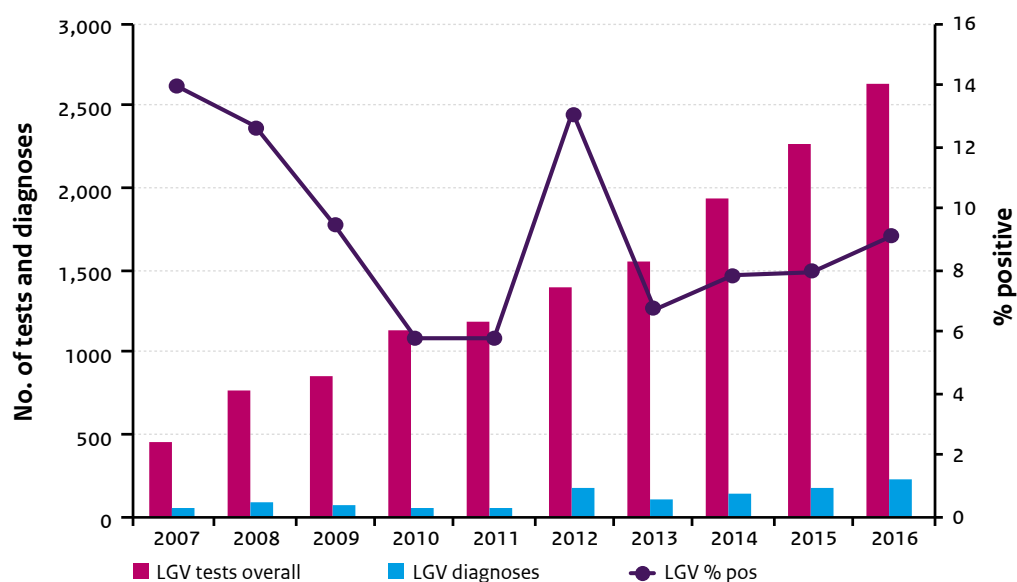
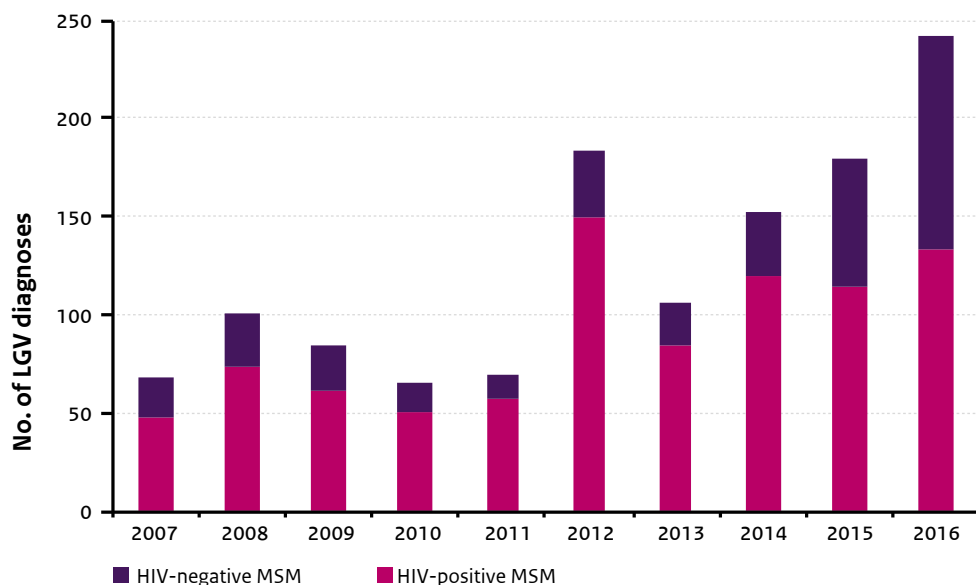


Table 3.8 Characteristics of MSM diagnosed with LGV, 2011-2016

	2011 (N=70) n (%)	2012 (N=184) n (%)	2013 (N=106) n (%)	2014 (N=152) n (%)	2015 (N=179) n (%)	2016 (N=242) n (%)
Median age (range)	40 (21-67)	41 (19-67)	43 (19-69)	42 (21-63)	41 (18-66)	39 (16-75)
Dutch ethnicity	40 (57.1)	117 (63.6)	71 (67.0)	101 (66.4)	118 (65.9)	158 (65.3)
Notified for LGV						12 (5.0)
Symptoms recorded	50 (71.4)	126 (68.5)	79 (74.5)	95 (62.5)	96 (53.6)	142 (58.7)
Known HIV positive	55 (78.6)	140 (76.1)	83 (78.3)	116 (76.3)	113 (63.1)	131 (54.1)
Concurrent gonorrhoea	17 (24.3)	47 (25.5)	30 (28.3)	40 (26.3)	48 (26.8)	91 (37.6)
Concurrent syphilis	9 (12.9)	17 (9.2)	9 (8.5)	11 (7.2)	18 (10.1)	31 (12.8)
Concurrent new HIV diagnosis	2 (2.9)	9 (4.9)	2 (1.9)	4 (2.6)	1 (0.6)	2 (0.8)
LGV with anorectal chlamydia infection only	53 (75.7)	153 (83.2)	97 (91.5)	126 (82.9)	159 (88.8)	211 (87.2)
LGV with urethral chlamydia infection only	2 (2.9)	0 (0.0)	1 (0.9)	2 (1.3)	2 (1.1)	5 (2.1)
LGV with anorectal and urethral chlamydia	5 (7.1)	22 (12.0)	8 (7.5)	18 (11.8)	12 (6.7)	15 (6.2)

Figure 3.8 Number of LGV diagnoses among MSM by HIV status, 2007-2016

4 Gonorrhoea

4.1 Key points

- In 2016, 6,092 patients were diagnosed with gonorrhoea at the STI clinics in the Netherlands: 15.3 percent of these were women, 10.0 percent heterosexual men and 74.8 percent MSM.
- The overall positivity rate was higher in 2016 (4.3 percent) than in 2015 (4.0 percent). The positivity rate was more or less stable among women (1.4 percent), and among heterosexual men (1.7 percent), but increased to 11.3 percent among MSM.
- The positivity rate was particularly high in the following risk groups: MSM who were known HIV-positive (19.2 percent); MSM who previously had an STI (18.6 percent); MSM who had symptoms of gonorrhoea (21.5 percent); and women, heterosexual men and MSM who were notified for gonorrhoea (21.0, 14.2 and 31.8 percent respectively).
- Of the individuals diagnosed with gonorrhoea, 26.7 per cent had a chlamydia co-infection; 3.3 percent was also diagnosed with infectious syphilis and 1.1 percent was newly diagnosed with HIV.
- At GPs, the number of gonorrhoea episodes, estimated from data from NIVEL-PCD, was 7,900 in 2015, 9.7 percent higher than in 2014 (7,200). The reporting rate in 2015 was 0.5 per 1,000 population, and it was higher in men than in women (0.7 versus 0.3 per 1,000).
- In less than half of all gonorrhoea diagnoses at STI clinics (38 percent) resistance levels could be measured by culture.
- Resistance to ceftriaxone (first-choice treatment in the Netherlands) was not found. However, one isolate reached the borderline value for resistance. For cefotaxime (also a third generation cephalosporin) 1.3 per cent of the isolates had an MIC higher than 0.125 mg/L and were considered resistant, and 13.8 per cent of the isolates was considered resistant to azithromycin. Clinical resistance to third generation cephalosporins was not reported.

4.2 STI clinics: characteristics, risk groups and trends

Figure 4.1 Positivity rates of gonorrhoea by region, the Netherlands, 2016

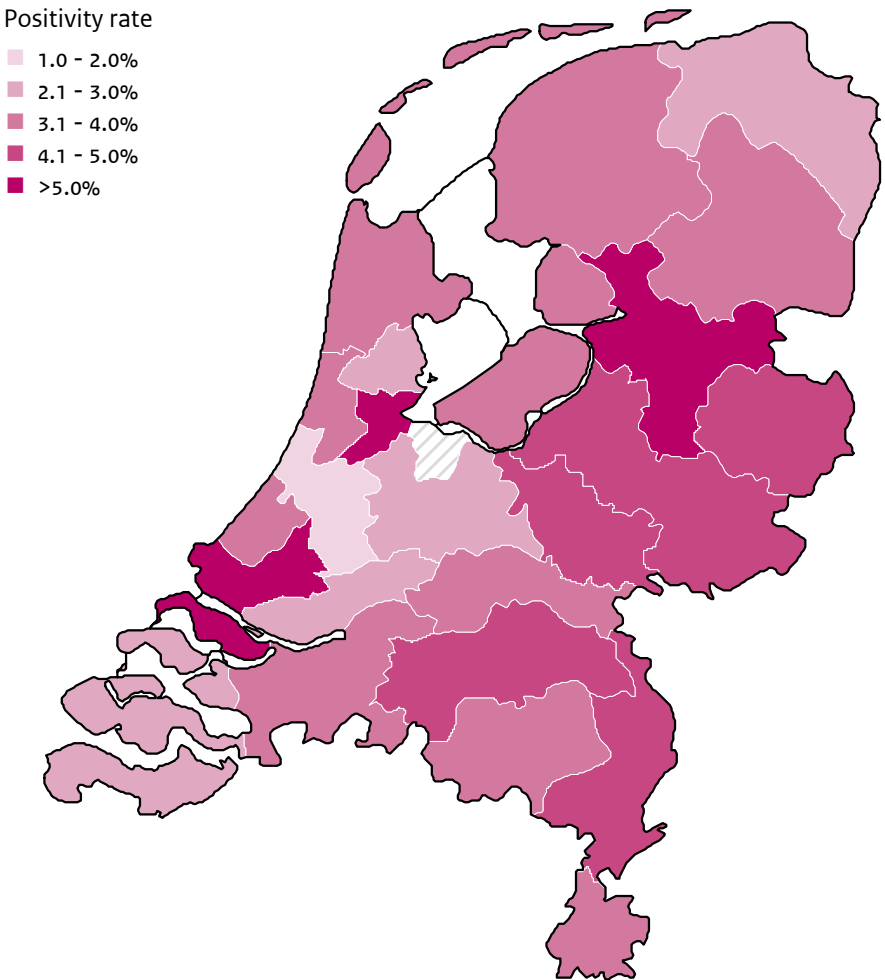


Figure 4.2 Number of gonorrhoea tests and percentage of gonorrhoea positives by region, gender and type of sexual contact, 2016

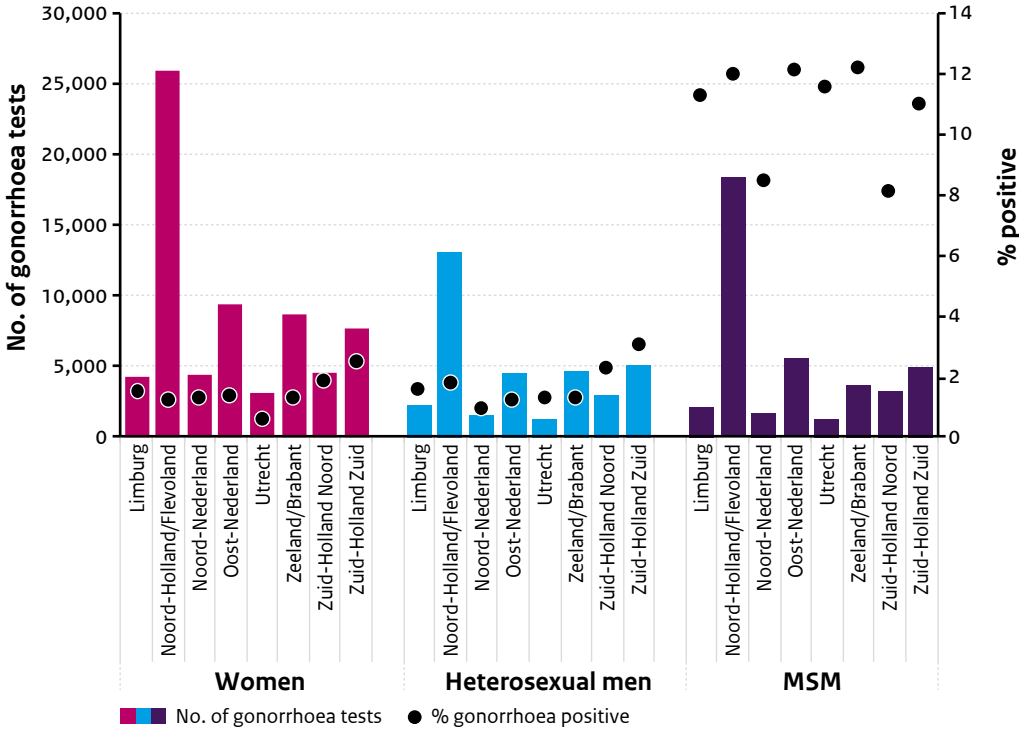
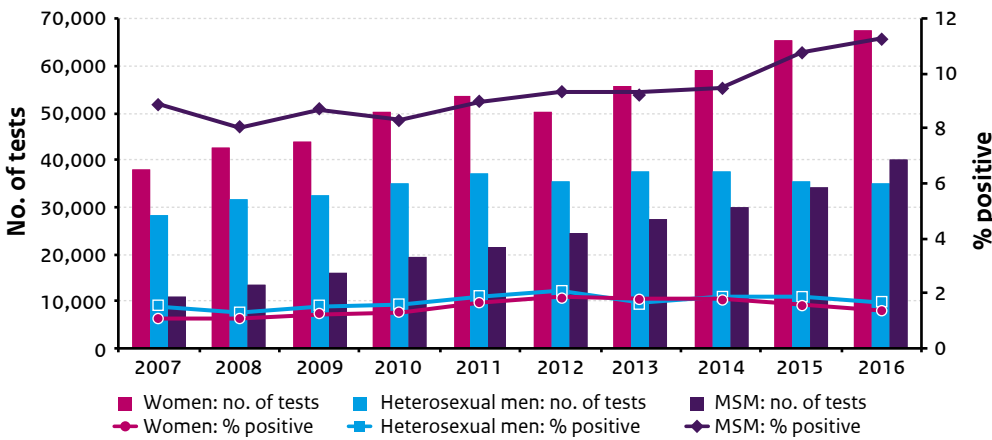


Figure 4.3 Total number of tests and positivity rates of gonorrhoea by gender and type of sexual contact, 2007-2016



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, 2016

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	203/8,375	2.4	54/2,305	2.3	101/882	11.5
20-24	394/38,798	1.0	247/18,050	1.4	807/5,962	13.5
25-29	137/11,333	1.2	142/8,068	1.8	907/7,020	12.9
30-34	56/3,505	1.6	62/2,991	2.1	710/5,320	13.3
35-39	35/1,770	2.0	35/1,332	2.6	580/4,807	12.1
40-44	27/1,234	2.2	15/745	2.0	431/4,024	10.7
45-49	31/1,178	2.6	14/630	2.2	393/4,123	9.5
50-54	25/786	3.2	17/397	4.3	318/3,555	8.9
≥ 55	23/545	4.2	21/484	4.3	307/4,525	6.8
Total	931/67,524	1.4	607/35,002	1.7	4,554/40,218	11.3

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 4.4 Trends in positivity rate for gonorrhoea in MSM by HIV-status, 2007-2016

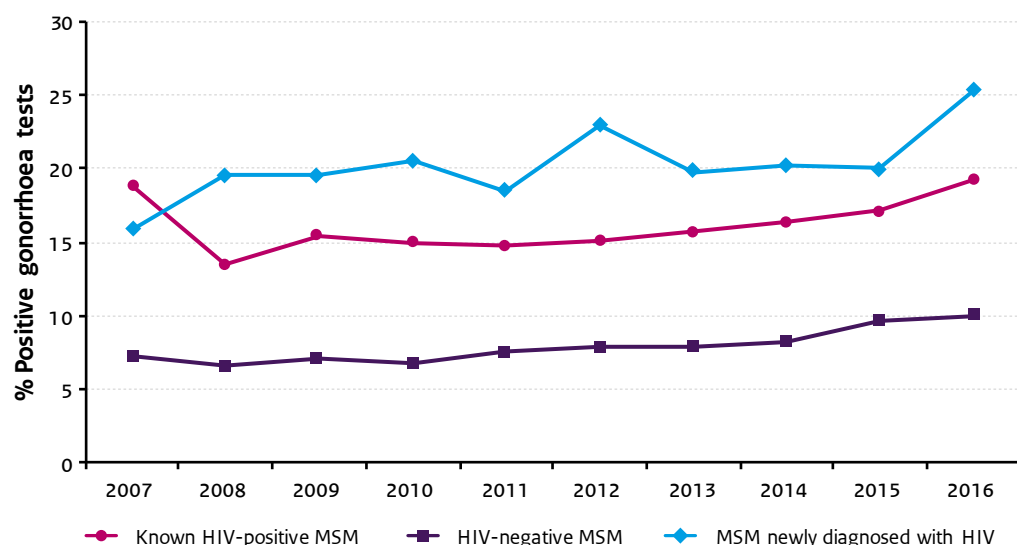
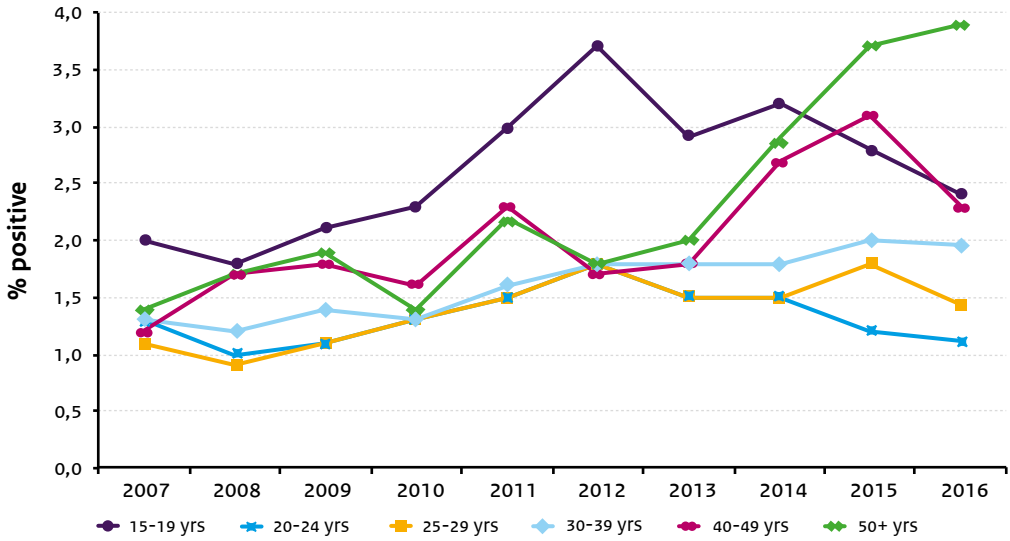


Figure 4.5a Trends in positivity rate for gonorrhoea in women and heterosexual men by age group, 2007-2016



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, 2007-2016

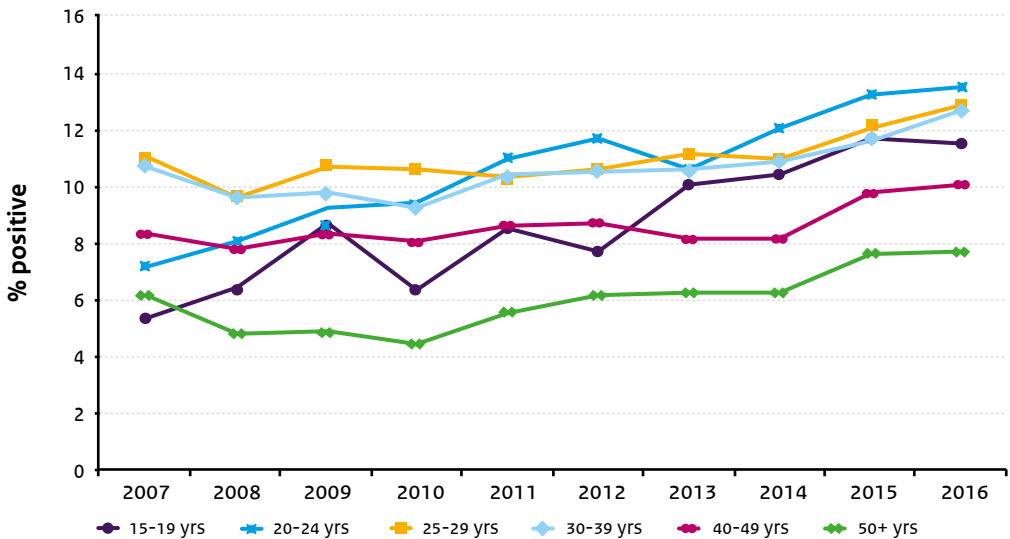


Table 4.2a Number of positive tests and persons tested for gonorrhoea by ethnicity, gender and type of sexual contact, 2016

Ethnicity	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	488/48,137	1.0	182/21,536	0.8	2,997/27,691	10.8
Western migrants	63/3,981	1.6	17/2,196	0.8	468/3,729	12.6
First generation non-Western migrants	150/6,723	2.2	160/4,468	3.6	727/5,642	12.9
Second generation non-Western migrants	229/8,627	2.7	248/6,778	3.7	350/3,039	11.5
Non-Western, generation unknown	0/9	0.0	0/6	0.0	1/13	7.7
Unknown	1/47	2.1	0/18	0.0	11/104	10.6
Total	931/67,524	1.4	607/35,002	1.7	4,554/40,218	11.3

Table 4.2b Number of positive tests and persons tested for gonorrhoea among first and second generation non-Western migrants by region of origin, gender and type of sexual contact, 2016

Region of origin	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Turkey	11/707	1.6	25/1,037	2.4	65/571	11.4
North Africa/Morocco	29/1,153	2.5	54/1,544	3.5	75/599	12.5
Suriname	108/3,407	3.2	134/2,828	4.7	177/1,287	13.8
Netherlands Antilles/Aruba	77/1,680	4.6	90/1,442	6.2	140/930	15.1
Sub-Saharan Africa	34/1,533	2.2	45/1,429	3.1	59/453	13.0
Eastern Europe	51/2,486	2.1	13/567	2.3	124/941	13.2
Latin America	36/1,589	2.3	17/593	2.9	175/1,378	12.7
Asia	33/2,804	1.2	30/1,812	1.7	263/2,535	10.4
Total	379/15,359	2.5	408/11,252	3.6	1,078/8,694	12.4

Table 4.3a Number of positive tests and persons tested for gonorrhoea by triage indication, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Notified						
Not notified	617/55,112	1.1	442/24,801	1.8	2,903/31,561	9.2
Notified for gonorrhoea	189/901	21.0	91/642	14.2	1,131/3,554	31.8
Notified for other STI/HIV	86/9,504	0.9	53/8,194	0.6	418/4,440	9.4
Unknown	39/2,007	1.9	21/1,365	1.5	102/663	15.4
Symptoms						
No	544/44,465	1.2	135/22,013	0.6	2,519/30,719	8.2
Yes	384/22,810	1.7	471/12,912	3.6	2,026/9,437	21.5
Unknown	2/258	0.8	1/77	1.3	5/62	8.1
STI/HIV endemic area						
No	552/52,165	1.1	199/23,750	0.8	3,476/31,524	11.0
Yes	379/15,359	2.5	408/11,252	3.6	1,078/8,694	12.4
Age <25 years						
No	334/20,351	1.6	306/14,647	2.1	3,646/33,374	10.9
Yes	597/47,173	1.3	301/20,355	1.5	908/6,844	13.3
Partner in risk group						
No	430/47,192	0.9	351/24,187	1.5		
Yes	471/18,999	2.5	247/10,362	2.4		
Unknown	30/1,333	2.3	9/453	2.0		
CSW						
No	763/61,387	1.2	601/34,509	1.7	4,427/39,081	11.3
Yes, in past 6 months	166/5,827	2.8	5/210	2.4	95/822	11.6
Unknown	2/310	0.6	1/283	0.4	32/315	10.2
Gonorrhoea/chlamydia/syphilis in past year						
Not tested	485/41,655	1.2	398/25,500	1.6	1,138/13,162	8.6
Tested, negative	236/17,221	1.4	94/5,973	1.6	1,403/14,770	9.5
Tested, positive	184/7,654	2.4	109/3,167	3.4	1,761/9,459	18.6
Tested, unknown	7/257	2.7	3/80	3.8	57/402	14.2
Unknown	19/737	2.6	3/282	1.1	195/2,425	8.0

Table 4.3b Number of positive tests and persons tested for gonorrhoea by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Socioeconomic status						
High	213/20,969	1.0	138/10,144	1.4	1,446/13,101	11.0
Medium	167/14,572	1.1	91/7,346	1.2	898/8,456	10.6
Low	466/27,878	1.7	341/16,302	2.1	2,038/16,881	12.1
Unknown	85/4,105	2.1	37/1,210	3.1	172/1,780	9.7
Educational level#						
High	297/42,053	0.7	170/20,843	0.8	2,780/25,712	10.8
Low/medium	521/21,196	2.5	399/12,530	3.2	1,401/11,051	12.7
Unknown	113/4,275	2.6	38/1,629	2.3	373/3,455	10.8
Number of partners in past 6 months						
0 partners	2/396	0.5	0/155	0.0	6/197	3.0
1 partner	258/17,957	1.4	113/6,269	1.8	241/3,411	7.1
2 partners	212/17,671	1.2	127/7,273	1.7	371/4,321	8.6
3 or more partners	392/29,230	1.3	358/21,062	1.7	3,815/31,445	12.1
Unknown	67/2,270	3.0	9/243	3.7	121/844	14.3
Condom use if last sexual contact was casual*						
No	295/28,742	1.0	302/15,813	1.9	1,776/14,093	12.6
Yes	161/11,036	1.5	84/5,928	1.4	1,221/11,778	10.4
Unknown	13/660	2.0	9/370	2.4	84/717	11.7
Anal sex, in past 6 months						
No	705/56,939	1.2			472/7,900	6.0
Yes, insertive					680/7,174	9.5
Yes, receptive	226/10,585	2.1			460/4,312	10.7
Yes, insertive and receptive					2,942/20,832	14.1
Receptive oral sex with a man, in past 6 months						
No	145/9,830	1.5			80/1,284	6.2
Yes	735/48,626	1.5			4,347/37,017	11.7
Unknown	51/9,068	0.6			127/1,917	6.6

Table 4.3b (continued) Number of positive tests and persons tested for gonorrhoea by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW						
No	925/66,986	1.4	540/31,833	1.7	4,456/38,724	11.5
Yes, in past 6 months	3/202	1.5	65/2,889	2.2	67/1,171	5.7
Unknown	3/336	0.9	2/280	0.7	31/323	9.6
Previous HIV test						
No	432/40,990	1.1	325/21,672	1.5	347/4,566	7.6
Yes, positive	2/48	4.2	4/31	12.9	1,005/5,228	19.2
Yes, negative	462/25,110	1.8	262/12,641	2.1	3,187/30,178	10.6
Yes, result unknown	6/152	3.9	0/41	0.0	4/68	5.9
Unknown	29/1,224	2.4	16/617	2.6	11/178	6.2

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

* Type of sexual contact was steady for 36.4% (n=51,927) and missing for 1.2% (n=1,680) of persons tested for gonorrhoea.

Table 4.4 Concurrent STI among persons diagnosed with gonorrhoea by gender and type of sexual contact, 2016

Concurrent infection	Women (N=931) n (%)	Heterosexual men (N=607) n (%)	MSM (N=4,554) n (%)
Chlamydia	373 (40.1)	257 (42.3)	997 (21.9)
Syphilis, infectious	1 (0.1)	3 (0.5)	196 (4.3)
HIV newly diagnosed	1 (0.1)	2 (0.3)	67 (1.5)
Genital herpes	9 (1.0)	1 (0.2)	18 (0.4)
Genital warts	10 (1.1)	13 (2.1)	49 (1.1)
Hepatitis B, infectious	1 (0.1)	2 (0.3)	6 (0.1)
Hepatitis C	0 (0.0)	0 (0.0)	3 (0.1)

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

Table 4.5 Anatomic location of gonorrhoea infection by gender and type of sexual contact, 2016

Location	Women (N=931) n (%)	Heterosexual men (N=607) n (%)	MSM (N=4,554) n (%)
Urogenital only	464 (49.8)	596 (98.2)	313 (6.9)
Anorectal only	49 (5.3)	3 (0.5)	1,441 (31.6)
Oral only	160 (17.2)	7 (1.2)	1,157 (25.4)
Urogenital and anorectal	120 (12.9)	0 (0.0)	453 (9.9)
Urogenital and oral	60 (6.4)	1 (0.2)	101 (2.2)
Anorectal and oral	11 (1.2)	0 (0.0)	774 (17.0)
Urogenital and anorectal and oral	67 (7.2)	0 (0.0)	312 (6.9)
Pooled samples*	0 (0.0)	0 (0.0)	3 (0.1)

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

Table 4.6 Number and percentage of positive tests for gonorrhoea by anatomic location, gender and type of sexual contact, 2016

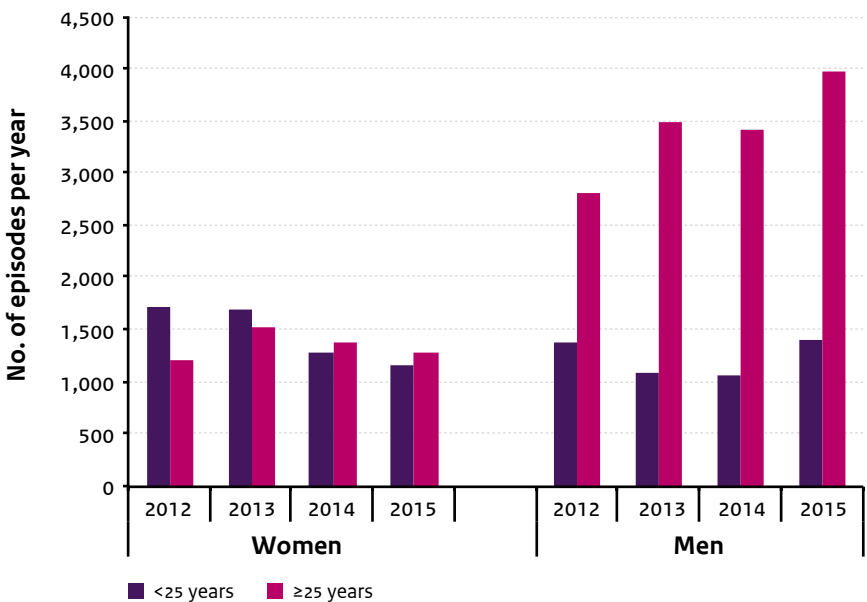
Location	Women n positive (%)	Heterosexual men n positive (%)	MSM n positive (%)
Urogenital	711 (1.1)	597 (1.7)	1,180 (2.9)
Anorectal	246 (1.2)	3 (1.3)	2,981 (7.7)
Oral	297 (1.3)	8 (2.1)	2,345 (6.0)

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.

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, 2012-2015



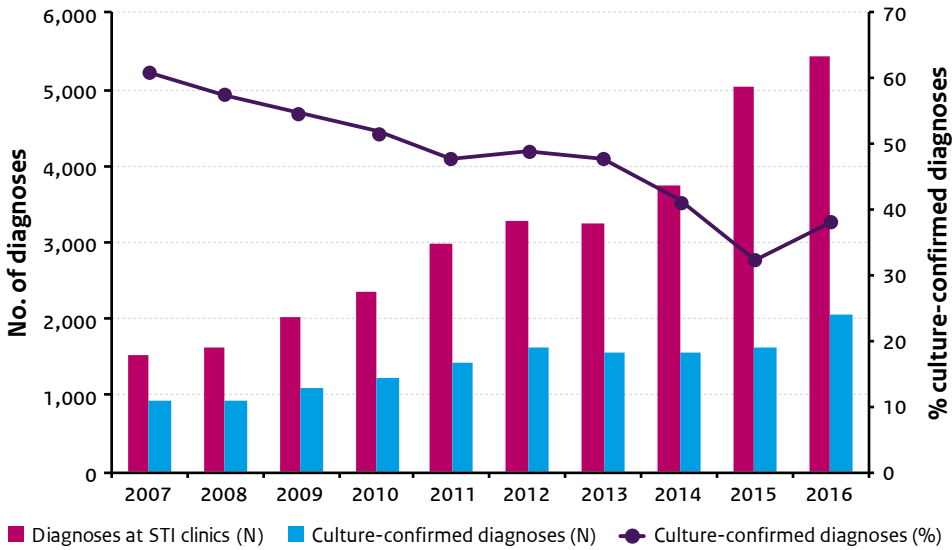
Footnote: About 70% of the total Dutch population consists of persons aged ≥ 25 years and about 30% consists of persons aged < 25 years.

Table 4.7 Annual reporting rate (number of episodes per 1,000 persons) of gonorrhoea at GPs in the Netherlands by gender and age group, based on GP practices in NIVEL-PCD, 2012-2015

	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

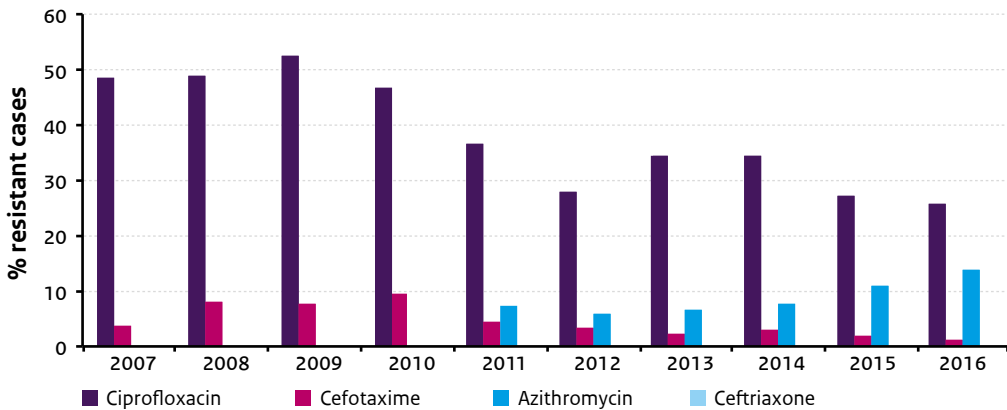
4.4 Antimicrobial resistance of gonococci in the Netherlands

Figure 4.7 Number of gonorrhoea diagnoses at STI clinics and number and percentage of culture-confirmed diagnoses, 2007-2016



Footnote: In less than half of all gonorrhoea diagnoses at STI clinics resistance levels were 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, and not by culture.

Figure 4.8 Gonococcal resistance (following Eucast breakpoints) in the Netherlands, proportion of resistant cases 2007-2016

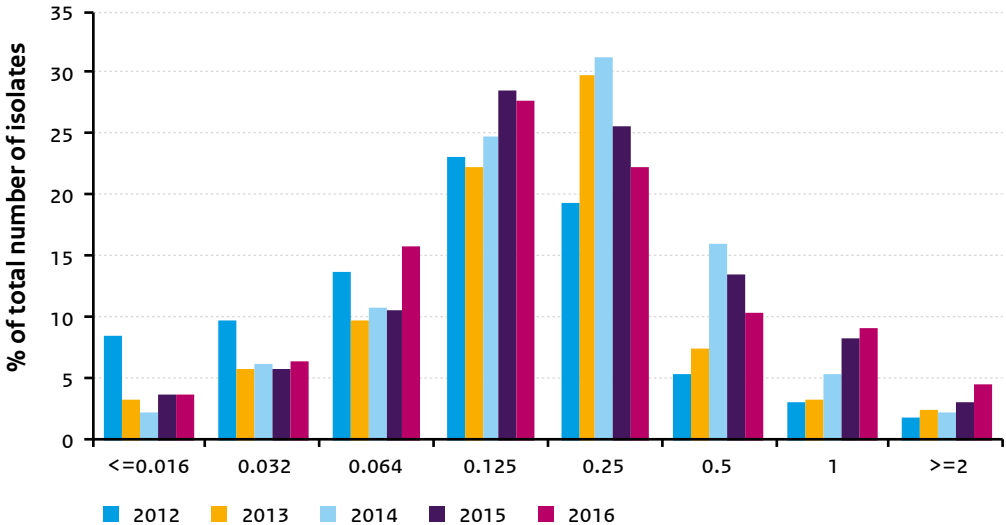


(Source: GRAS, STI clinics)

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

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

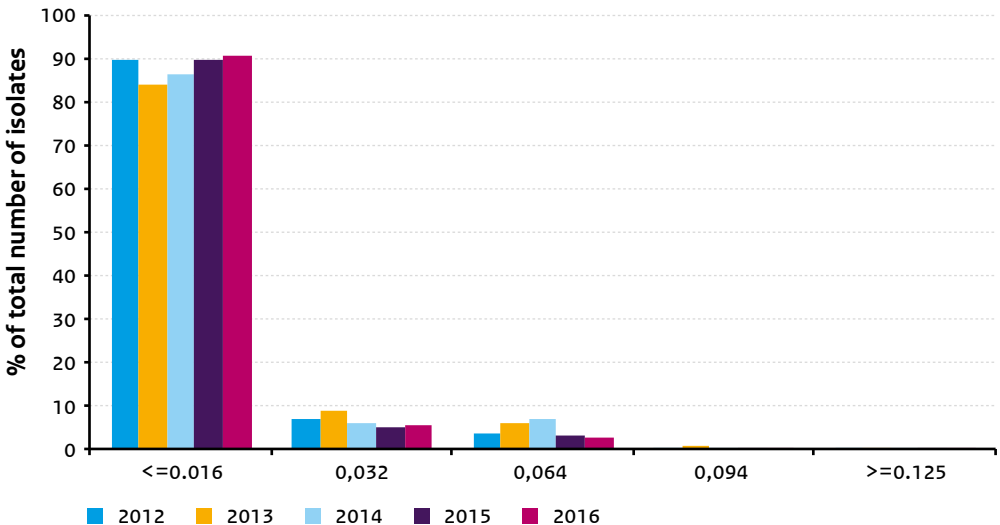
Figure 4.9a MIC (= minimum inhibitory concentration) distribution for azithromycin, 2012-2016



(Source: GRAS, STI clinics)

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 E-test.

Figure 4.9b MIC (= minimum inhibitory concentration) distribution for ceftriaxone, 2012-2016



(Source: GRAS, STI clinics)

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 E-test.

5 Syphilis

5.1 Key points

- In 2016, 1,223 clients (95.3 per cent MSM, 3.0 per cent heterosexual men, 1.7 per cent women) were diagnosed with infectious syphilis at the STI clinics in the Netherlands.
- The number of diagnoses of infectious syphilis increased with 30% from 942 in 2015 to 1,223 in 2016, mainly because of the increase in diagnoses among MSM (+29%).
- The percentage of positive tests for infectious syphilis among MSM dropped from 4.3 to 2.0 per cent between 2007 and 2011 but has clearly increased from 2013 (2.0 per cent) to 2.9 per cent in 2016. The increase was mainly due to the increase in HIV-positive MSM: from 6.6 per cent in 2014 to 8.4 per cent in 2016. In the last 2 years syphilis rates also increased among HIV-negative MSM: from 1.4 per cent in 2013 to 2.0 per cent in 2016.
- Of all infectious syphilis cases among MSM, 26 per cent was notified for syphilis; 37 per cent were diagnosed in known HIV-positives and 2.2 per cent in newly diagnosed HIV cases.
- Of the MSM diagnosed with infectious syphilis, 20.1% had a co-infection with chlamydia and 16.8% had a co-infection with gonorrhoea.
- The number of tests among women (n=29,991) and heterosexual men (n=19,409) remained similar to 2015, when the number of tests were 30,699 and 20,388 respectively. The number of syphilis diagnoses among heterosexual men increased from 20 in 2015 to 37 in 2016; among women the numbers in both years were relatively low: 21 in both 2015 and 2016.
- The number of infections of congenital syphilis found in neonates remained very low, 0 or 1 per year, since 2008.

5.2 STI clinics: characteristics, risk groups and trends

Figure 5.1 Positivity rates of infectious syphilis by region, the Netherlands, 2016

Positivity rate

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

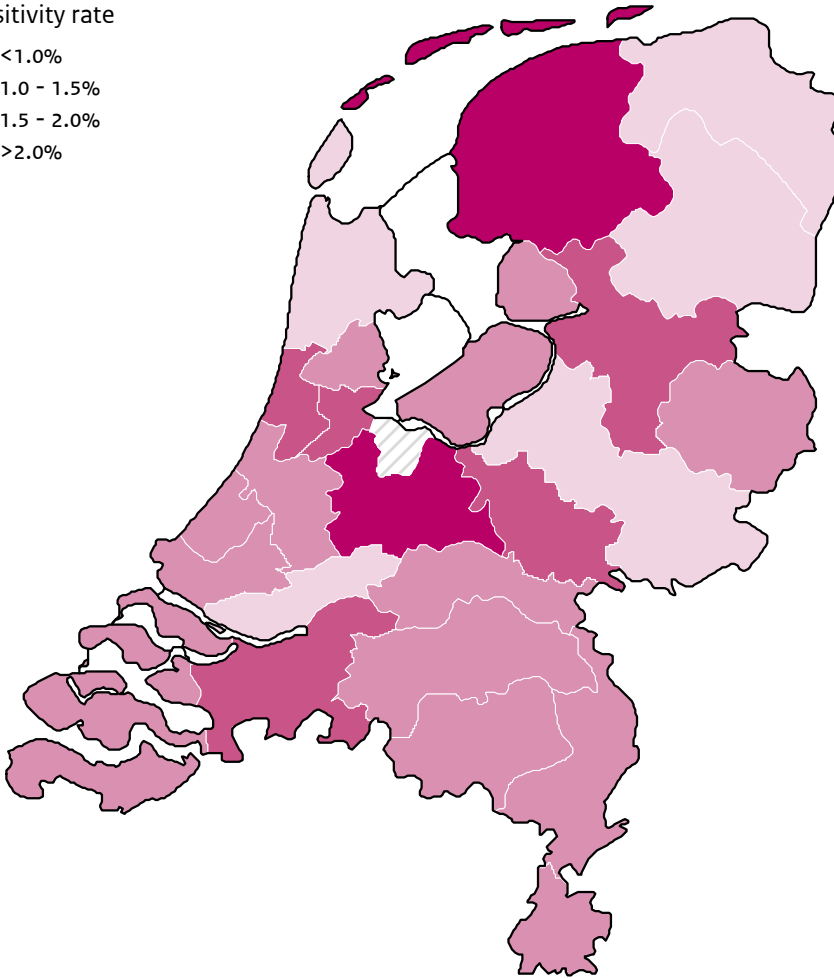


Figure 5.2 Number of syphilis tests and percentage of syphilis positives by region, gender and type of sexual contact, 2016

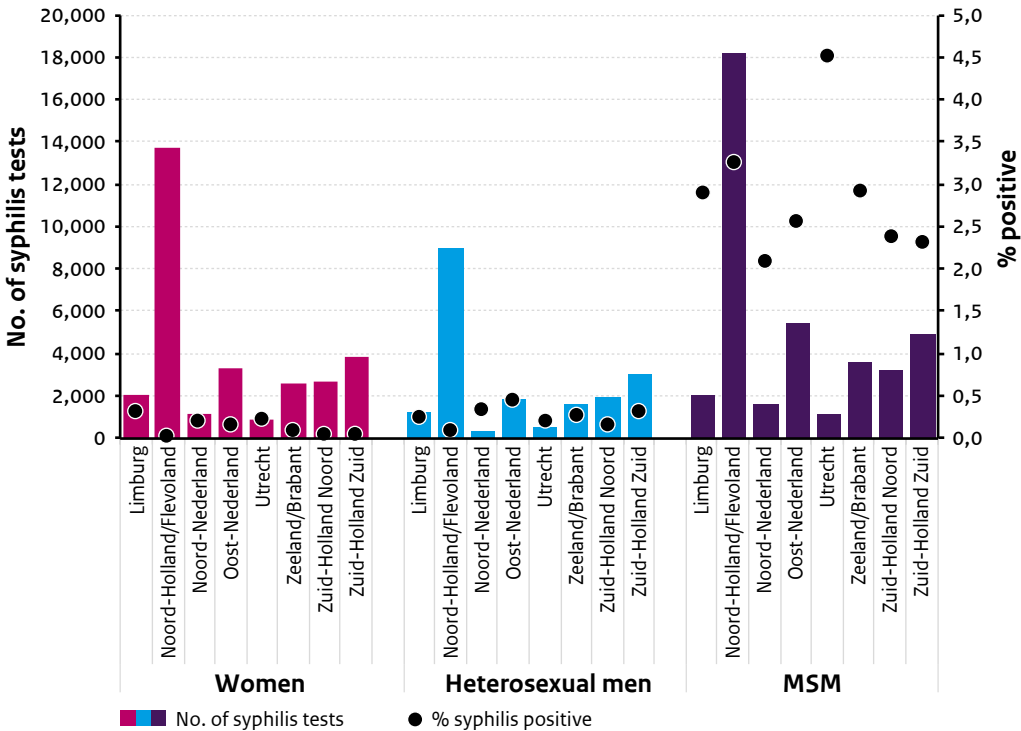


Figure 5.3 Total number of tests and positivity rate of infectious syphilis by gender and type of sexual contact, 2007-2016

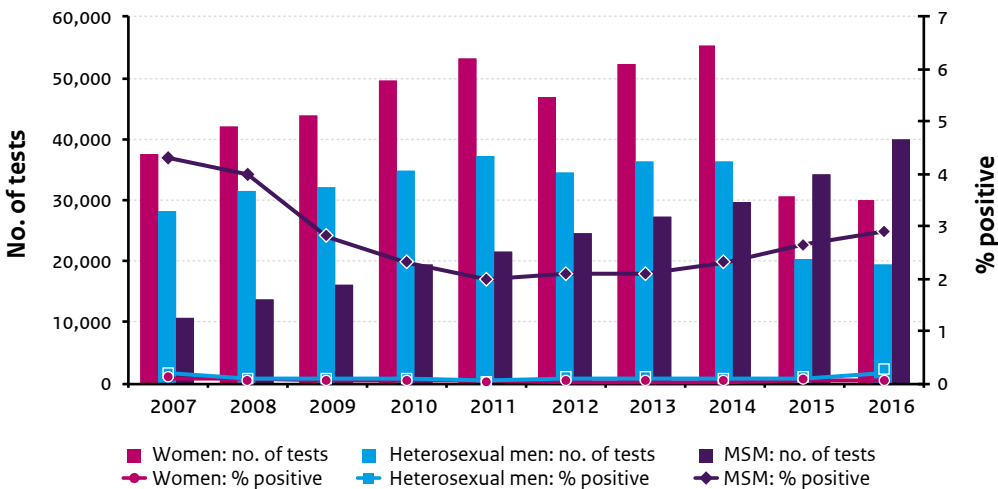


Table 5.1 Number of positive tests and persons tested for infectious syphilis by age, gender and type of sexual contact, 2016

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	5/2,073	0.24	2/617	0.32	14/872	1.61
20-24	4/10,259	0.04	8/5,827	0.14	106/5,897	1.80
25-29	3/8,786	0.03	8/6,496	0.12	156/6,993	2.23
30-34	0/3,445	0.00	2/2,935	0.07	145/5,293	2.74
35-39	1/1,738	0.06	3/1,313	0.23	160/4,802	3.33
40-44	2/1,214	0.16	7/738	0.95	143/4,008	3.57
45-49	2/1,161	0.17	2/618	0.32	152/4,107	3.70
50-54	1/775	0.13	2/390	0.51	149/3,540	4.21
≥ 55	3/540	0.56	3/475	0.63	140/4,505	3.11
Unknown	0/0	0.00	0/0	0.00	0/1	0.00
Total	21/29,991	0.07	37/19,409	0.19	1,165/40,018	2.91

Figure 5.4 Percentage of positive syphilis tests in MSM by HIV status, 2007-2016

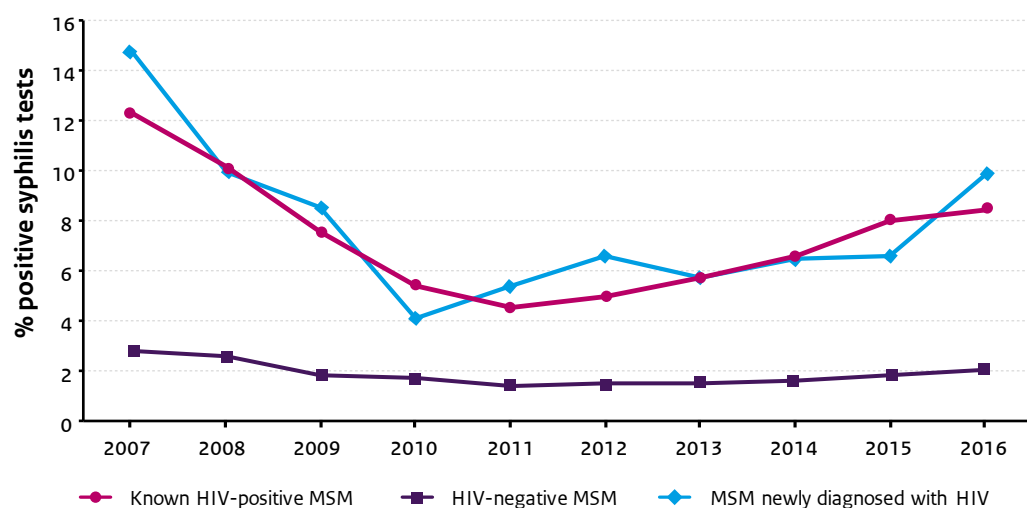


Table 5.2a Number of positive tests and persons tested for infectious syphilis by ethnicity, gender and type of sexual contact, 2016

Ethnicity	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	14/16,700	0.08	21/9,470	0.22	713/27,523	2.59
Western migrants	0/2,034	0.00	0/1,336	0.00	101/3,713	2.72
First generation non-Western migrants	6/6,375	0.09	9/4,214	0.21	259/5,631	4.60
Second generation non-Western migrants	1/4,846	0.02	7/4,365	0.16	90/3,036	2.96
Non-Western, generation unknown	0/9	0.00	0/6	0.00	0/13	0.00
Unknown	0/27	0.00	0/18	0.00	2/102	1.96
Total	21/29,991	0.07	37/19,409	0.19	1,165/40,018	2.91

Table 5.2b Number of positive tests and persons tested for infectious syphilis among first and second generation non-Western migrants by region of origin, gender and type of sexual contact, 2016

Region of origin	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Turkey	0/427	0.00	1/730	0.14	12/573	2.09
North Africa/Morocco	0/727	0.00	5/1,136	0.44	14/599	2.34
Suriname	1/2,281	0.04	2/2,138	0.09	53/1,284	4.13
Netherlands Antilles/Aruba	3/1,264	0.24	1/1,127	0.09	61/926	6.59
Eastern Europe	1/2,279	0.04	1/475	0.21	48/939	5.11
Sub-Saharan Africa	0/1,077	0.00	2/1,076	0.19	12/451	2.66
Latin America	2/1,322	0.15	1/469	0.21	65/1,376	4.72
Asia	0/1,853	0.00	3/1,434	0.21	84/2,532	3.32
Total	7/11,230	0.06	16/8,585	0.19	349/8,680	4.02

Table 5.3a Number of positive tests and persons tested for infectious syphilis by triage indication, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Notified						
Not notified	10/22,594	0.0	27/12,731	0.2	692/31,418	2.2
Notified for syphilis	10/134	7.5	6/98	6.1	305/1,830	16.7
Notified for other STI/HIV	1/5,865	0.0	3/5,515	0.1	151/6,113	2.5
Unknown	0/1,398	0.0	1/1,065	0.1	17/657	2.6
Symptoms						
No	14/16,814	0.1	4/10,419	0.0	547/30,599	1.8
Yes	7/13,084	0.1	33/8,962	0.4	617/9,351	6.6
Unknown	0/93	0.0	0/28	0.0	1/68	1.5
STI/HIV endemic area						
No	14/18,761	0.1	21/10,824	0.2	816/31,338	2.6
Yes	7/11,230	0.1	16/8,585	0.2	349/8,680	4.0
Age <25 years						
No	12/17,659	0.1	27/12,965	0.2	1,045/33,248	3.1
Yes	9/12,332	0.1	10/6,444	0.2	120/6,769	1.8
Partner in risk group						
No	14/12,123	0.1	20/9,591	0.2		
Yes	6/16,961	0.0	16/9,614	0.2		
Unknown	1/907	0.1	1/204	0.5		
CSW						
No	16/24,158	0.1	36/19,145	0.2	1,134/38,887	2.9
Yes, in past 6 months	4/5,735	0.1	1/192	0.5	21/816	2.6
Unknown	1/98	1.0	0/72	0.0	10/315	3.2
Gonorrhoea/chlamydia/syphilis in past year						
Not tested	8/16,943	0.0	24/13,740	0.2	346/13,073	2.6
Tested, negative	9/9,101	0.1	8/3,726	0.2	378/14,734	2.6
Tested, positive	4/3,344	0.1	4/1,749	0.2	390/9,375	4.2
Tested, unknown	0/158	0.0	0/42	0.0	16/402	4.0
Unknown	0/445	0.0	1/152	0.7	1,165/40,018	2.9

Table 5.3b Number of positive tests and persons tested for infectious syphilis by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Socioeconomic status						
High	3/8,050	0.0	7/5,437	0.1	382/13,039	2.9
Medium	5/5,620	0.1	12/3,625	0.3	235/8,412	2.8
Low	13/13,081	0.1	13/9,515	0.1	486/16,793	2.9
Unknown	0/3,240	0.0	5/832	0.6	62/1,774	3.5
Educational level#						
High	5/16,040	0.0	12/10,972	0.1	661/25,591	2.6
Low/medium	12/10,391	0.1	22/7,147	0.3	366/10,989	3.3
Unknown	4/3,560	0.1	3/1,290	0.2	138/3,438	4.0
Number of partners in past 6 months						
0 partners	0/223	0.0	0/83	0.0	3/197	1.5
1 partner	7/6,633	0.1	12/2,973	0.4	98/3,385	2.9
2 partners	2/6,324	0.0	12/3,915	0.3	100/4,289	2.3
3 or more partners	10/14,773	0.1	13/12,309	0.1	934/31,307	3.0
Unknown	2/2,038	0.1	0/129	0.0	30/840	3.6
Condom use if last sexual contact was casual*						
No	9/11,120	0.1	21/8,755	0.2	499/14,011	3.6
Yes	4/7,033	0.1	3/3,842	0.1	278/11,728	2.4
Unknown	0/371	0.0	0/211	0.0	15/719	2.1
Anal sex, in past 6 months						
No	15/23,153	0.1			112/7,841	1.4
Yes, insertive					177/7,141	2.5
Yes, receptive	6/6,838	0.1			123/4,298	2.9
Yes, insertive and receptive					753/20,738	3.6
Receptive oral sex with a man, in past 6 months						
No	0/3,820	0.0			38/1,268	3.0
Yes	20/25,000	0.1			1,101/36,840	3.0
Unknown	1/1,171	0.1			26/1,910	1.4

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, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW						
No	21/29,673	0.1	30/16,736	0.2	1,133/38,526	2.9
Yes, in past 6 months	0/170	0.0	7/2,605	0.3	21/1,168	1.8
Unknown	0/148	0.0	0/68	0.0	11/324	3.4
Previous HIV test						
No	9/11,188	0.1	18/8,891	0.2	64/4,521	1.4
Yes, positive	1/43	2.3	1/28	3.6	435/5,185	8.4
Yes, negative	11/17,974	0.1	14/10,127	0.1	660/30,064	2.2
Yes, result unknown	0/116	0.0	1/34	2.9	1/69	1.4
Unknown	0/670	0.0	3/329	0.9	5/179	2.8

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 34.0% (n=30,436) and missing for 1.3% (n=1,192) of persons tested for syphilis.

Table 5.4 Concurrent STI by gender and type of sexual contact among persons diagnosed with infectious syphilis, 2016

Concurrent infection	Women (N=21) n (%)	Heterosexual men (N=37) n (%)	MSM (N=1,165) n (%)
Chlamydia	6 (28.6)	6 (16.2)	234 (20.1)
Gonorrhoea	1 (4.8)	3 (8.1)	196 (16.8)
HIV newly diagnosed	0 (0.0)	1 (2.7)	26 (2.2)
Genital herpes	0 (0.0)	0 (0.0)	10 (0.9)
Genital warts	0 (0.0)	0 (0.0)	7 (0.6)
Hepatitis B, infectious	0 (0.0)	1 (2.7)	4 (0.3)
Hepatitis C	0 (0.0)	0 (0.0)	0 (0.0)

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

5.3 Antenatal screening

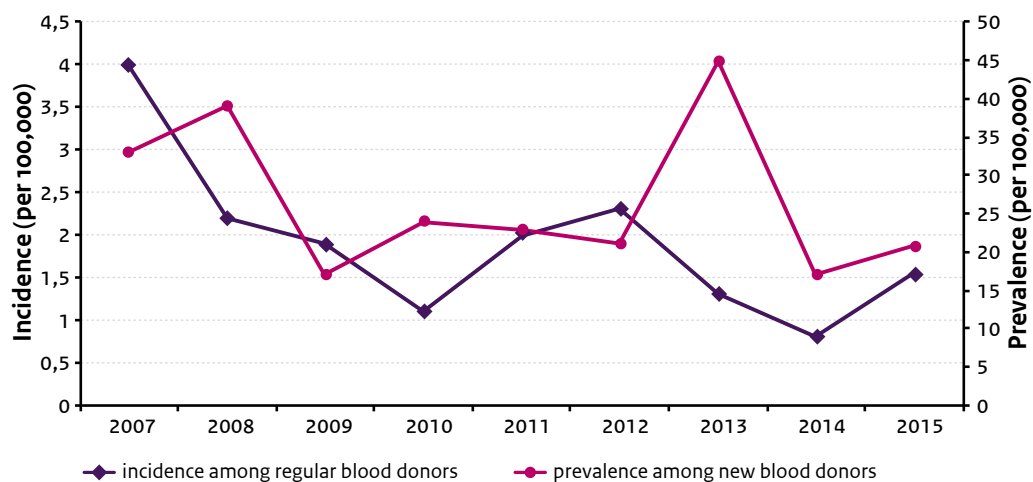
Table 5.5 Syphilis prevalence estimates in pregnant women, based on test results of antenatal screening, 2012-2015

Year	Nr. 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

(Sources: C.P.B. van der Ploeg (TNO), Y. Schönbeck (TNO), P. Oomen (RIVM), K. Vos (RIVM). Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE). Procesmonitor 2015. TNO/RIVM 2017; and earlier monitors)

5.4 Blood donors

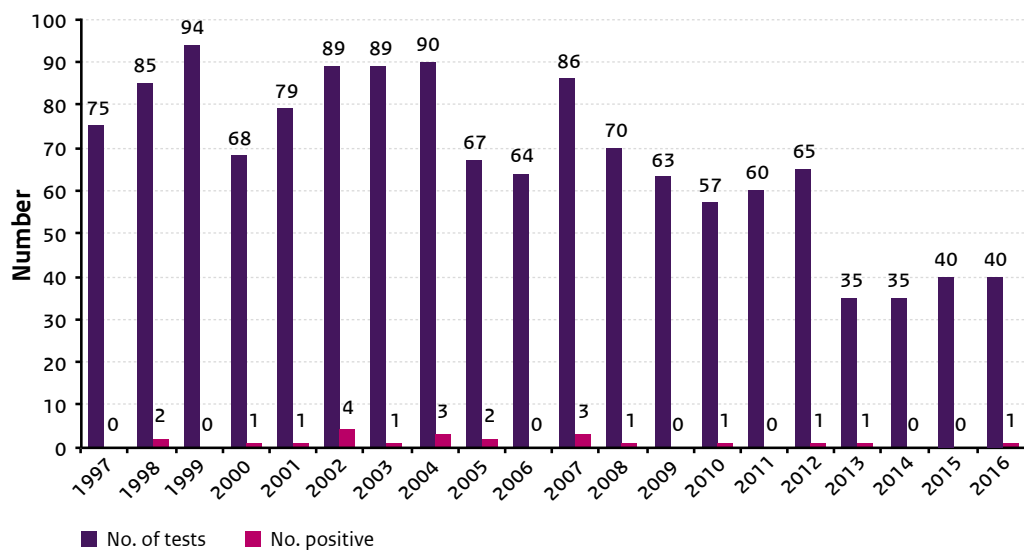
Figure 5.5 Syphilis incidence and prevalence (per 100,000) among regular and new blood donors in the Netherlands, 2007-2015



(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. 1997-2016



(Source: CIb/IDS)

VIRAL STI

6 HIV and AIDS

6.1 Key points

6.1.1 STI clinics

- In 2016, 286 individuals were newly diagnosed with HIV at STI clinics in the Netherlands (93 per cent MSM). Among MSM, 264 HIV infections were diagnosed; comparable to the number of HIV infections in 2015 (n=260).
- Among heterosexual men and women, 16 out of the 21 persons newly diagnosed with HIV originated from an STI/HIV endemic country.
- The positivity rate among MSM has decreased from 2.8 per cent in 2007 to 0.8 per cent in 2016.
- The highest positivity rates were found among MSM notified for HIV (3.9 per cent), MSM originating from Latin America (2.2 per cent) and MSM who were first generation non-Western immigrants (1.7 per cent).
- The lowest positivity rates were found among MSM originating from Turkey (0.4 per cent) and MSM who reported no anal sex (0.4 per cent).

6.1.2 HIV treatment centres

- In total, 19,137 HIV patients were reported in clinical care as of December 2016.
- In 2016, 976 new HIV patients were reported in care; a decline compared to 2015 (n= 1,033). Of newly registered patients, 666 were diagnosed in 2016 (incomplete due to reporting delay). The proportion of MSM (67 per cent) was comparable to 2015 (65 per cent). The proportion of heterosexuals (males and females) was 26 per cent in 2016.
- Of HIV positive MSM entering care and diagnosed in 2016, 45 per cent were diagnosed at STI clinics, 26 per cent at GPs, and 18 per cent in hospitals. Of heterosexual males, 48 per cent were diagnosed in hospitals, 32 per cent by GPs, and 4 per cent at STI clinics. Of heterosexual women, 39 per cent were diagnosed at a hospital, 32 per cent by GPs, 17 per cent through pregnancy screening, and 5 per cent at STI clinics.
- Of patients diagnosed in 2016, 46 per cent presented late (CD4<350/mm3, or AIDS-defining event regardless of CD4 count). This proportion was lower for MSM (35 per cent) than for women (51 per cent) and heterosexual men (57 per cent).
- In 2015, about 88 per cent of people infected with HIV was estimated to have been diagnosed and linked to care. Of these patients, 88 per cent had started combination antiretroviral therapy (cART) and 93 per cent of them had a suppressed viral load.

6.1.3 General practice

- At GPs, there was an estimated number of 23,400 prevalent HIV cases in 2015 with a reporting rate of 1.4 per 1,000 population. Reporting rates were higher in men than in women (2.3 versus 0.5/1,000). The number of prevalent HIV cases registered at the GP increased from 2009 to 2013 and slightly decreased again between 2013 and 2015.

6.2 STI clinics: 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, 2007-2016

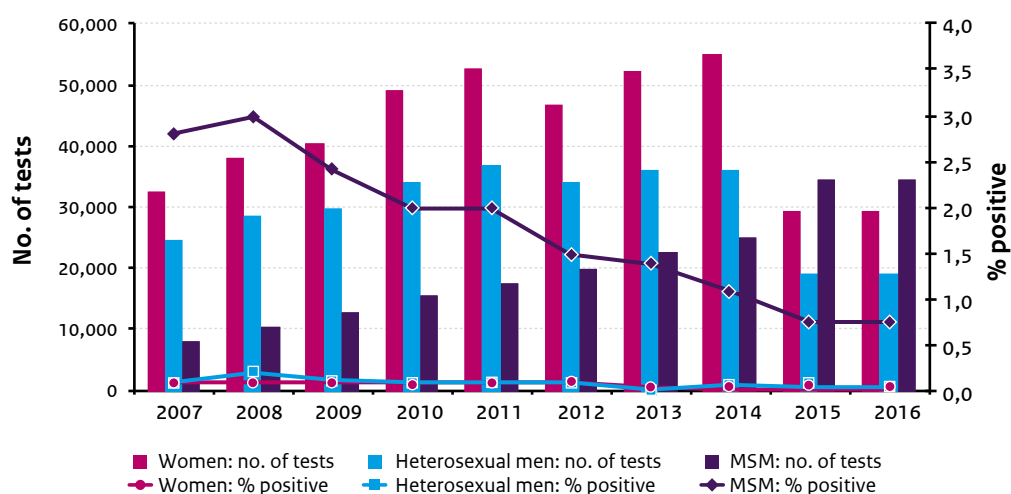


Table 6.1 Number of positive tests and persons tested for HIV by age, gender and type of sexual contact, 2016

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	1/1,992	0.05	0/598	0.00	5/863	0.58
20-24	2/10,042	0.02	2/5,702	0.03	38/5,726	0.65
25-29	2/8,748	0.02	1/6,471	0.02	46/6,501	0.69
30-34	1/3,433	0.02	4/2,924	0.05	50/4,640	0.86
35-39	2/1,726	0.06	2/1,306	0.14	29/4,002	0.91
40-44	0/1,205	0.07	0/732	0.10	22/3,239	0.70
45-49	0/1,147	0.00	1/612	0.07	26/3,205	0.74
50-54	1/765	0.05	0/384	0.10	28/2,662	0.92
≥ 55	1/533	0.19	1/471	0.21	20/3,690	0.54
Total	10/29,591	0.03	11/19,200	0.06	264/34,528	0.76

Footnote: 1 male with unknown type of sexual contact was newly diagnosed with HIV.

Table 6.2a Number of positive tests and persons tested for HIV by ethnicity, gender and type of sexual contact, 2016

Ethnicity	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	1/16,415	0.01	2/9,318	0.02	124/24,177	0.51
Western migrants	1/1,988	0.05	1/1,320	0.08	29/3,127	0.93
First generation non-Western migrants	8/6,335	0.13	3/4,189	0.07	76/4,439	1.71
Second generation non-Western migrants	0/4,817	0.00	5/4,349	0.11	35/2,688	1.30
Non-Western, generation unknown	0/9	0.00	0/6	0.00	0/10	0.00
Unknown	0/27	0.03	0/18	0.06	0/87	0.76
Total	10/29,591	0.03	11/19,200	0.06	264/34,528	0.76

Table 6.2b Number of positive tests and persons tested for HIV among first and second generation non-Western migrants by region of origin, gender and type of sexual contact, 2016

Region of origin	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Turkey	0/425	0.00	1/730	0.14	2/523	0.38
North Africa/Morocco	1/720	0.14	2/1,129	0.18	8/562	1.42
Suriname	2/2,267	0.09	2/2,122	0.09	18/1,010	1.78
Netherlands Antilles/Aruba	0/1,262	0.00	0/1,125	0.00	12/732	1.64
Eastern Europe	0/2,267	0.00	0/472	0.00	14/746	1.88
Sub-Saharan Africa	5/1,073	0.47	2/1,068	0.19	5/383	1.31
Latin America	0/1,312	0.00	1/466	0.21	22/997	2.21
Asia	0/1,835	0.00	0/1,432	0.00	30/2,184	1.37
Total	8/11,161	0.07	8/8,544	0.09	111/7,137	0.43

Table 6.3a Number of positive tests and persons tested for HIV by triage indication, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Notified						
Not notified	7/22,268	0.03	6/12,583	0.05	178/27,801	0.64
Notified for HIV	1/194	0.52	2/126	1.59	26/662	3.93
Notified for other STI	0/5,734	0.00	3/5,429	0.06	50/5,515	0.91
Unknown	2/1,395	0.14	0/1,062	0.00	10/550	1.82
Symptoms						
No	4/16,626	0.02	6/10,307	0.06	164/27,084	0.61
Yes	6/12,872	0.05	5/8,865	0.06	99/7,377	1.34
Unknown	0/93	0.00	0/28	0.00	1/67	1.49
STI/HIV endemic area						
No	2/18,430	0.01	3/10,656	0.03	153/27,391	0.56
Yes	8/11,161	0.07	8/8,544	0.09	111/7,137	1.56
Age <25 years						
No	7/17,557	0.04	9/12,900	0.07	221/27,939	0.79
Yes	3/12,034	0.02	2/6,300	0.03	43/6,589	0.65
Partner in risk group						
No	2/11,797	0.02	6/9,416	0.06		
Yes	8/16,890	0.05	4/9,582	0.04		
Unknown	0/904	0.00	1/202	0.50		
CSW						
No	9/23,791	0.04	10/18,936	0.05	256/33,589	0.76
Yes, in past 6 months	1/5,703	0.02	0/192	0.00	7/700	1.00
Unknown	0/97	0.00	1/72	1.39	1/239	0.42
Gonorrhoea/chlamydia/syphilis in past year						
Not tested	7/16,671	0.04	8/13,596	0.06	123/12,028	1.02
Tested, negative	3/9,015	0.03	1/3,685	0.03	66/13,038	0.51
Tested, positive	0/3,306	0.00	1/1,724	0.06	61/6,908	0.88
Tested, unknown	0/158	0.00	0/42	0.00	2/352	0.57
Unknown	0/441	0.00	1/153	0.65	12/2,202	0.54

Table 6.3b Number of positive tests and persons tested for HIV by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Socioeconomic status						
High	1/8,014	0.01	4/5,409	0.07	79/11,091	0.71
Medium	1/5,503	0.02	4/3,578	0.11	42/7,381	0.57
Low	7/12,858	0.05	2/9,389	0.02	128/14,496	0.88
Unknown	1/3,216	0.03	1/824	0.12	15/1,560	0.96
Educational level#						
High	1/15,808	0.01	4/10,856	0.04	142/22,301	0.64
Low/medium	3/10,263	0.03	5/7,065	0.07	88/9,392	0.94
Unknown	6/3,520	0.17	2/1,279	0.16	34/2,835	1.20
Number of partners in past 6 months						
0 partners	0/222	0.00	1/80	1.25	3/172	1.74
1 partner	7/6,505	0.11	4/2,917	0.14	30/3,063	0.98
2 partners	1/6,216	0.02	2/3,864	0.05	40/3,847	1.04
3 or more partners	2/14,622	0.01	4/12,213	0.03	187/26,788	0.70
Unknown	0/2,026	0.00	0/126	0.00	4/658	0.61
Condom use if last sexual contact was casual*						
No	3/10,990	0.03	4/8,682	0.05	99/11,542	0.86
Yes	0/6,967	0.00	1/3,810	0.03	66/10,495	0.63
Unknown	0/367	0.00	0/211	0.00	5/632	0.79
Anal sex, in past 6 months						
No	10/22,812	0.04			26/7,169	0.36
Yes, insertive					30/6,686	0.45
Yes, receptive	0/6,779	0.00			39/3,759	1.04
Yes, insertive and receptive					169/16,914	1.00
Receptive oral sex with a man, in past 6 months						
No	4/3,763	0.11			10/1,173	0.85
Yes	5/24,667	0.02			240/31,612	0.76
Unknown	1/1,161	0.09			14/1,743	0.80

Table 6.3 (continued) Number of positive tests and persons tested for HIV by demographics, (sexual) behavioural characteristics, gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW						
No	10/29,275	0.03	8/16,542	0.05	257/33,205	0.77
Yes, in past 6 months	0/169	0.00	2/2,592	0.08	5/1,078	0.46
Unknown	0/147	0.00	1/66	1.52	2/245	0.82
Previous HIV test						
No	3/10,956	0.03	5/8,769	0.06	42/4,467	0.94
Yes, positive	0/2	0.00	0/1	0.00	0/5	0.00
Yes, negative	4/17,876	0.02	3/10,075	0.03	216/29,821	0.72
Yes, result unknown	2/112	1.79	3/33	9.09	4/60	6.67
Unknown	1/645	0.16	0/322	0.00	2/175	1.14

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

* Last sexual contact was steady for 34.4% (n=28,530) and unknown for 1.3% (n=1,093) of persons tested for HIV.

Table 6.4 Concurrent STI by gender and type of sexual contact among persons newly diagnosed with HIV at the STI clinics, 2016

Concurrent infection	Women (N=10) n (%)	Heterosexual men (N=11) n (%)	MSM (N=264) n (%)
Chlamydia	2 (20.0)	1 (9.1)	65 (24.6)
Gonorrhoea	1 (10.0)	2 (18.2)	67 (25.4)
Syphilis, infectious	0 (0.0)	1 (9.1)	26 (9.8)
Genital herpes	0 (0.0)	0 (0.0)	2 (0.8)
Genital warts	0 (0.0)	0 (0.0)	2 (0.8)
Hepatitis B, infectious	0 (0.0)	0 (0.0)	6 (2.3)
Hepatitis C	0 (0.0)	0 (0.0)	0 (0.0)

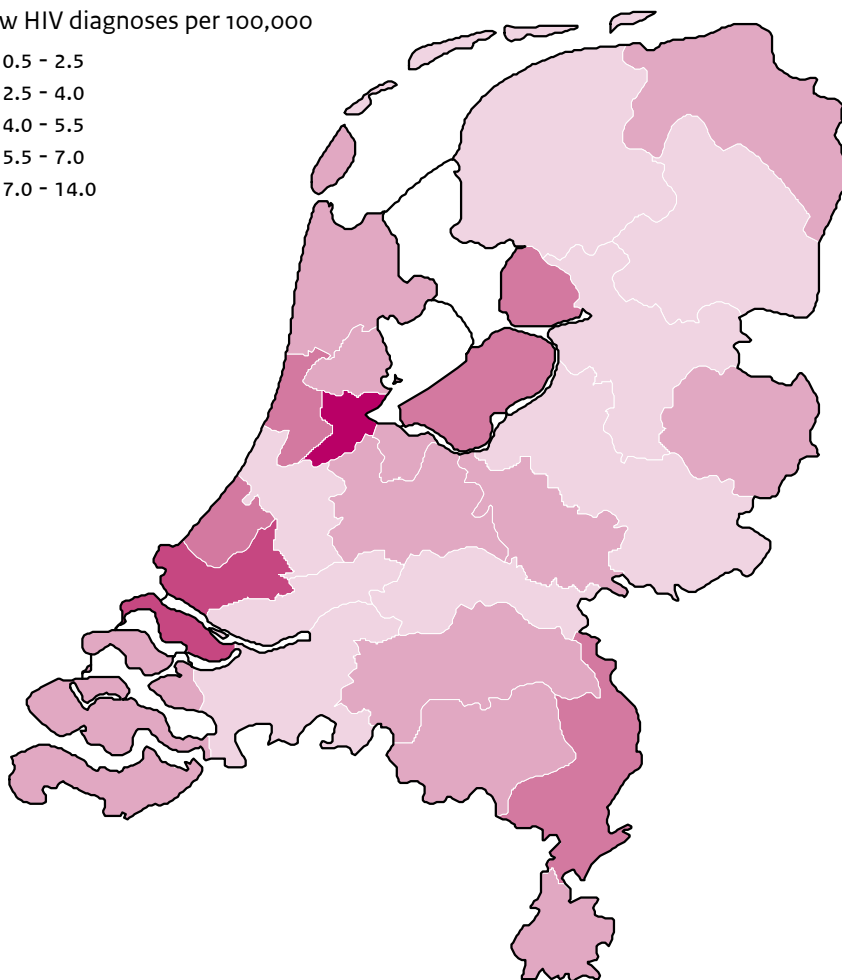
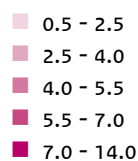
Footnote: STI clinics check for genital herpes and genital warts on indication only. In addition, clients are not routinely tested on hepatitis C.

6.3 HIV treatment centres

6.3.1 Newly diagnosed HIV cases in care in 2016

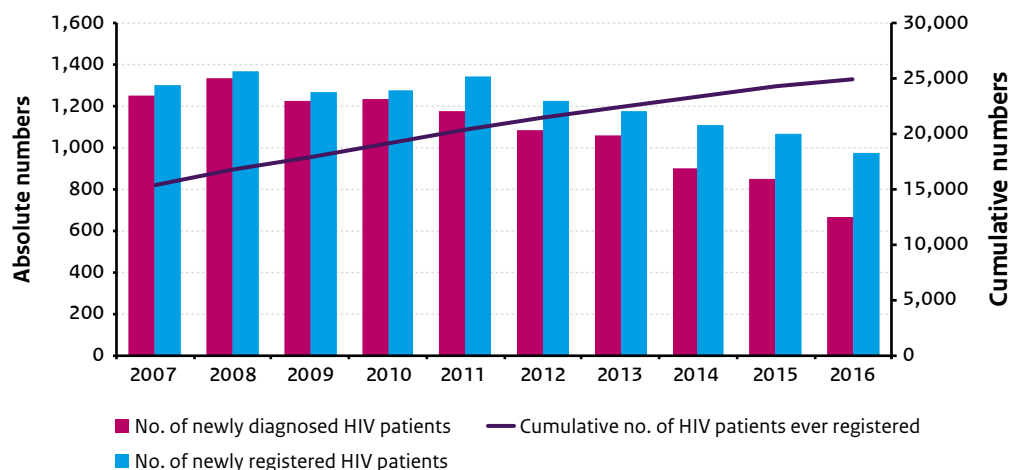
Figure 6.2 Number of new HIV diagnoses per 100,000 inhabitants by region, the Netherlands, 2016

New HIV diagnoses per 100,000



Footnote: calculations based on HIV diagnoses per region.
(Sources: Stichting HIV Monitoring, CBS)

Figure 6.3 Number of newly diagnosed HIV cases and newly registered HIV patients by year, 2007-2016



(Source: Stichting HIV Monitoring, 2016 incomplete)

Table 6.5a Number of HIV patients diagnosed in 2016 by age and main transmission category, as of December 31, 2016

Age (years)	Women (%)	Heterosexual men (%)	MSM (%)	Other/unknown *
0-14	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.0)
15-19	2 (2.4)	0 (0.0)	12 (2.7)	2 (4.0)
20-24	5 (6.1)	6 (6.7)	52 (11.7)	5 (10.0)
25-29	8 (9.8)	14 (15.7)	77 (17.3)	3 (6.0)
30-39	28 (34.1)	23 (25.8)	111 (24.9)	16 (32.0)
40-49	18 (22.0)	19 (21.3)	79 (17.8)	9 (18.0)
50-59	14 (17.1)	12 (13.5)	76 (17.1)	8 (16.0)
60-69	5 (6.1)	14 (15.7)	28 (6.3)	6 (12.0)
70-79	2 (2.4)	1 (1.1)	10 (2.2)	0 (0.0)
≥ 80	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	82	89	445	50

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

Table 6.5b Number of HIV patients in care, by age and main transmission category, as of December 31, 2016

Age (years)	Women (%)	Heterosexual men (%)	MSM (%)	Other/unknown* (%)
0-14	5 (0.2)	0 (0.0)	6 (0.1)	315 (19.0)
15-19	159 (5.1)	29 (1.2)	180 (1.5)	44 (2.7)
20-24	440 (14.0)	160 (6.6)	978 (8.2)	137 (8.3)
25-29	682 (21.7)	291 (12.1)	1,804 (15.1)	205 (12.3)
30-39	1,069 (34.0)	828 (34.3)	4,197 (35.2)	455 (27.4)
40-49	457 (14.5)	646 (26.8)	3,116 (26.1)	268 (16.1)
50-59	232 (7.4)	325 (13.5)	1,278 (10.7)	132 (8.0)
60-69	70 (2.2)	116 (4.8)	310 (2.6)	52 (3.1)
70-79	15 (0.5)	12 (0.5)	44 (0.4)	9 (0.5)
≥ 80	0 (0.0)	2 (0.1)	1 (0.0)	0 (0.0)
Unknown	14 (0.4)	4 (0.2)	7 (0.1)	43 (2.6)
Total	3,143	2,413	11,921	1,660

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

Table 6.6 Number of HIV cases diagnosed in 2016 and number of HIV patients in care by gender and main reported transmission risk group, as of December 31, 2016

Transmission risk group	Women		Men		Total	
	2016 (%)	Total in care (%)	2016 (%)	Total in care (%)	2016 (%)	Total in care (%)
MSM	-	-	445 (77.3)	11,921 (76.8)	445 (66.8)	11,921 (62.3)
Heterosexual contact	82 (91.1)	3,143 (87.2)	89 (15.5)	2,413 (15.5)	171 (25.7)	5,556 (29.0)
Injecting drug use	0 (0.0)	84 (2.3)	1 (0.2)	230 (1.5)	1 (0.2)	314 (1.6)
Blood or blood products	0 (0.0)	92 (2.6)	6 (1.0)	151 (1.0)	6 (0.9)	243 (1.3)
Mother to child	1 (1.1)	147 (4.1)	1 (0.2)	143 (0.9)	2 (0.3)	290 (1.5)
Other/unknown	7 (7.8)	140 (3.9)	34 (5.9)	673 (4.3)	41 (6.2)	813 (4.2)
Total	90	3,606	576	15,531	666	19,137

Table 6.7a Number of HIV cases diagnosed in 2016 by region of origin and main transmission category, as of December 31, 2016

Ethnicity	Women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
The Netherlands	30 (36.6)	51 (57.3)	290 (65.2)	26 (52.0)
Europe, other	2 (2.4)	6 (6.7)	52 (11.7)	6 (12.0)
Caribbean & Latin America	17 (20.7)	9 (10.1)	51 (11.5)	4 (8.0)
Sub-Saharan Africa	20 (24.4)	19 (21.3)	9 (2.0)	6 (12.0)
Other	10 (12.2)	3 (3.4)	38 (8.5)	4 (8.0)
Unknown	3 (3.7)	1 (1.1)	5 (1.1)	4 (8.0)
Total	82	89	445	50

* 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, 2016

Ethnicity	Women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
The Netherlands	921 (29.3)	1,139 (47.2)	8,669 (72.7)	766 (46.1)
Europe, other	152 (4.8)	160 (6.6)	1,095 (9.2)	212 (12.8)
Caribbean & Latin America	471 (15.0)	335 (13.9)	1,200 (10.1)	125 (7.5)
Sub-Saharan Africa	1,333 (42.4)	655 (27.1)	164 (1.4)	407 (24.5)
Other	257 (8.2)	117 (4.8)	748 (6.3)	140 (8.4)
Unknown	9 (0.3)	7 (0.3)	45 (0.4)	10 (0.6)
Total	3,143	2,413	11,921	1,660

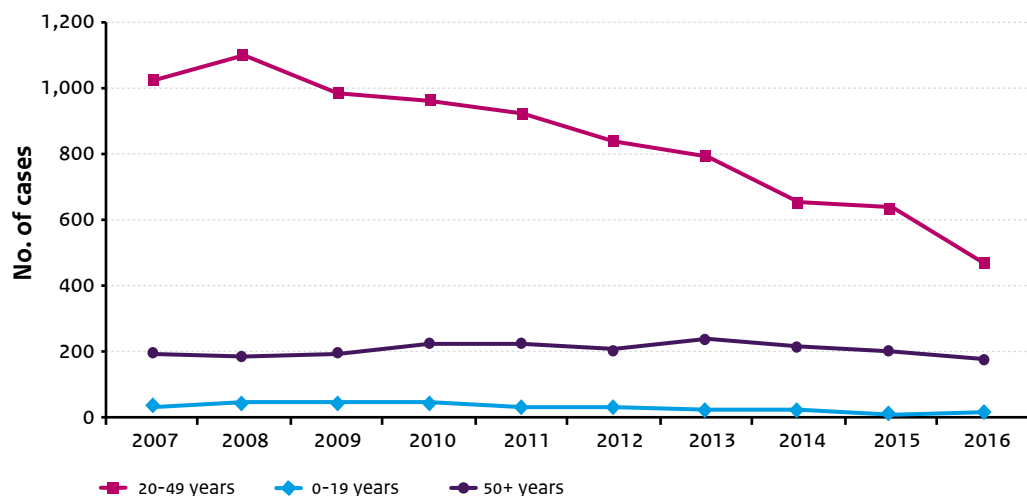
* Injecting drug use, blood and blood contacts, mother-to-child transmission, other, unknown.

Table 6.8 Number of HIV cases diagnosed in 2016 by test location and main transmission category, as of December 31, 2016

Test location	Women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
PHS/STI clinic	4 (4.9)	4 (4.5)	202 (45.4)	3 (6.0)
Hospital	32 (39.0)	43 (48.3)	79 (17.8)	34 (68.0)
General practitioner	26 (31.7)	28 (31.5)	115 (25.8)	8 (16.0)
Pregnancy screening	14 (17.1)	1 (1.1)	0 (0.0)	0 (0.0)
Other	6 (7.3)	13 (14.6)	49 (11.0)	5 (10.0)
Total	82	89	445	50

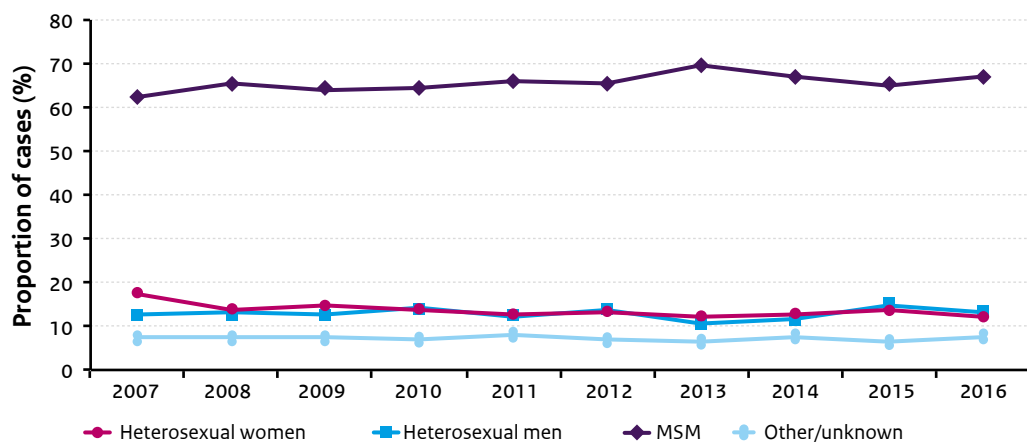
* Injecting drug use, blood and blood contacts, mother-to-child transmission, other, unknown.

Figure 6.4 Number of newly diagnosed HIV cases by age group and year of diagnosis, 2007-2016



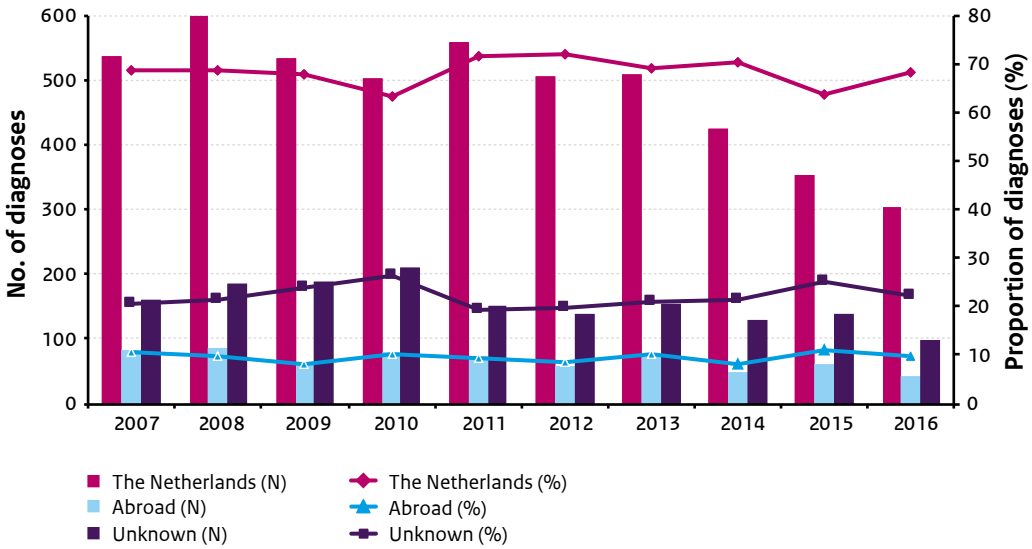
(Source: Stichting HIV Monitoring, 2016 incomplete)

Figure 6.5 Proportion of newly diagnosed HIV cases, by main transmission group and year of diagnosis, 2007-2016



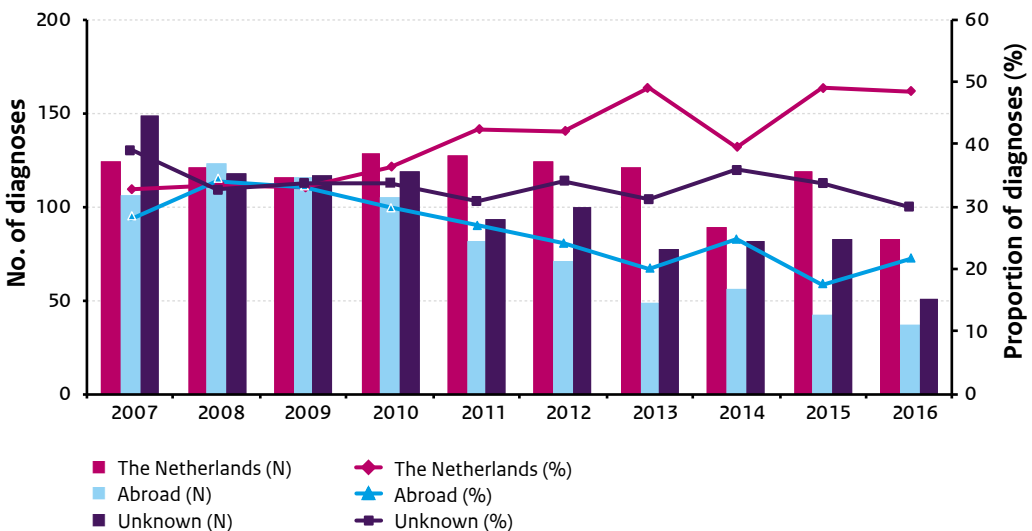
(Source: Stichting HIV Monitoring, 2016 incomplete)

Figure 6.6a Reported country of HIV infection of newly diagnosed MSM by year of diagnosis, 2007-2016



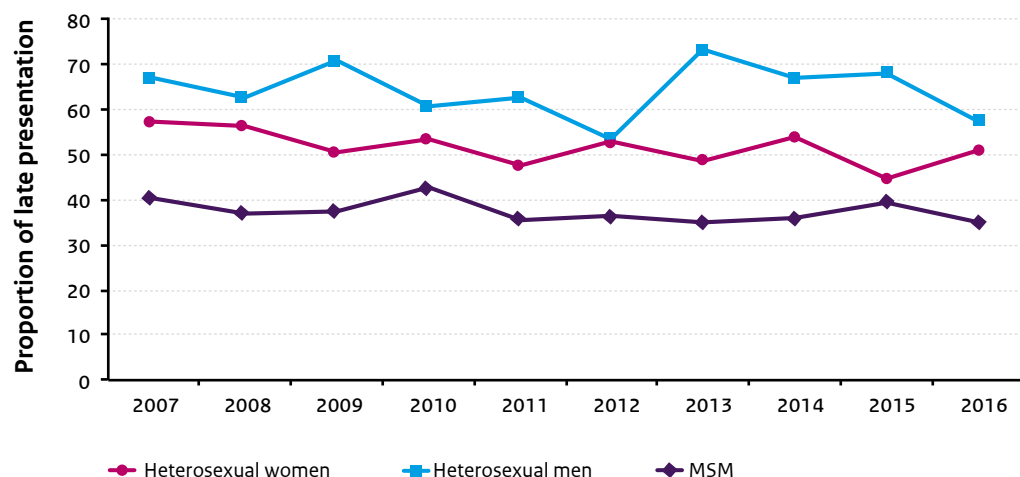
(Source: Stichting HIV Monitoring, 2016 incomplete)

Figure 6.6b Reported country of newly diagnosed HIV positive heterosexuals by year of diagnosis, 2007-2016



(Source: Stichting HIV Monitoring, 2016 incomplete)

Figure 6.7 Proportion of late presentation (CD4 count <350/mm³ or AIDS at diagnosis) by transmission risk group, 2007-2016



(Source: Stichting HIV Monitoring, 2016 incomplete)

6.3.2 AIDS cases and deaths among HIV patients

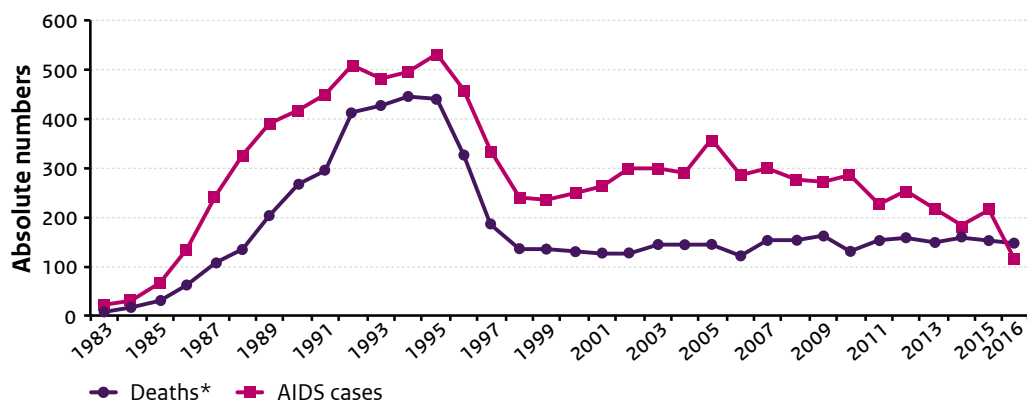
Table 6.9 Number of AIDS patients by year of AIDS diagnosis and transmission risk group, 1983-2016

Year of diagnosis	Heterosexual women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
≤2006	3,788 (16.7)	2,914 (12.9)	13,427 (59.3)	2,522 (11.1)
2007	58 (19.2)	53 (17.5)	137 (45.4)	54 (17.9)
2008	46 (16.5)	56 (20.1)	133 (47.7)	44 (15.8)
2009	39 (14.2)	68 (24.8)	137 (50.0)	30 (10.9)
2010	58 (20.1)	62 (21.5)	129 (44.6)	40 (13.8)
2011	45 (18.8)	40 (16.7)	117 (49.0)	37 (15.5)
2012	48 (18.2)	52 (19.7)	128 (48.5)	36 (13.6)
2013	34 (15.1)	41 (18.2)	117 (52.0)	33 (14.7)
2014	22 (11.5)	40 (20.9)	95 (49.7)	34 (17.8)
2015	29 (13.8)	42 (20.0)	104 (49.5)	35 (16.7)
2016	25 (21.6)	23 (19.8)	50 (43.1)	18 (15.5)
Total	4,192 (16.7)	3,391 (13.5)	14,574 (58.2)	2,883 (11.5)

(Sources: 1987-1999: Health Inspectorate, 1999-2016: Stichting HIV Monitoring, 2016 incomplete)

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

Figure 6.8 Number of AIDS cases and deaths among HIV patients, 1983-2016



(Sources: AIDS cases < 1999: AIDS registration Health Inspectorate, ≥ 1999: Stichting HIV Monitoring. Deaths < 2002: CBS, ≥ 2002: Stichting HIV Monitoring, 2016 incomplete)

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

Table 6.10 Number of deaths among HIV/AIDS patients by year of death and transmission risk group, 2007-2016

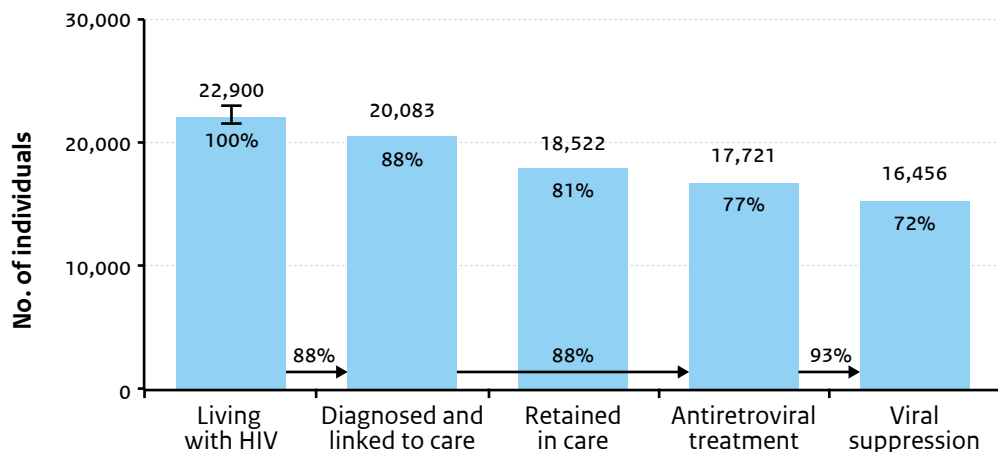
Year of diagnosis	Heterosexual women n (%)	Heterosexual men n (%)	MSM n (%)	Other/unknown* n (%)
2007	18 (11.7)	17 (11.0)	84 (54.5)	35 (22.7)
2008	16 (10.0)	25 (15.6)	78 (48.8)	41 (25.6)
2009	13 (7.9)	27 (16.5)	83 (50.6)	41 (25.0)
2010	16 (12.2)	16 (12.2)	64 (48.9)	35 (26.7)
2011	13 (8.4)	32 (20.8)	77 (50.0)	32 (20.8)
2012	9 (5.7)	27 (17.2)	88 (56.1)	33 (21.0)
2013	12 (8.1)	31 (20.8)	79 (53.0)	27 (18.1)
2014	19 (11.6)	25 (15.2)	87 (53.0)	33 (20.1)
2015	18 (11.3)	38 (23.8)	75 (46.9)	29 (18.1)
2016	16 (11.3)	25 (17.7)	72 (51.1)	28 (19.9)
Total	150 (9.8)	263 (17.1)	787 (51.3)	334 (21.8)

(Source: Stichting HIV Monitoring)

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

Footnote: Total deaths, not only caused by HIV/AIDS.

Figure 6.9 Continuum of care for HIV in 2015, Stichting HIV Monitoring



(Source: Stichting HIV Monitoring, Monitoring Report 2016 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

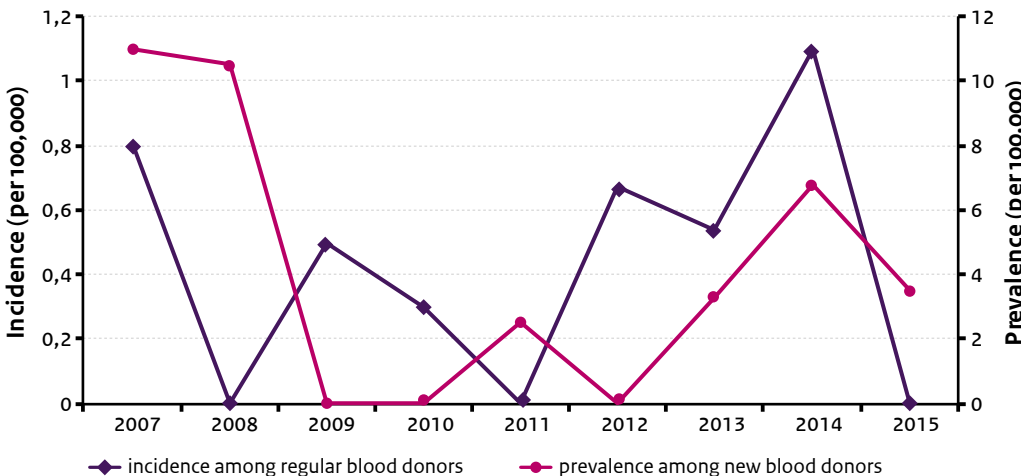
Table 6.11 HIV prevalence estimates in pregnant women, based on test results of antenatal screening, 2012-2015

Year	Nr. 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

(Sources: C.P.B. van der Ploeg (TNO), Y. Schönbeck (TNO), P. Oomen (RIVM), K. Vos (RIVM). Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE). Procesmonitor 2015. TNO/RIVM 2017; and earlier monitors)

6.4.2 Blood donors

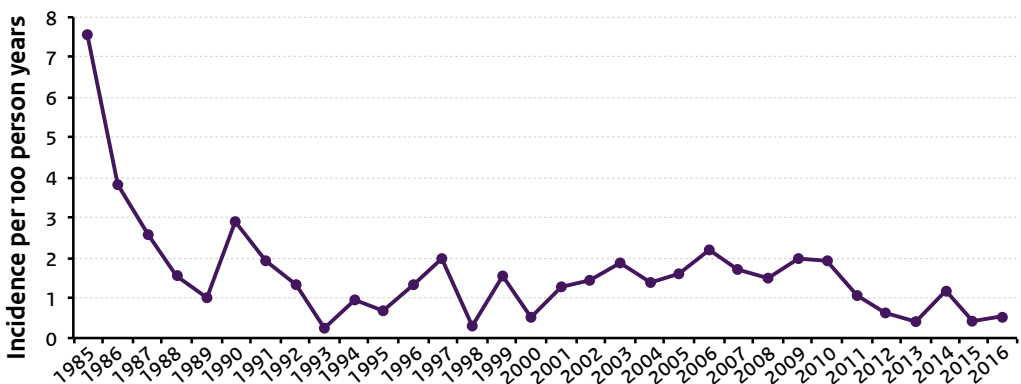
Figure 6.10 HIV incidence and prevalence (per 100,000) among regular and new blood donors in the Netherlands, 2007–2015



(Source: Sanquin)

6.4.3 HIV incidence in MSM in the Amsterdam Cohort Studies

Figure 6.12 Yearly HIV incidence among MSM in Amsterdam Cohort Studies, 1985–2016



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, 2009-2015

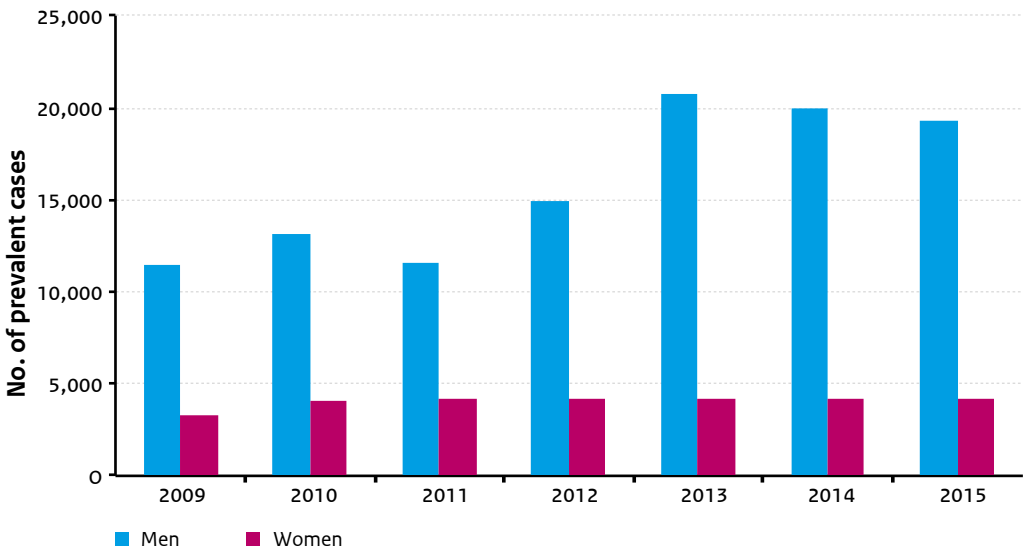


Table 6.12 Estimated prevalence of HIV (rate per 1,000 population) at GPs in the Netherlands by gender, based on GP practices in NIVEL-PCD, 2009-2015

	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	2.4	1.5
2015	0.5	2.3	1.4

7 Genital warts

7.1 Key points

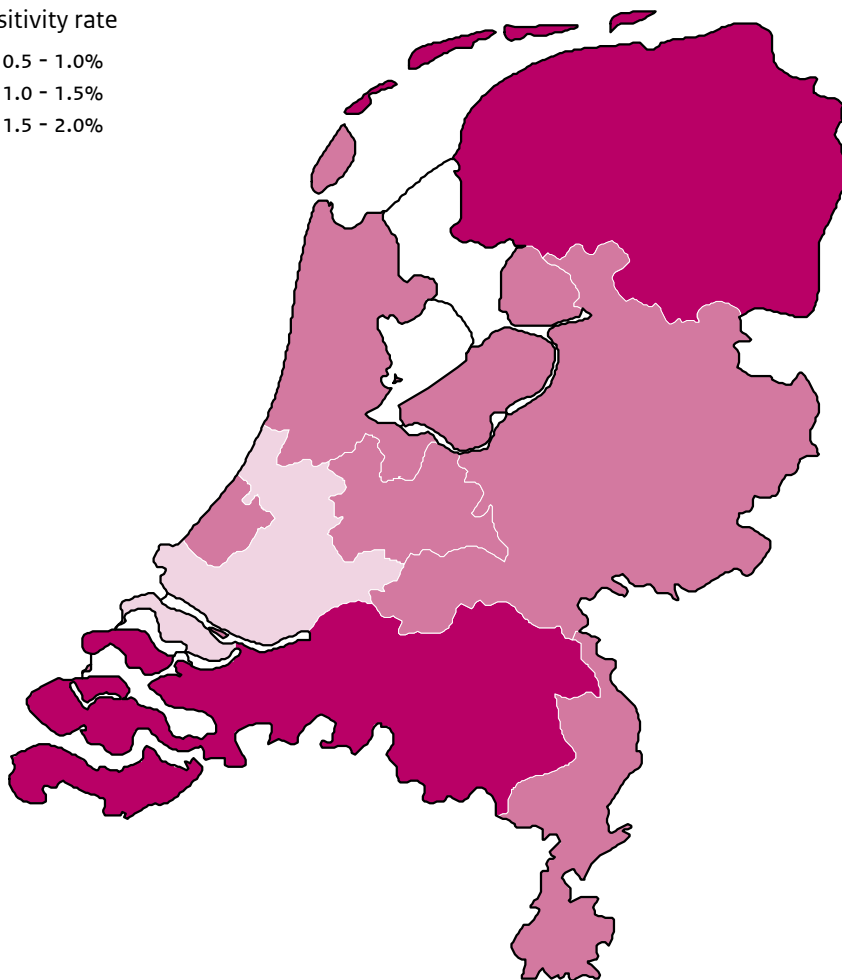
- In 2016, the number of genital warts diagnoses was 1,785 at the STI clinics in the Netherlands; 36.6 per cent of diagnoses were in women, 42.6 per cent in heterosexual men, and 20.8 per cent in MSM.
- Among women and heterosexual men, the positivity rate of genital warts remained relatively stable since 2013, while the positivity rate continued to decrease among MSM. The positivity rate was higher among heterosexual men (2.2 per cent) than among MSM (0.9 per cent) and women (1.0 per cent).
- Among MSM, the positivity rate declined with age, while in heterosexual men the positivity rate was highest among 20- to 44-year-olds. Among women, the positivity rates were stable across all age categories.
- At GPs, the number of genital warts episodes, estimated from data from NIVEL-PCD, was 36,800 in 2015, with a reporting rate of 2.2 per 1,000 population. The reporting rate was higher for men than for women (2.5 versus 1.90/1,000). Among women, the reporting rate was highest in the <25 age group (2.2/1,000) whereas in men it was highest in the ≥25 age group (2.9/1,000).

7.2 STI clinics: characteristics, risk groups and trends

Figure 7.1 Positivity rates of genital warts by region, the Netherlands, 2016

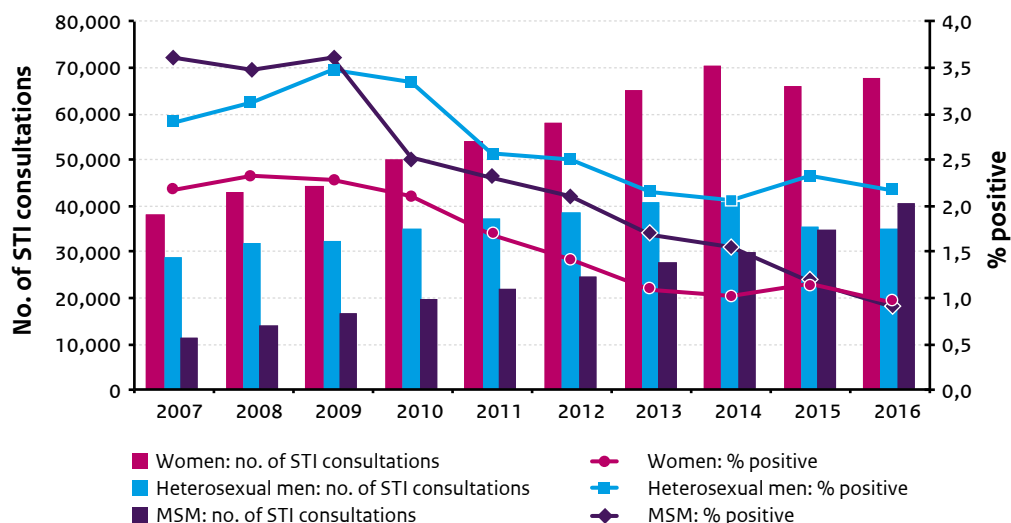
Positivity rate

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



Footnote: STI clinics 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, 2007-2016



Footnote: STI clinics 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, 2016

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	82/8,383	1.0	29/2,307	1.3	14/886	1.6
20-24	401/38,829	1.0	362/18,070	2.0	83/5,980	1.4
25-29	103/11,349	0.9	201/8,086	2.5	87/7,042	1.2
30-34	33/3,510	0.9	86/2,998	2.9	60/5,336	1.1
35-39	9/1,773	0.5	39/1,339	2.9	31/4,827	0.6
40-44	11/1,236	0.9	19/749	2.5	24/4,038	0.6
45-49	6/1,183	0.5	11/632	1.7	21/4,131	0.5
50-54	6/789	0.8	7/399	1.8	24/3,562	0.7
≥ 55	2/548	0.4	7/485	1.4	27/4,537	0.6
Unknown	0/0	0	0/0	0	0/1	0.0
Total	653/67,600	1.0	761/35,065	2.2	371/40,340	0.9

Footnote: STI clinics 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.

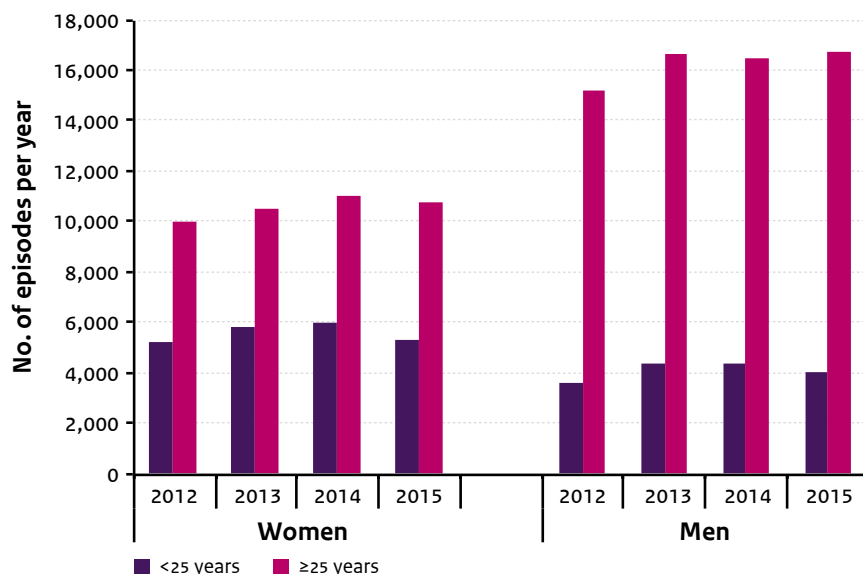
Table 7.2 Number of people diagnosed with genital warts and number of STI consultations by ethnicity, gender and type of sexual contact, 2016

Ethnicity	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	490/48,194	1.0	462/21,569	2.1	229/27,776	0.8
Western migrants	42/3,981	1.1	59/2,199	2.7	52/3,734	1.4
First generation non-Western migrants	43/6,733	0.6	81/4,479	1.8	49/5,659	0.9
Second generation non-Western migrants	77/8,633	0.9	158/6,790	2.3	40/3,054	1.3
Unknown	1/59	1.7	1/28	3.6	1/117	0.9
Total	653/67,600	1.0	761/35,065	2.2	371/40,340	0.9

Footnote: STI clinics 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, 2012-2015



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 persons) of genital warts at GPs in the Netherlands by gender and age group, based on GP practices in NIVEL-PCD, 2012-2015

	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

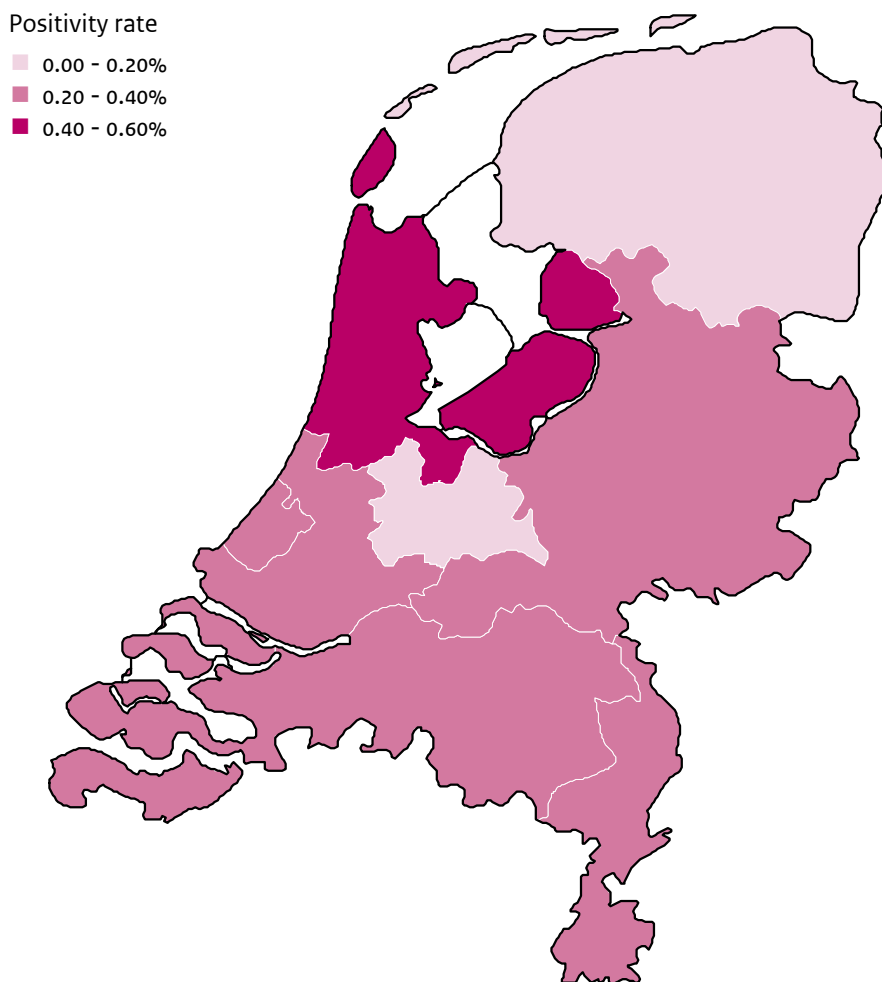
8 Genital herpes

8.1 Key points

- In 2016, the number of genital herpes diagnoses was 519 (43.5 per cent women, 26.2 per cent heterosexual men and 30.3 per cent MSM) at the STI clinics in the Netherlands.
- The positivity rate of genital herpes was 0.4 per cent for heterosexual men and MSM and 0.3 per cent for women in 2016. Positivity rates were comparable to rates in 2015 and 2014.
- The positivity rates of genital herpes by ethnicity were lowest among ethnic Dutch (0.3 per cent). Highest positivity rates in women and heterosexual men were found among Western migrants (both 0.7 per cent).
- The number of primary infections with unknown type decreased over time. In 2016, HSV2 primary infection was more common than HSV1 primary infection among heterosexual men, while equal numbers of HSV1 and HSV2 primary infections were found in women and MSM.
- At GPs, the number of genital herpes episodes, estimated from data from NIVEL-PCD, was 20,500 in 2015, with a reporting rate of 1.2 per 1,000 population. The reporting rate was higher for women than for men (1.7 versus 0.7/1,000). Among men, the reporting rate was higher in the ≥ 25 age group (0.9/1,000) compared to the < 25 age group (0.3/1,000), whereas in women rates were similar across both age ranges.

8.2 STI clinics: characteristics, risk groups and trends

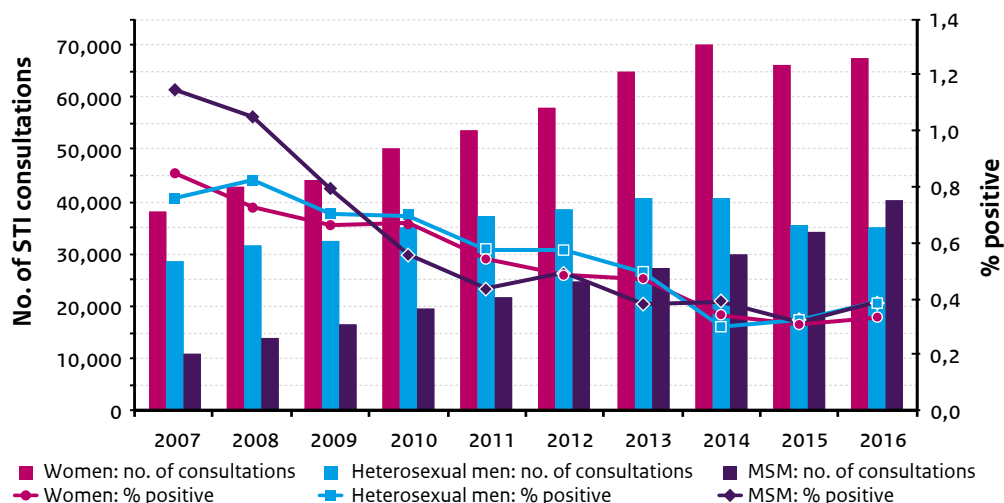
Figure 8.1 Positivity rates of genital herpes by region, the Netherlands, 2016



Footnote 1: STI clinics 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 STI clinics 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, 2007-2016



Footnote 1: STI clinics 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 STI clinics 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, 2016

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	27/8,383	0.3	4/2,307	0.2	2/886	0.2
20-24	107/38,829	0.3	56/18,070	0.3	30/5,980	0.5
25-29	52/11,349	0.5	33/8,086	0.4	28/7,042	0.4
30-34	15/3,510	0.4	22/2,998	0.7	24/5,336	0.4
35-39	7/1,773	0.4	5/1,339	0.4	25/4,827	0.5
40-44	5/1,236	0.4	6/749	0.8	7/4,038	0.2
45-49	7/1,183	0.6	3/632	0.5	18/4,131	0.4
50-54	3/789	0.4	1/399	0.3	12/3,562	0.3
≥ 55	3/548	0.5	6/485	1.2	11/4,537	0.2
Unknown	0/0	0	0/0	0	0/1	0.0
Total	226/67,600	0.3	136/35,065	0.4	157/40,340	0.4

Footnote 1: STI clinics 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 STI clinics 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 ethnicity, gender and type of sexual contact, 2016

Ethnicity	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	131/48,194	0.3	71/21,569	0.3	95/27,776	0.3
Western migrants	26/3,981	0.7	15/2,199	0.7	17/3,734	0.5
First generation non-Western migrants	24/6,733	0.4	17/4,479	0.4	31/5,659	0.5
Second generation non-Western migrants	45/8,633	0.5	32/6,790	0.5	13/3,054	0.4
Unknown	0/59	0.0	1/28	3.6	1/117	0.9
Total	226/67,600	0.3	136/35,065	0.4	157/40,340	0.4

Footnote 1: STI clinics 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.

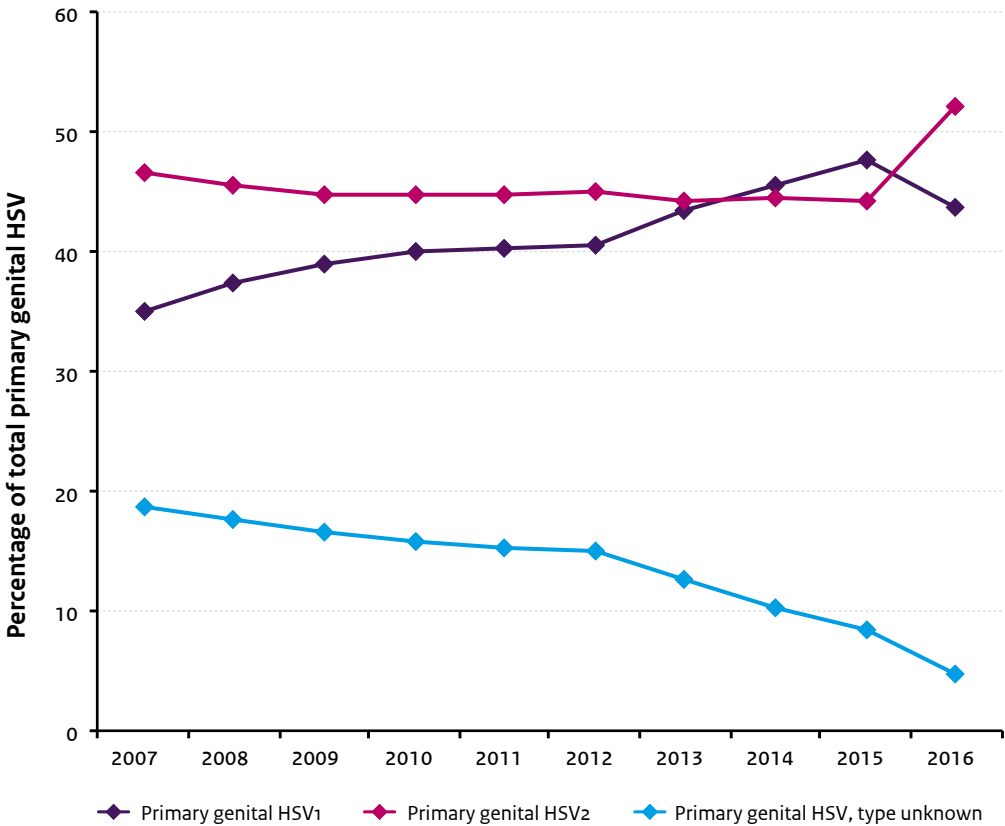
Footnote 2: All genital herpes diagnoses at the STI clinics are included, both lab confirmed and not lab confirmed.

Table 8.3 Number and percentage of genital herpes types by gender and type of sexual contact, 2016

	Women		Heterosexual men		MSM	
	N	%	N	%	N	%
Primary HSV1	104	46.0	42	30.9	73	46.5
Primary HSV2	101	44.7	87	64.0	73	46.5
Primary HSV, type unknown*	8	3.5	5	3.7	4	2.5
Recurrent HSV	13	5.8	2	1.5	7	4.5
Total HSV	226		136		157	

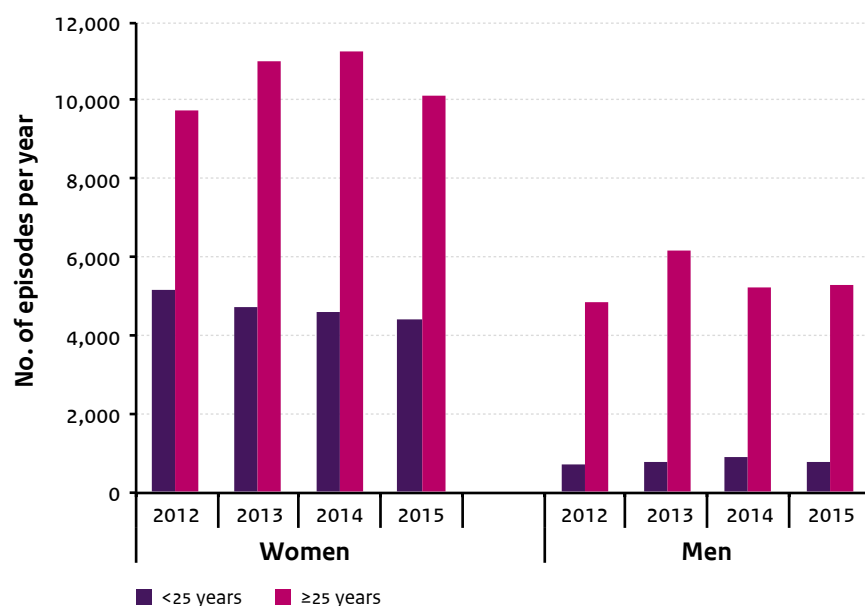
* HSV type is unknown in the absence of a herpes test, or in case of a negative herpes test but with clinical symptoms strongly suggestive of herpes.

Figure 8.3 Percentage of HSV1, HSV2 and HSV type unknown of all primary genital herpes diagnoses, 2007-2016



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, 2012-2015



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 persons) of genital herpes at GPs in the Netherlands by gender and age group, based on GP practices in NIVEL-PCD, 2012-2015

	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

9 Hepatitis B

9.1 Key points

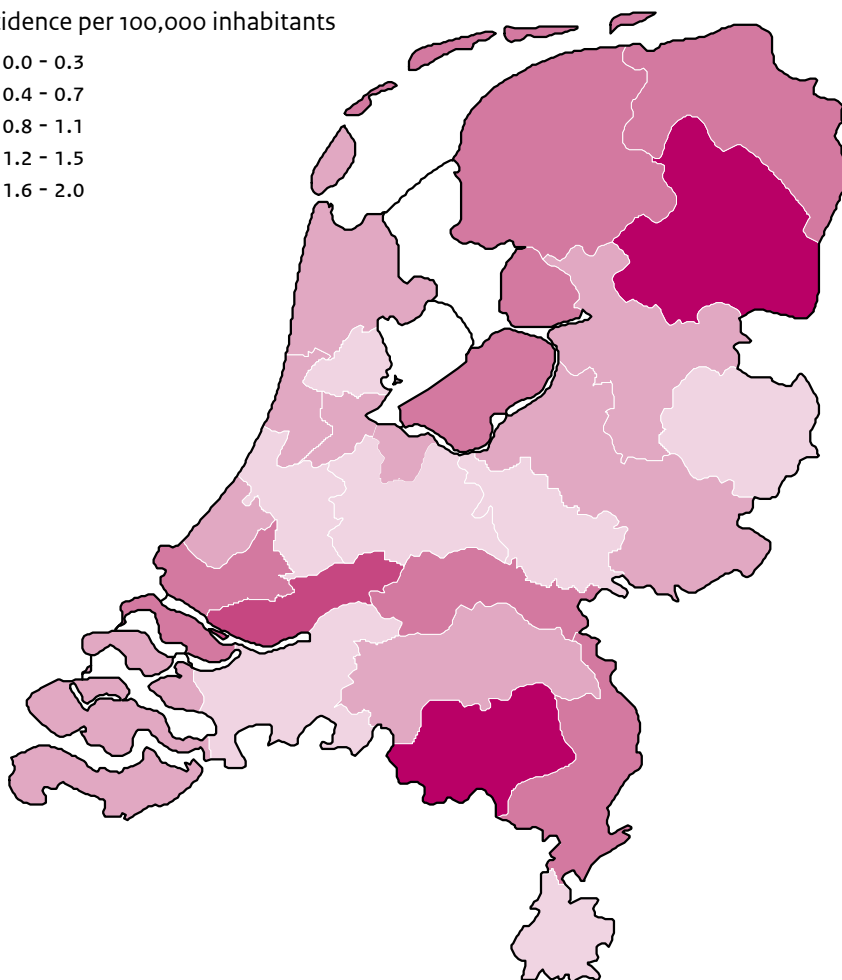
- In 2016, there were 109 notified acute hepatitis B cases, comparable to 2015 (n=105)
- The incidence of notified cases of acute hepatitis B in 2016 was 0.6 per 100,000 inhabitants, and was higher in men (1.0 per 100,000) than in women (0.3 per 100,000). In 2015, also 0.6 per 100,000 inhabitants were notified as acute hepatitis B cases.
- Among the notified cases, unprotected sexual contact remained the most important risk factor for acute hepatitis B (64 percent).
- At the STI clinics, there were 109 hepatitis B diagnoses (38 percent heterosexual men, 33 percent MSM, 29 percent women) in 2016.
- At the STI clinics, the positivity rate was higher among first-generation non-Western migrants (0.5 percent) than among second-generation non-Western migrants (0.05 percent) or among ethnic Dutch (0.01 percent).
- Data from the screening of pregnant women showed an estimated prevalence of hepatitis B of 0.3 percent in 2015.
- At the end of 2016, a cumulative number of 21,263 commercial sex workers and 54,372 MSM entered the vaccination programme for behavioural risk groups since the beginning of the programme in 2002.
- Within the vaccination programme, 369 carriers of hepatitis B have been encountered among the commercial sex workers and MSM, and 4,958 participants in the programme have been into contact with hepatitis B previously.

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, 2016

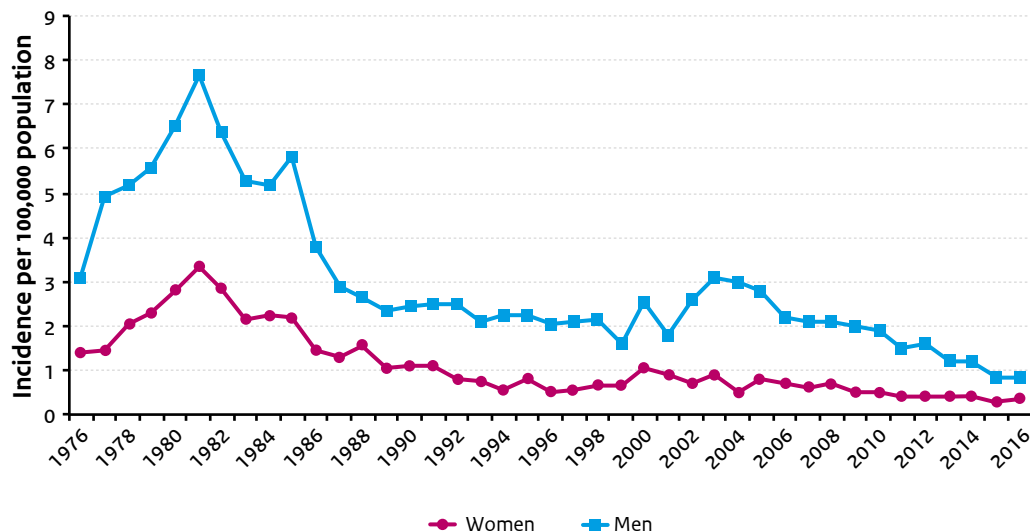
Incidence per 100,000 inhabitants

- 0.0 - 0.3
- 0.4 - 0.7
- 0.8 - 1.1
- 1.2 - 1.5
- 1.6 - 2.0



(Source: RIVM-OSIRIS, notification data)

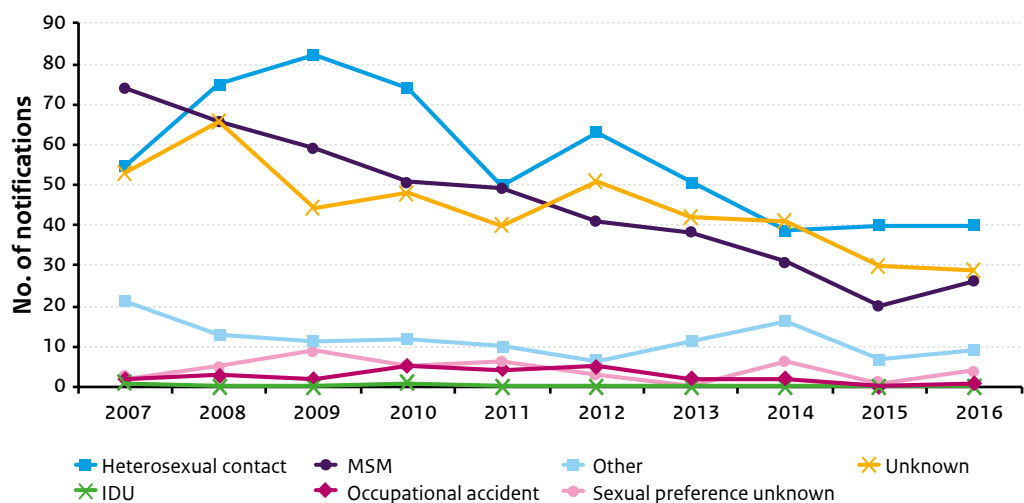
Figure 9.2 Incidence of acute hepatitis B by gender, 1976-2016



(Source: RIVM-OSIRIS, notification data)

Footnote: Data of 2016 might be incomplete, because of reporting delay (data were collected on 15 March 2017)

Figure 9.3 Number of acute hepatitis B infections by route of transmission, 2007-2016



(Source: RIVM-OSIRIS, notification data)

Footnote: Data of 2016 might be incomplete, because of reporting delay (data were collected on 15 March 2017).

Table 9.1 Proportion of acute hepatitis B cases by most common route of transmission, the Netherlands, 2016

	Heterosexual contact (N=40) n (%)*	MSM (N=26) n (%)*	Other (N=43) n (%)*
Infected abroad	9 (22.5)	1 (3.8)	9 (20.9)
Born abroad	3 (7.5)	2 (7.7)	14 (32.6)
Infected by casual partner	22 (55.0)	24 (92.3)	4 (9.3)
Median age (range)	45 (15-76)	52 (22-74)	45 (19-75)

(Source: RIVM-OSIRIS, notification data)

Footnote: Data of 2016 might be incomplete, because of reporting delay (2016 data were collected on March 15 2017)

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

9.3 Infectious hepatitis B diagnoses at the STI clinics

Table 9.2 Number of positive tests and persons tested for hepatitis B by age, gender and type of sexual contact, 2016

Age (years)	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
≤19	0/913	0.0	1/292	0.3	0/493	0.0
20-24	6/3,176	0.2	14/1,930	0.7	2/2,076	0.1
25-29	10/1,988	0.5	7/1,548	0.5	6/1,906	0.3
30-34	5/891	0.6	7/889	0.8	9/1,262	0.7
35-39	5/506	1.0	4/437	0.9	3/861	0.3
40-44	3/325	0.9	4/294	1.4	2/737	0.3
45-49	1/238	0.4	1/203	0.5	6/638	0.9
50-54	2/144	1.4	2/119	1.7	3/551	0.5
≥ 55	0/119	0.0	1/160	0.6	5/676	0.7
Total	32/8,300	0.4	41/5,872	0.7	36/9,200	0.4

Footnote: Hepatitis B includes both acute and chronic cases.

Table 9.3 Number of positive tests and persons tested for hepatitis B by ethnicity, gender and type of sexual contact, 2016

Ethnicity	Women		Heterosexual men		MSM	
	n positive/N	%	n positive/N	%	n positive/N	%
Ethnic Dutch	2/3,228	0.1	2/1,540	0.1	10/5,443	0.2
Western migrants	2/438	0.5	0/252	0.0	3/1,298	0.2
First generation non-Western migrants	25/3,529	0.7	37/3,165	1.2	19/1,606	1.2
Second generation non-Western migrants	3/1,097	0.3	2/910	0.2	4/816	0.5
Non-Western, unknown generation	0/8	0.0	0/5	0.0	0/37	0.0
Total	32/8,300	0.4	41/5,872	0.7	36/9,200	0.4

Footnote: Hepatitis B includes both acute and chronic cases.

Table 9.4 Concurrent STI by gender and type of sexual contact among persons diagnosed with hepatitis B, 2016

Concurrent infection	Women (N=32) n (%)	Heterosexual men (N=41) n (%)	MSM (N=36) n (%)
Chlamydia	4 (12.5)	6 (14.6)	8 (22.2)
Gonorrhoea	1 (3.1)	2 (4.9)	6 (16.7)
Syphilis, infectious	0 (0.0)	1 (2.4)	4 (11.1)
HIV newly diagnosed	0 (0.0)	0 (0.0)	6 (16.7)
Genital herpes	0 (0.0)	0 (0.0)	0 (0.0)
Genital warts	0 (0.0)	1 (2.4)	0 (0.0)
Hepatitis C	0 (0.0)	0 (0.0)	0 (0.0)

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

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

9.4 Antenatal screening

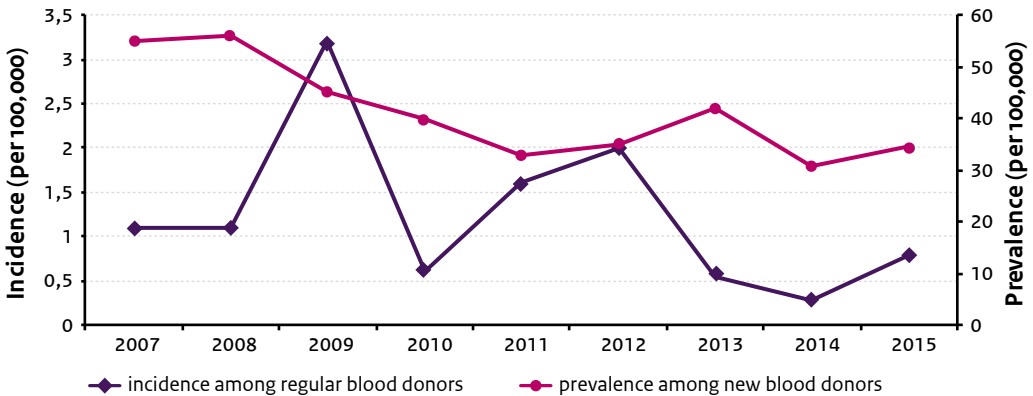
Table 9.5 Hepatitis B prevalence estimates for pregnant women, based on test results of antenatal screening, 2012-2015

Year	Nr. 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

(Sources: C.P.B. van der Ploeg (TNO), Y. Schönbeck (TNO), P. Oomen (RIVM), K. Vos (RIVM). Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE). Procesmonitor 2015. TNO/RIVM 2017; 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, 2002-2016

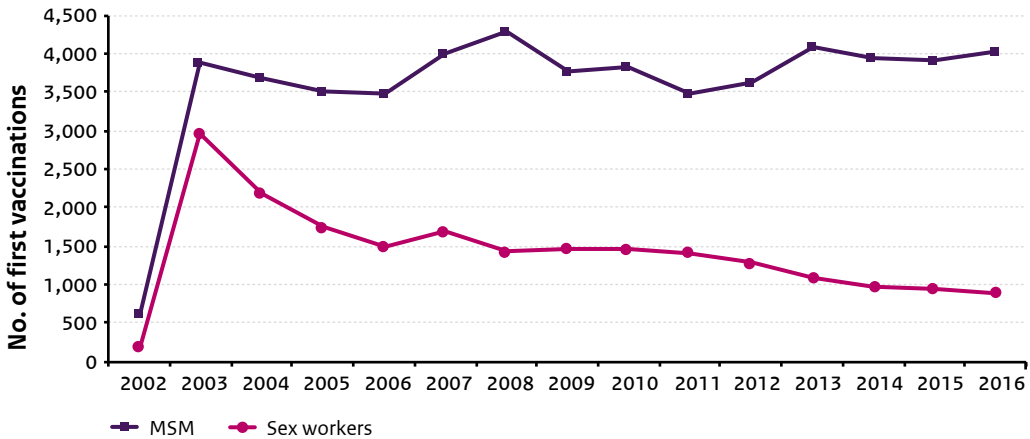


Table 9.6 Number of vaccinated, chronically infected and immune participants of the hepatitis B vaccination program, 2002-2016

	CSW	MSM
First vaccination	21,263	54,372
Second vaccination	13,691	42,366
Third vaccination	9,537	35,210
Hepatitis B status at first consultation*		
Hepatitis B carrier (%)	153 (0.7)	216 (0.4)
Hepatitis B immune (%)	1,670 (7.9)	3,288 (6.0)

Footnote: Not included in the table are heterosexuals (n=41,007) with multiple partners whom were included until October 2007, drug users (n=17,894) who were included until January 2012, and participants with unknown risk group (n=2,995).

* During the consult of first vaccination all participants are tested serologically for markers of previous or current hepatitis B infection.

Table 9.7 Number and percentage of first hepatitis B vaccinations per risk group and location of first vaccination, 2002-2016

Location of first vaccination	CSW (N=21,263) n (%)	MSM (N=54,372) n (%)
STI clinic	3,246 (15.3)	15,313 (28.2)
Public health service*	13,239 (62.3)	34,199 (62.9)
Penitentiary institution	698 (3.3)	156 (0.3)
MSM location	56 (0.3)	2,453 (4.5)
Drug location	36 (0.2)	176 (0.3)
CSW location	3,866 (18.2)	13 (0.02)
Other	122 (0.6)	2,062 (3.8)

* The number of hepatitis B vaccinations given at public health services (PHS) can also consist of vaccinations given at an STI clinic. In a number of regions, the STI clinic and the PHS work closely together.

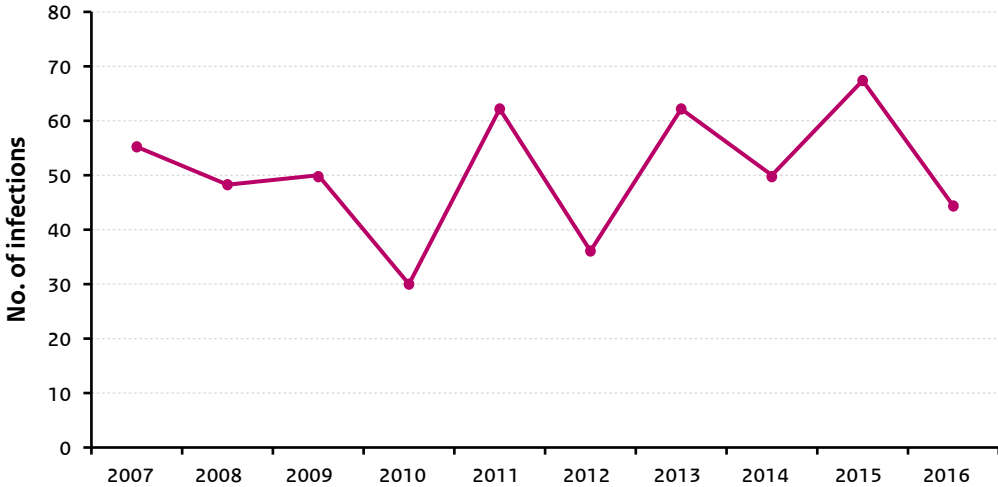
10 Hepatitis C

10.1 Key points

- In 2016, the total number of acute HCV notifications ($n = 44$) decreased with 34 percent compared with 2015 ($n = 67$).
- Unprotected sexual contact between men remained the most important route of transmission for acute hepatitis C (68 percent).
- Of all HCV positive MSM ($n=30$) notified in 2016, 90 percent ($n=27$) were HIV positive.
- At the STI clinics, 1,007 people were tested for HCV and seven hepatitis C cases were diagnosed, which were all MSM.
- Of the seven hepatitis C cases diagnosed at the STI clinics, four were previously tested HIV positive.
- Since 2013, reinfections with HCV have been registered in Osiris. In 2013, one reinfection was reported, as well as in 2014. In 2015 and 2016, these numbers were five and two, respectively.
- In 2015, no hepatitis C cases were found among both new and regular blood donors.

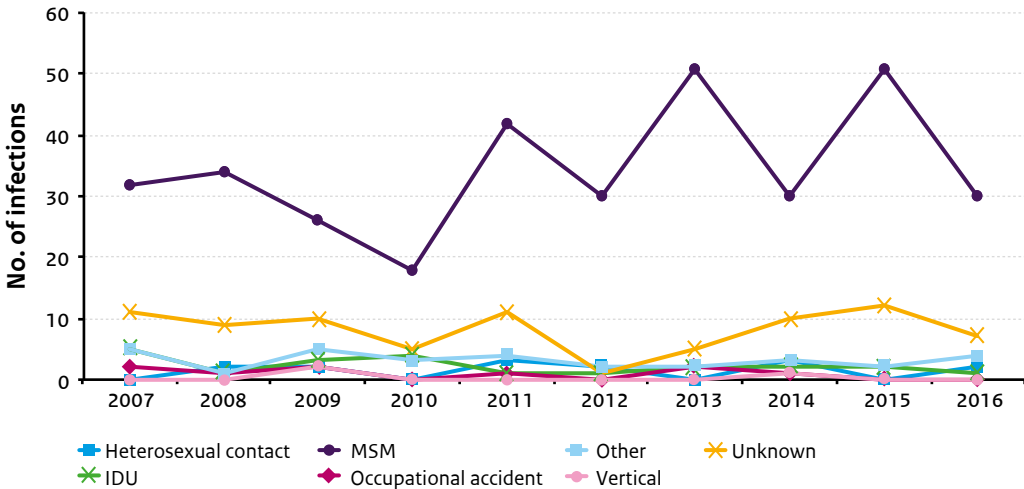
10.2 Notification data: characteristics, risk groups and trends

Figure 10.1 Number of acute hepatitis C infections, 2007-2016



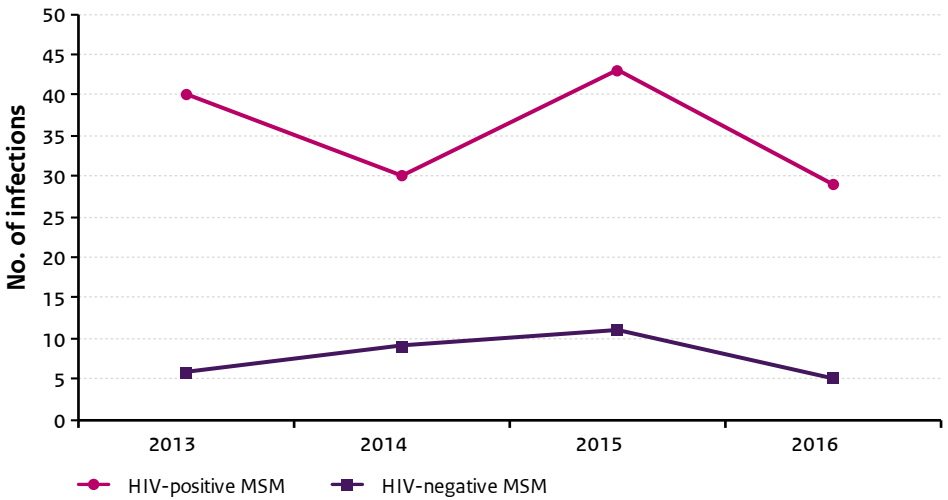
(Source: RIVM-OSIRIS, notification data)

Figure 10.2 Number of acute hepatitis C infections by route of transmission, 2007-2016



(Source: RIVM-OSIRIS, notification data)

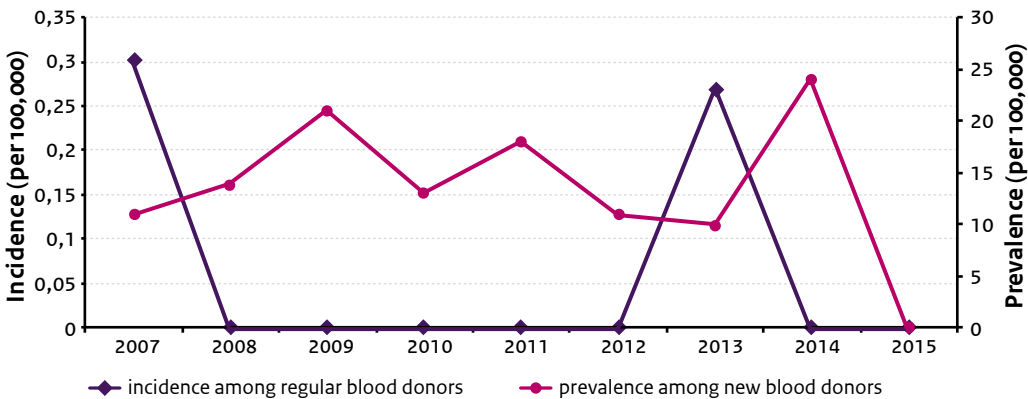
Figure 10.3 Number of acute hepatitis C infections in MSM by HIV status, 2013-2016



(Source: RIVM-OSIRIS, notification data)

10.3 Blood donors

Figure 10.4 Hepatitis C incidence and prevalence among regular and new blood donors in the Netherlands, 2007-2015



(Source: Sanquin)

11 Conclusions and recommendations

The STI clinic surveillance data from 2016 show that STI clinics have implemented a stronger focus on high risk groups, as indicated by increasing STI positivity rates, and increases in the proportion of visitors who were notified for STI. Also an increase was seen in the total number of consultations compared to 2015. The increase in consultations was highest among MSM and persons under the age of 25. The number of STI-related consultations in the general practice remained twice as high as the number of consultations at STI clinics. Since 2013, the total number of STI consultations at the general practice showed a slight decrease, contrary to expectations after the implementation of stricter triaging at STI clinics. This might suggest that people who were not allowed to test at STI clinics, do not go to the general practitioner instead but go elsewhere (e.g. online) or do not test for STI. More insight in this possible change in healthcare seeking behaviour is needed.

A new chapter on regional surveillance was added to this report. Consultation rates and STI positivity rates differed strongly between the municipal health service regions in the Netherlands, which can be (at least partially) explained by differences in STI clinic attendee characteristics. Variation across regions was seen in the percentage of attendees with low/medium education level, age, and percentage of attendees who were notified or had STI symptoms. Currently, we are investigating the factors that may explain differences in consultations and positivity rates in regions. Data from the Lifestyle monitor showed that 14 per cent of 20-30 years olds reported having taken an STI test in the last year and 11 per cent an HIV test. These figures were higher in persons that had unsafe sex with a casual partner in the last year (31 per cent for STI and 21 per cent for HIV).¹⁷

Groups that were at high risk of STI, as reflected in their high positivity rates, were persons who reported being notified for an STI, having STI related symptoms, having had an STI in the past year or persons who were previously or newly diagnosed with HIV. High-risk behaviour has not changed among STI clinic attendees, reflected by unchanged proportions of heterosexual clients reporting not having used a condom at their last sex contact (in MSM this proportion declined) and having more than three sex partners in the preceding six months. While this indicates that those at highest risk do find the STI clinics, it also indicates that high-risk behaviour is ongoing. This suggests that further efforts, such as promotion of condom use 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 optimized to maximize the effect of control efforts and to reach those most in need of care.

¹⁷ Rutgers. Kerncijfers leefstijlmonitor seksuele gezondheid [In Dutch]. Utrecht, the Netherlands, 2016.

Partner notification registration at STI clinics effectively identifies a group with high positivity rates: persons notified for STI. A considerable proportion of all STI-clinic clients indicated to have been notified. This shows the importance of partner notification for those infected with an STI in the STI clinic and elsewhere. In case of HIV, sexual contacts of newly diagnosed HIV patients are probably at highest risk of HIV. More efforts are needed at general practitioners, HIV treatment centres and at STI clinics to notify all relevant partners of these patients.

Chlamydia trachomatis remains the most commonly diagnosed bacterial STI, both among high-risk groups at STI clinics and among persons tested at the general practitioner. In the STI clinics, the positivity rate of chlamydia increased in women and heterosexual men, and remained stable in MSM. At general practices, the number of chlamydia episodes stabilized in both men and women. The reporting rate was higher in women under 25 years of age than in women of 25 years and older, while in men rates were similar in both age groups. Surveillance of chlamydia at general practices is hampered by a lack of a specific ICPC-code for chlamydia. Repeated infections in persons previously diagnosed for chlamydia are common, suggesting unchanged risk behaviour, suboptimal treatment of the index and/or partner, or autoinoculation (infection of one anatomic site by another anatomic site within one person).¹⁸ Despite many efforts chlamydia rates do not decline. Since chlamydia is the main STI in heterosexuals, one might consider to focus on the control of the disease (i.e. prevention of long term complications of chlamydia) instead of preventing chlamydia infection. The number of *Lymphogranuloma venereum* (an aggressive variant of chlamydia) cases has increased again at the STI clinics in 2016. Notably, the increase was primarily seen in HIV negative men. Currently, LGV seems to increase steadily while the testing policy remained unchanged. The increase calls for strict adherence to the LGV testing policy. However, adherence to the testing policy (i.e. testing on LGV when anal chlamydia is diagnosed) varied between STI clinics from 42 to 100 per cent in 2016.

Infections with gonorrhoea mainly occur in MSM. At the STI clinics, the positivity rate has increased in MSM in 2016, and is higher than the positivity rate for chlamydia among MSM. The incidence rate of gonorrhoea among men in the general practice surveillance also increased. In women, the incidence of gonorrhoea decreased in the general practice surveillance network. Close surveillance of gonorrhoea trends is of particular importance, as the threat of drug-resistant gonorrhoea is becoming ever more real, since treatment failures with the only available treatment option (third-generation cephalosporin) 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 2004, has not been found at the STI clinics in the Netherlands. Of concern is the increasing azithromycin resistance since 2014, based on GRAS surveillance data, as well as the fact that only one third of positive isolates is successfully tested for resistance in diagnostic cultures. We will pilot innovative sampling techniques in STI clinics and the introduction of standardized diagnostic methods in

¹⁸ Heijne JCM, van Liere GAFS, Hoebe CIPA, Bogaards JA, van Benthem BHB, Dukers-Muijers NHTM. What explains anorectal chlamydia infection in women? Implications of a mathematical model for test and treatment strategies. Sex Transm Infect. 2016 Dec 16. pii: sextrans-2016-052786. doi: 10.1136/sextrans-2016-052786.

laboratories processing samples of GP patients, to improve antibiotic resistance surveillance. For syphilis, attention is required for the further rising number of diagnoses among MSM, especially among HIV-positive MSM but also among HIV-negative MSM. This may be caused by increased risk behaviour within high-risk sexual MSM networks as suggested by the geographical clustering of cases.¹⁹ As a similar trend was observed for gonorrhoea, with increases mainly among MSM, this might indicate that a group of high risk MSM, who might be eligible for PrEP, would need intensive support to prevent a further increase in infections with gonorrhoea and syphilis.

Two thirds of all new HIV diagnoses in the Netherlands occur among MSM. At STI clinics, the highest positivity rate was found among MSM who were notified for HIV. The HIV positivity rate at the STI clinics has declined over the past years. The proportion of MSM STI clinic visitors not tested for HIV previous to their consultation has declined over the years; there is however still a group 'undiagnosed' HIV positives that is not yet reached sufficiently or timely. Compared to MSM, heterosexuals are more often diagnosed late (CD4<350/mm³ or AIDS), especially heterosexual men (57 per cent in 2016) and those diagnosed at general practices or in hospitals. UNAIDS set the 90-90-90 goals (90 per cent diagnosed, of whom 90 per cent received antiretroviral therapy, of whom 90 per cent have an undetectable viral load) by 2020. We are heading towards the first goal and the two other goals are (almost) reached with 88 per cent of patients who retained in care had started antiretroviral therapy of whom 93 per cent have undetectable load. However, these figures differ per region and risk group.²⁰ To increase the percentage of diagnosed HIV positives and to prevent new HIV infections, a multi-sectoral approach is needed combining innovative biomedical and behavioural interventions for HIV testing uptake²¹ including (peer-led) community-based testing, pro-active testing by GPs^{22,23}, and last but not least primary prevention by condom use. Stigma reduction for all STI and especially HIV is still necessary²⁴.

¹⁹ van Aar F, den Daas C, van der Sande MAB, Soetens LC, de Vries HJC, van Benthem BHB. Outbreaks of syphilis among men who have sex with men attending STI clinics between 2007 and 2015 in the Netherlands: a space-time clustering study. *Sex Transm Infect* 2016; advance online publication (ahead of print).

²⁰ Op de Coul E, van Sighem A, Brinkman K, van Benthem BH, van der Ende ME, Geerlings S, Reiss P. Factors associated with presenting late or with advanced HIV disease in the Netherlands, 1996-2014: results from a national observational cohort. *BMJ Open* 2016; 6(1):e009688.

²¹ den Daas C, Doppen M, Schmidt AJ, Op de Coul E. Determinants of never having tested for HIV among MSM in the Netherlands. *BMJ Open* 2016; 6(1):e009480.

²² Joore IK, Twisk DE, Vanrolleghem AM, de Ridder M, Geerlings SE, van Bergen JEAM, van den Broek IV. The need to scale up HIV indicator condition-guided testing for early case-finding: a case-control study in primary care. *BMC Fam Pract* 2016; 17(1):161.

²³ Joore IK, Reukers DF, Donker GA, van Sighem AI, Op de Coul ELM, Prins JM, Geerlings SE, Barth RE, van Bergen JE, van den Broek IVF. Missed opportunities to offer HIV tests to high-risk groups during general practitioners' STI-related consultations: an observational study. *BMJ Open* 2016; 6(1):e009194.

²⁴ Stutterheim SE, Sicking L, Baas I, Brands R, Roberts H, van Brakel WH, Lechner L, Kok G, Bos AE. Disclosure of HIV Status to Health Care Providers in the Netherlands: A Qualitative Study. *J Assoc Nurses AIDS Care* 2016; 27(4): 485-494.

The number of acute hepatitis B notifications slightly increased in 2016, mainly due to an increase in MSM transmission, despite the vaccination programme for MSM. In contrast, the number of acute hepatitis C notifications has decreased in 2016, possibly as a result of the successful treatment to cure HCV infections that is now available for all patients with chronic HCV, irrespective of liver disease stage. Similar to HIV, the WHO goals for HBV and HCV state that by 2030, 90 per cent of all HBV- and HCV-infected people should be diagnosed, 90 per cent of those eligible being treated, of whom 90 per cent should have undetectable viral load. Currently, a national surveillance system to monitor HBV and HCV infections is lacking and therefore no estimations are available to present the continuum of care for hepatitis B and C.

National real-time data from STI clinics, in addition to local alerts, can provide early warning of outbreaks of STI in certain high-risk groups or regions. In 2016, five local alerts were reported in the weekly infectious diseases signal report: one on HAV infections in MSM, one on HIV seroconversion in the AmPrEP trial, two on syphilis clusters among MSM and heterosexuals and one on HCV infections in HIV negative MSM. Visualizing 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 is possible to anonymously identify clients who repeatedly visit the same STI clinic in the national database. This enables gaining more insight in repeated testing behaviour of STI clinic 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. The PIENTER survey will provide a national prevalence estimate for HIV in the Netherlands and the percentage of people unaware of their infection, both important inputs for the continuum of care. Another survey on sexual behaviour and STI (PECAN) carried out by Rutgers, SANL and RIVM will provide a national prevalence estimate for chlamydia together with detailed data on sexual behaviour. The population surveys could give additional information of the STI prevalence in low-risk groups.

Online testing for STI is gaining popularity, and it is important to coordinate efforts to reach the groups making use of this unsupervised way of testing, and provide them with tailored information on sexual health, STI prevention and control, and information on reliable online tests. All these factors are taken into account in the Advieschat²⁵. Incorporating online test use and online test results in STI surveillance is challenging but necessary, since there are indications that people start using these online services more frequently.

²⁵ <https://soatest.advies.chat/>

Recommendations:

- 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 and keep track of lower risk groups/the general population as well.
- Stimulate the systematic culturing of gonorrhoea diagnosed among high-risk groups to prevent the transmission of pandrug-resistant strains.
- Investigate what alternatives for testing and treatment people choose when not eligible for STI care at STI centres.
- Promote timely and complete partner notification, especially for gonorrhoea, syphilis and HIV.
- Stimulate community based testing for HIV as well as pro-active testing by general practitioners to reduce the number of undiagnosed HIV and late presentation into care.
- 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
LCI	Landelijk Centrum Infectieziektebestrijding, National Centre of Infectious Disease Control
LGV	<i>Lymphogranuloma venereum</i>
LSM	LeefStijl Monitor, LifeStyle Monitor
IDS	Laboratory for Infectious Disease and Screening
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
PHS	Public Health Service
PID	Pelvic Inflammatory Disease
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
SHM	Stichting HIV Monitoring, HIV Monitoring Foundation
SOAP	Online STI registration system
STI	Sexually Transmitted Infection
TNO	Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organisation

Appendix B National Surveillance of STI clinics

Coordinating STI clinics

GGD Amsterdam	A.A. Hogewoning
GGD Haaglanden	M. Somsen
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 STI clinics

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
Veiligheids- en Gezondheidsregio Gelderland Midden
Veiligheidsregio Limburg Noord

Laboratories

Academisch Ziekenhuis Maastricht
Albert Schweitzer Ziekenhuis Dordrecht
Amphia Ziekenhuis Breda
Canisius Wilhelmina Ziekenhuis Nijmegen
Centraal Bacteriologisch and Serologisch laboratorium Hilversum
CERTe Medische Diagnostiek & Advies Groningen
Diagnostiek voor U Eindhoven
Erasmus MC Rotterdam
Gelre Ziekenhuizen Apeldoorn
Groene Hart Ziekenhuis Gouda
Haaglanden Medisch Centrum
Isala klinieken Zwolle
Izore, Centrum Infectieziekten Friesland
Jeroen Bosch Ziekenhuis 's-Hertogenbosch
Laboratoria Pathologische Anatomie and Medische Microbiologie Veldhoven
Laboratorium Microbiologie Twente Achterhoek
Laboratorium pathologie (ADZR) Terneuzen
Laboratorium voor Infectieziekten Groningen
Laboratorium voor medische microbiologie & immunologie Admiraal de Ruyter ziekenhuis Goes
Leiden Universitair Medisch Centrum
Meander Medisch Centrum Amersfoort
Medisch Centrum Alkmaar
Medisch centrum Spijkensisse
Slingeland Ziekenhuis Doetinchem
St. Elisabeth Ziekenhuis Tilburg
Star Medisch Diagnostisch Centrum Rotterdam
Streeklaboratorium voor de Volksgezondheid Amsterdam
Streeklaboratorium voor de Volksgezondheid Deventer
Streeklaboratorium voor de Volksgezondheid Haarlem
Radboud Universitair Medisch Centrum
Universitair Medisch Centrum Utrecht
Zaans Medisch Centrum Zaandam

Appendix C HIV Monitoring Foundation

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, J.T.M. van der Meer, 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: J. van Eden, A.M.H. van Hes, M. Mutschelknauss, H.E. Nobel, 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, X.V. Thomas.

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, H.A.M. van Beek.

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

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: A.M.C. van Rossum.

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.

Hiv Focus Centrum (DC Klinieken):

HIV treating physicians: A. van Eeden*.

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

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

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.

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*, B.M.W. Diederens, 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), E. Witte.

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. 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, H. Scholvinck, Y. Stienstra, C.L. Vermont, K.R. Wilting.

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.

Universitair Medisch Centrum 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, UMCU, Utrecht:

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

HIV nurse consultants: N. Nauta.

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Data analysis: D.O. Bezemer, A.I. van Sighem, C. Smit, F.W.M.N. Wit, T.S. Boender.

Data management and quality control: S. Zaheri, M. Hillebregt, A. de Jong.

Data monitoring: D. Bergsma, S. Grivell, A. Jansen, M. Raethke, R. Meijering, T. Rutkens.

Data collection: L. de Groot, M. van den Akker, Y. Bakker, M. Bezemer, E. Claessen, A. El Berkaoui, J. Koops, E. Kruijne, C. Lodewijk, L. Munjshvili, B. Peeck, C. Ree, R. Regtop, Y. Ruijs, M. Schoorl, A. Timmerman, E. Tuijn, L. Veenenberg, S. van der Vliet, A. Wisse, T. Woudstra.

Patient registration: B. Tuk.

Appendix D NIVEL Primary Care Database (NIVEL-PCD)

Data collection and processing

Rodrigo Davids

Gideon Opperhuizen

Researchers

Drs. Sabine de Hoon

Dr. Mark Nielen

Dr. Gé Donker

Project management

Dr. Joke Korevaar

Dr. Robert Verheij

Prof. Dr. Francois Schellevis

Prof. Dr. Dinny de Bakker

Appendix E STI publications (co-)authored by RIVM employees 2016

van den Broek I.V., Sfetcu O., van der Sande M.A.B., Andersen B., Herrmann B., Ward H., Gotz H.M., Uuskula A., Woodhall S.C., Redmond S.M., Amato-Gauci A.J., Low N., van Bergen J.E. Changes in chlamydia control activities in Europe between 2007 and 2012: a cross-national survey. *Eur J Public Health* 2016; 26(3):382-8.

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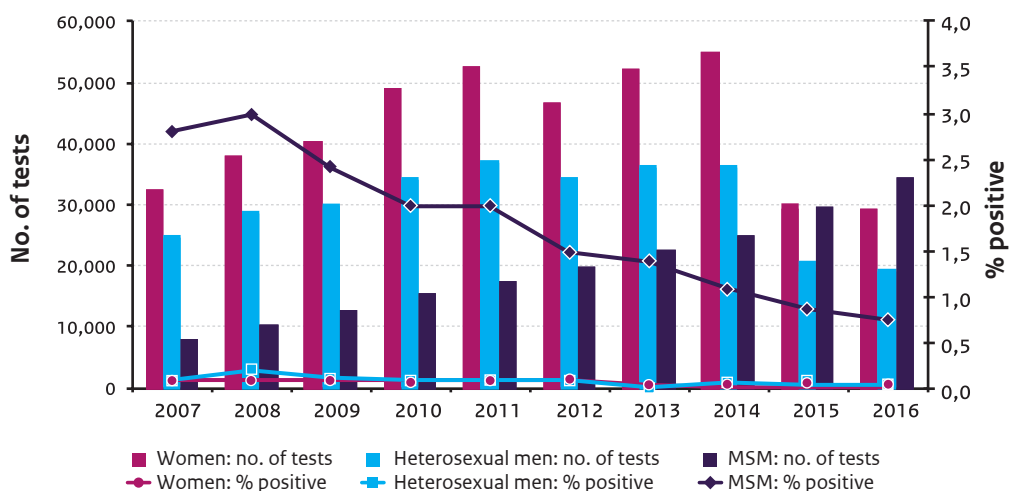
Erratum

Rapport 2017-0003

Sexually transmitted infections including HIV, in the Netherlands in 2016

In figuur 6.1 zijn voor het jaar 2015 abusievelijk de cijfers van het jaar 2016 afgebeeld.
Hieronder de correcte weergave van de figuur.

Figure 6.1 Total number of tests and positivity rate of new HIV cases by gender and type of sexual contact, 2007-2016



Voor akkoord, 03-07-2017

Brigit van Benthem

Afdelingshoofd soa



.....
**M. Visser, F. van Aar, A.A.M. van Oeffelen,
I.V.F. van den Broek, E.L.M. Op de Coul,
S.H.I. Hofstraat, J.C.M. Heijne, C. den Daas,
B.M. Hoenderboom, D.A. van Wees,
M. Basten, P.J. Woestenberg, H.M. Götz,
A.I. van Sighem, S. de Hoon,
B.H.B. van Benthem**
.....

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