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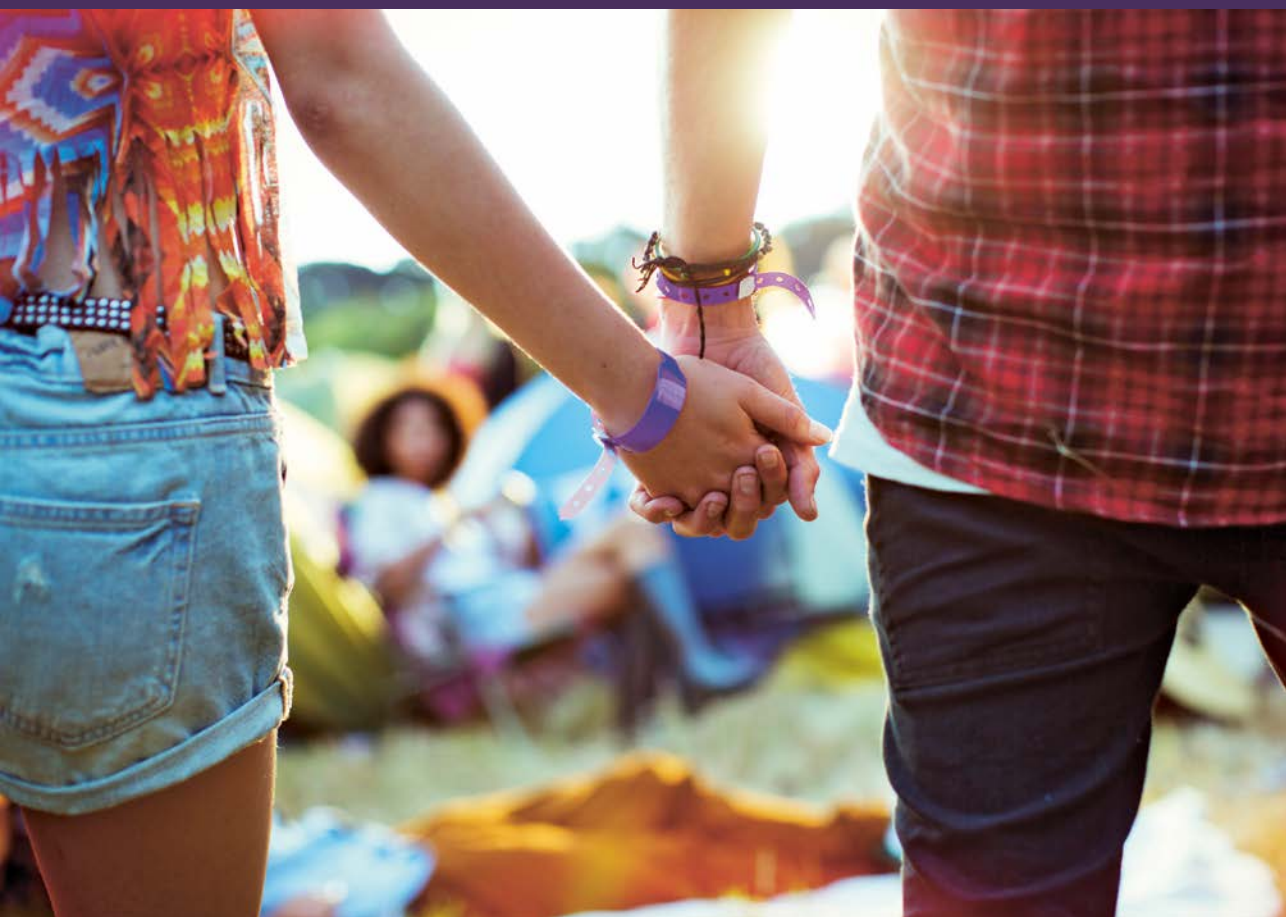
Sexually transmitted infections

including HIV,
in the Netherlands
in 2014



Sexually transmitted infections, including HIV, in the Netherlands in 2014

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Publiekssamenvatting

Seksueel overdraagbare aandoeningen, waaronder hiv, in Nederland in 2014

Het aantal mensen dat zich bij een Centrum Seksuele Gezondheid (CSG) heeft laten testen op een seksueel overdraagbare aandoening (soa) blijft stijgen. Het percentage bij wie een soa wordt aangetroffen neemt eveneens toe, tot 15,5 procent in 2014. De stijgende lijn is ook te zien bij huisartsen, waar nog steeds de meeste soa-consulten worden verricht. Net als in voorgaande jaren is chlamydia de meest voorkomende soa.

De CSG bieden hoog-risicogroepen de mogelijkheid om zich gratis te laten testen op soa's. Daarnaast verstrekken zij medicatie als een soa wordt aangetroffen. In totaal waren er in 2014 141.191 consulten bij de CSG, een stijging van 6 procent ten opzichte van 2013. De meeste soa's zijn geconstateerd bij personen die voor een soa waren gewaarschuwd door een (voormalige) partner en bij hiv-positieve mannen die seks hebben met mannen (MSM).

Chlamydia

In 2014 had 12,6 procent van de CSG-bezoekers een chlamydia-infectie (17.753 diagnoses); een stijging van 0,8 procent ten opzichte van 2013. De grootste toename was te zien bij heteroseksuele mannen (van 12,8 procent in 2013 naar 13,9 procent in 2014). Chlamydia wordt nog steeds het meest aangetroffen bij vrouwen en bij heteroseksuele mannen onder de 25 jaar (15,6 procent had chlamydia). Bij MSM blijft het percentage chlamydia al jaren stabiel, rond de 10 procent.

Gonorroe

Sinds 2012 is het percentage CSG-bezoekers met gonorroe stabiel. Het bedroeg 3,6 procent in 2014 met in totaal 4.594 diagnoses. Gonorroe komt ruim vier keer zo vaak voor bij MSM als bij vrouwen en heteroseksuele mannen. In diverse Europese landen is gonorroe waargenomen die resistent is tegen de voorgeschreven antibiotica. In Nederland is deze resistentie nog niet aangetroffen. Het blijft van belang dit nauwkeurig in de gaten te houden.

Syfilis

Syfilis werd bij de CSG vooral vastgesteld bij MSM (93 procent van de 742 syfilis-diagnoses in 2014). Het percentage MSM met een syfilis-infectie steeg van 2,0 procent in 2013 naar 2,3 procent in 2014. De stijging was het grootst bij hiv-positieve MSM: van 5,8 procent in 2013 naar 6,6 procent in 2014. Van alle MSM met syfilis wist 41 procent dat ze hiv hadden.

Hiv

Het aantal nieuwe hiv-diagnoses bij de CSG is in 2014 met 9 procent gedaald (323 versus 358 in 2013), waarvan bijna 90 procent werd aangetroffen bij MSM. Het percentage nieuwe hiv-diagnoses bij MSM daalde van 3,0 procent in 2008 naar 1,1 procent in 2014. Het aantal nieuwe hiv-diagnoses daalde ook bij de Nederlandse hiv-behandelcentra (van 1.311 in 2008 naar 992 in 2013).

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

Synopsis

Sexually transmitted infections, including HIV, in the Netherlands in 2014

The number of people who got tested for a sexually transmitted infection (STI) at a Dutch STI clinic increased further in 2014. In addition, the percentage of consultations resulting in an STI diagnosis increased slightly to 15.5 per cent in 2014. General practitioners, who carry out the majority of STI consultations in the Netherlands, report a similar upward trend. As in previous years, chlamydia was the most frequently diagnosed STI.

STI clinics offer free STI testing to high-risk groups and provide care and treatment if an STI is diagnosed. The total number of STI clinic consultations in 2014 was 141,191, an increase of 6 per cent compared to 2013. In 2014, STI clinic attendees who were diagnosed with an STI were mainly people who had been warned of possible STI exposure by their (former) partner, and known HIV-positive men who have sex with men (MSM).

Chlamydia

In 2014, 12.6 per cent of STI clinic attendees had a chlamydia infection (17,753 diagnoses). This figure represents an increase of 0.8 percentage points compared to 2013. The greatest increase was observed in heterosexual men (from 12.8 per cent in 2013 to 13.9 per cent in 2014). Chlamydia was primarily diagnosed in women and in heterosexual men below 25 years of age (15.6 per cent diagnosed with chlamydia). The percentage of MSM diagnosed with chlamydia has remained stable for years at around 10 per cent.

Gonorrhoea

The percentage of STI clinic attendees with a gonorrhoea infection has remained stable since 2012, and amounted to 3.6 per cent in 2014 with a total of 4,594 diagnoses. Gonorrhoea is over four times more common in MSM than in women and heterosexual men. Increased resistance to the antibiotics prescribed to treat gonorrhoea infections has been observed in several European countries, but not yet in the Netherlands. It remains important to closely monitor antibiotic resistance.

Syphilis

Syphilis was mainly diagnosed among MSM, who accounted for 93 per cent of the 742 cases diagnosed at STI clinics in 2014. The percentage of MSM with a syphilis infection increased from 2.0 per cent in 2013 to 2.3 per cent in 2014. The greatest rise was observed in known HIV-positive MSM: from 5.8 per cent in 2013 to 6.6 per cent in 2014. Of all MSM with syphilis, 41 per cent were known HIV-positives.

HIV

In 2014, the number of people newly diagnosed with HIV at STI clinics decreased by 9 per cent (from 358 cases in 2013 to 323 in 2014). MSM accounted for nearly 90 per cent of this group. The percentage of new HIV diagnoses in MSM decreased from 3.0 per cent in 2008 to 1.1 per cent in 2014. The number of new HIV diagnoses at Dutch HIV treatment centres also declined (from 1,311 in 2008 to 992 in 2013).

Keywords: STI, MSM, chlamydia, gonorrhoea, HIV, resistance, young people, monitoring, STI clinic

Preface

This annual report provides an overview of the epidemiology of sexually transmitted infections (STI), including HIV, in the Netherlands in 2014. The data presented are derived from the national STI surveillance database and other sources registering STI and HIV in the Netherlands, such as general practices, the antenatal screening programme and HIV treatment centres, and from notifications. 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 a set of recommendations are given.

We hope that this report will contribute to further awareness of the distribution and causes of STI, including HIV, in the Netherlands, resulting in the development and targeting of (preventative) interventions, and enabling an 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. This report can also be downloaded in PDF format from www.soahiv.nl.

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 organizations for their continuing collaboration in collecting data: the STI clinics (STI clinics and Public Health Services), Stichting HIV Monitoring (SHM) and GGD Nederland. We also thank SOA AIDS Nederland, Rutgers WPF, HIV Vereniging, the Netherlands Institute for Health Services Research (NIVEL), general practices participating in the NIVEL Primary Care Database, the Dutch Working Group on Clinical Virology and the other units at the Centre for Infectious Disease Control – the Laboratory for Infectious Disease and Screening (CIb/IDS) and the Preparedness and Response Unit (CIb/LCI) – for their support. Furthermore, we would like to thank Petra Oomen for the data on pregnant women (Praeventis), Joke Korevaar, Gé Donker and Rodrigo Davids for NIVEL Primary Care Database (PCD) data and analysis, Paul van Beek and Anouk Urbanus for the data on participants in the HBV vaccination programme and Alies van Lier and Scott McDonald for their help with the Burden of Disease calculation. Also, Daan Notermans, Audrey King (all CIb/IDS) and Silke David (CIb/LCI) are thanked for their contributions.

Comments
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Samenvatting

In 2014 werden in totaal 141.191 soa-consulten uitgevoerd bij de Centra Seksuele Gezondheid (CSG), een stijging van 6 procent ten opzichte van 2013. Ook het percentage personen met een positieve soa-test (chlamydia, gonorroe, infectieuze syfilis, hepatitis B of hiv) nam toe, van 14,7 procent in 2013 naar 15,5 procent in 2014. De CSG zijn bedoeld voor hoogrisicogroepen die in de reguliere zorg niet voldoende bereikt worden. Om deze groepen te bereiken passen de CSG een landelijk afgestemd triagesysteem toe. De hoogrisicogroepen - waaronder mannen die seks hebben met mannen (MSM) (21 procent van de bezoekers in 2014), personen afkomstig uit soa/hiv-endemische gebieden (24 procent van de bezoekers in 2014) en jongeren tot 25 jaar (49 procent van de bezoekers in 2014) - worden gratis getest.
Huisartsendata laten zien dat het totaal aantal soa-gerelateerde episodes die bij de huisarts worden geregistreerd (gebaseerd op een selectie van huisartspraktijken en geëxtrapoleerd naar de Nederlandse populatie) groter is dan het aantal bij de CSG, met naar schatting 290.000 soa-gerelateerde episodes (soa-infecties en 'angst voor soa/hiv') in 2013 (data van 2014 zijn nog niet beschikbaar). Ook dit aantal is toegenomen tussen 2012 en 2013. De huisarts bereikt sommige hoogrisicogroepen goed, zoals jongeren onder de 25 jaar, maar andere hoogrisicogroepen, zoals MSM en sekswerkers, naar verhouding minder goed.

Bacteriële soa

In 2014 was chlamydia opnieuw de meest gediagnosticeerde bacteriële soa bij de CSG met 17.753 gerapporteerde gevallen. Het percentage positieve testen steeg van 11,8 procent in 2013 naar 12,6 procent in 2014. De hoogste percentages positieve testen werden gezien onder vrouwen en heteroseksuele mannen (respectievelijk 12,9 en 13,9 procent). De meerderheid van de chlamydia-infecties werd bij jongeren onder de 25 jaar gediagnosticeerd (59 procent). *Lymphogranuloma venereum* (LGV), een agressieve variant van anale chlamydia die met name bij hiv-geinfecteerde MSM voorkomt, wordt sinds de eerste diagnose in 2004 nog steeds regelmatig gevonden. In 2014 was er een lichte toename in het percentage LGV-positieven onder de geteste MSM met anorectale chlamydia: 7,4 procent versus 6,7 procent in 2013. Het geschatte aantal chlamydia-episodes bij de huisarts is in 2013 onder vrouwen licht gedaald (22.400 versus 24.100 in 2012); bij mannen was juist een lichte stijging te zien (15.800 versus 14.400 in 2012).
Gonorroe was na chlamydia de meest gediagnosticeerde bacteriële soa bij de CSG. In 2014 werden 4.594 gonorroe diagnoses gesteld, waarvan 61,9 procent bij MSM, 22,6 procent bij vrouwen en 15,5 procent bij heteroseksuele mannen. Tussen 2008 en 2012 was er een toename te zien in het percentage positieve gonorroetesten bij de CSG. Sinds 2012 is dit percentage stabiel gebleven, tussen de 3,4 en 3,6 procent. Gonorroe werd vooral gediagnosticeerd bij MSM: 9,5 procent testte positief (9,3 procent in 2013), vergeleken met 1,9 procent van de heteroseksuele mannen (1,7 procent in 2013) en 1,8 procent van de vrouwen (1,8 procent in 2013). Ook komt gonorroe vaak voor bij sekswerkers (4,3 procent). Het geschatte aantal gonorroe-episodes bij de huisarts is tussen 2009 en 2013 sterk toegenomen, zowel bij vrouwen als bij mannen (van in totaal 4.900 in 2009 naar 8.300 in 2013). Tot nu toe is er in Nederland

nog geen resistentie gerapporteerd voor ceftriaxone, de huidige eerste keus-cefalosporine voor de behandeling van gonorroe. Monitoring van antibioticaresistentie bij gonorroe blijft van belang, zeker gezien de gerapporteerde resistentie tegen derde generatie-cefalosporines in Europa.
Na stabilisering van het percentage positieve testen voor infectieuze syfilis bij de CSG tussen 2011 en 2013 (2,0 procent), steeg het percentage in 2014 licht naar 2,3 procent. Deze stijging was het grootst bij hiv-positieve MSM: van 5,8 procent in 2013 naar 6,6 procent in 2014. In totaal werden er in 2014 742 infectieuze syfilis diagnoses gesteld, waarvan 93 procent bij MSM. Van alle MSM met syfilis was 41 procent bekend hiv-positief.

Virale soa, inclusief hiv

In 2014 werden bij de CSG 323 nieuwe hiv-diagnoses gesteld, waarvan 86 procent bij MSM. Het percentage positieve hiv-testen bij MSM neemt nog steeds af: van 3,0 procent in 2008 naar 1,1 procent in 2014. Bij heteroseksuele mannen en vrouwen bleef dit percentage lager dan 0,1 procent. Bij 24 procent van de nieuw gediagnosticeerde hiv-positieve MSM die de CSG bezochten werd bij hetzelfde consult ook een chlamydia-infectie gevonden, bij 20 procent een gonorroe-infectie en bij 7 procent een syfilis-infectie.
In 2014 werden 1.076 nieuwe aanmeldingen van hiv-positieve personen in zorg gerapporteerd in de nationale hiv-registratie bij de Stichting HIV Monitoring (een afname van 9 procent vergeleken met 2013), waarvan er 719 ook gediagnosticeerd waren in 2014. Van alle nieuw geregistreerde hiv-patiënten was 68 procent MSM en 25 procent heteroseksueel. Eind 2014 waren in totaal 22.948 personen met hiv in Nederland geregistreerd in zorg. Hiv-positieve MSM geregistreerd in zorg werden meestal gediagnosticeerd bij één van de CSG (42 procent), terwijl dit bij hiv-positieve vrouwen en heteroseksuele mannen het vaakst in een ziekenhuis werd gedaan (respectievelijk 47 en 52 procent). Het aandeel personen met hiv dat laat in zorg kwam (<350 CD4 cellen/mm^3) is tussen 2012 en 2014 gedaald bij vrouwen en MSM (tot respectievelijk 52 en 29 procent in 2014), maar gestegen bij heteroseksuele mannen (tot 78 procent in 2014). Het totale aantal aids-diagnoses is de laatste jaren gedaald van 358 in 2005 naar 216 in 2013. In 2014 waren dit er tot nu toe 134 (nog onvolledig door rapportagevertraging).
Het aantal diagnoses van genitale wratten en genitale herpes bij de CSG nam in 2014 af naar respectievelijk 2.029 en 479 (dit was 2.057 en 612 in 2013). Hierbij moet worden opgemerkt dat onderzoek naar genitale wratten en genitale herpes alleen op indicatie gebeurt, waardoor het aantal diagnoses niet vergelijkbaar is met die van bacteriële soa en hiv, waarop routinematig getest wordt. Het merendeel van de diagnoses voor genitale wratten en genitale herpes wordt gesteld bij de huisarts: hier waren 36.500 geschatte diagnoses voor genitale wratten en 22.400 geschatte diagnoses voor genitale herpes in 2013 (een stijging van respectievelijk 36 en 38 procent ten opzichte van 2009).
Het aantal gerapporteerde acute hepatitis B-gevallen in de aangiftecijfers nam met 13 procent af van 144 in 2013 naar 126 in 2014; het aantal gerapporteerde acute hepatitis C-gevallen nam in deze periode met 20 procent af van 62 naar 50.

Concluderend, het aantal soa-consulten neemt nog steeds toe. Na stabilisatie van het percentage CSG-bezoekers met een soa in 2013, is er in 2014 weer een stijging te zien. Dit is voornamelijk toe te schrijven aan het toegenomen percentage bezoekers met een chlamydia-infectie. De meeste soa worden bij de huisarts gediagnosticeerd en het aantal diagnoses neemt ook hier toe (vooral door de stijging in het aantal gonorroe-, genitale wratten- en genitale herpesdiagnoses). Een intensieve soa-surveillance blijft essentieel om zicht te houden op opkomende soa, uitbraken en trends. De bestrijding zou daarnaast ondersteund kunnen worden door: het verder faciliteren van toegankelijke soa-zorg (bijvoorbeeld E-health); het verbeteren van tijdige waarschuwing voor mogelijke soa-uitbraken in het nationale soa-surveillancesysteem; gerichte interventies tot het verminderen van stigma rondom soa en hiv; het opsporen van ongediagnosticeerde hiv-infecties; het inzichtelijk maken van lange termijngevolgen van chlamydia; het systematisch kweken van de gonorroe die wordt gevonden bij hoogrisicogroepen om overdracht van resistente stammen te voorkomen; het integreren van soa-screening met hiv-zorg; en het voorbereiden op de mogelijke invoering van Pre-Exposure Prophylaxis (PrEP).

Summary

In 2014, 141,191 STI consultations were performed at Dutch STI clinics, an increase of 6 per cent over 2013. The percentage of people testing positive for STI (chlamydia, gonorrhoea, infectious syphilis, hepatitis B or HIV) also increased, from 14.7 per cent in 2013 to 15.5 per cent in 2014. The STI clinics target high-risk groups by patient selection based on a standardized list of criteria. High-risk groups, such as men having sex with men (MSM) (21 per cent of all attendees in 2014), people originating from STI/HIV-endemic areas (24 per cent of all attendees in 2014), and people under 25 years of age (49 per cent of all attendees in 2014) are tested free of charge. Data from general practices show that the total number of STI-related episodes at general practices (based on a selection of general practices in the Netherlands and extrapolation to the total Dutch population) is much larger than the numbers reported at STI clinics, with an estimation of 290,000 STI-related episodes (STI infections and 'fear of STI/HIV') in 2013 (data from 2014 are not available yet). This number also increased between 2012 and 2013. General practices reach certain high-risk groups quite well, like people under 25 years of age, but other high-risk groups, like MSM and commercial sex workers (CSW), are reached better by STI clinics. Besides data from the STI clinics and general practices, data from facilities providing regular care, such as HIV treatment centres and other surveillance sources, are also reported.

Bacterial STI

With 17,753 reported cases, chlamydia remained the most commonly diagnosed bacterial STI at STI clinics in 2014. The overall positivity rate increased from 11.8 per cent in 2013 to 12.6 per cent in 2014. The highest positivity rates were found in women and heterosexual men (12.9 per cent and 13.9 per cent, respectively). The majority of chlamydia cases were diagnosed in people younger than 25 years of age (59 per cent). *Lymphogranuloma venereum* (LGV), an aggressive strain of anal chlamydia mainly present in HIV-infected MSM, has been found frequently since the first LGV case in 2004. In 2014, there was a slight increase in the percentage of LGV positives among MSM with anorectal chlamydia: 7.4 per cent versus 6.7 per cent in 2013. In general practices, a slight decline in estimated chlamydia episodes was reported in women (24,100 in 2012 versus 22,400 in 2013); in men there was a slight increase (14,400 in 2012 versus 15,800 in 2013).

Gonorrhoea was the second most common bacterial STI identified at STI clinics. In 2014, 4,594 gonorrhoea cases were reported, 61.9 per cent in MSM, 22.6 per cent in women and 15.5 per cent in heterosexual men. After an increase in positive gonorrhoea tests between 2008 and 2012 at STI clinics, this percentage has remained stable since 2012, between 3.4 and 3.6 per cent. Gonorrhoea was most prevalent among MSM: 9.5 per cent tested positive (9.3 per cent in 2013), compared with 1.9 per cent of the heterosexual men (1.7 per cent in 2013) and 1.8 per cent of the women (1.8 per cent in 2013). Gonorrhoea was also frequently diagnosed in CSW (4.3 per cent). The estimated number of gonorrhoea episodes at general practices increased markedly between 2009 and 2013, in both men and women (from 4,900 in 2009 to 8,300 in 2013). Monitoring antimicrobial resistance in gonorrhoea remains important, especially given the reports of resistance to third-generation cephalosporins in Europe. So far, no resistance to ceftriaxone,

the first-choice cephalosporin to treat gonorrhoea, has been found in the Netherlands.
After a stabilization of positive infectious syphilis tests at STI clinics between 2011 and 2013 (2.0 per cent), this percentage increased slightly, to 2.3 per cent, in 2014. The greatest increase was seen among HIV-positive MSM: from 5.8 per cent in 2013 to 6.6 per cent in 2014. A total of 742 infectious syphilis cases were diagnosed in 2014, 93 per cent of them in MSM. Of all MSM with syphilis, 41 per cent were also known HIV-positive.

Viral STI, including HIV

At the STI clinics, 323 HIV infections were diagnosed in 2014, of which 86 per cent were MSM. The HIV positivity rate among MSM continued to decrease: from 3.0 per cent in 2008 to 1.1 per cent in 2014. The positivity rate in heterosexual men and women remained lower than 0.1 per cent. Of the newly diagnosed HIV-positive MSM consulting the STI clinics, 24 per cent were co-infected with chlamydia, 20 per cent with gonorrhoea and 7 per cent with syphilis. In 2014, 1,076 HIV-infected people in care were newly registered in the national database of the HIV treatment centres (SHM) (a decline of 9 per cent compared with 2013); 719 of them were diagnosed in 2014. The proportion of MSM among the newly registered was 68 per cent; 25 per cent were heterosexuals. At the end of 2014, a cumulative total of 22,948 HIV patients had been registered in care in the Netherlands. Whereas HIV-positive MSM in care were most often diagnosed at STI clinics (42 per cent), HIV-positive women and HIV-positive heterosexual men were most often diagnosed in hospitals (47 and 52 per cent, respectively). The proportion of patients diagnosed late (<350 CD4 cell counts/mm^3) decreased between 2012 and 2014 in women and MSM (to 52 and 29 per cent in 2014, respectively), but increased in heterosexual men (to 78 per cent in 2014). The number of AIDS diagnoses declined from 358 in 2005 to 216 in 2013. In 2014, there were 134 cases so far (incomplete due to reporting delay).
The number of genital warts and genital herpes diagnoses at STI clinics decreased in 2014 to 2,029 and 479, respectively (from 2,057 and 612 in 2013). These two STIs are tested on indication only, so the number of diagnoses is not comparable with those of bacterial STI and HIV (routinely screened). The majority of genital warts and genital herpes cases are diagnosed at general practices: in 2013, there were 36,500 diagnoses of genital warts and 22,400 diagnoses of genital herpes estimated (an increase of 36 and 38 per cent since 2009, respectively).
The number of cases of acute hepatitis B in the notification data decreased by 13 per cent, from 144 in 2013 to 126 in 2014; the number of reported cases of acute hepatitis C declined in this period by 20 per cent, from 62 to 50.

In conclusion, the number of STI consultations shows an increasing trend. Among consultations at STI clinics, the percentage of clients with a positive STI test, which had stabilized in 2013, rose again in 2014. This increase is mainly accountable to an increase in the percentage of people with a chlamydia infection. The majority of STIs are diagnosed at general practices and this number is also increasing (mainly accountable to a rise in gonorrhoea, genital warts and genital herpes diagnoses). Strong STI surveillance remains essential to monitor emerging STIs and relevant trends. STI control could be supported by: further facilitating access to STI care (e.g. E-health); improving the efficiency of the national surveillance system for earlier warning of possible STI outbreaks; targeted interventions to diminish stigma related to STI and HIV; reducing the number of undiagnosed HIV infections; gaining more insight into the long-term

sequelae of chlamydia infection; systematically culturing gonorrhoea diagnosed in high-risk groups to prevent the transmission of drug-resistant strains; integrating STI screening into HIV care; and preparing for the possible implementation of Pre-Exposure Prophylaxis (PrEP).

Introduction

This report describes current trends in the epidemiology of STIs, 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 collaborates with various partners in the field of STI to collect data for surveillance and to generate insights into trends and determinants: the STI clinics, the Stichting HIV Monitoring (SHM), public health laboratories, general practices participating in the NIVEL-PCD 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 STI data – from general practices, surveys, screening programmes, national registries, cohort studies and other surveillance systems – are included where possible. Together they provide an overview of the current state of STI, including HIV, in the Netherlands. Preliminary data were presented in the *Thermometer Seksuele Gezondheid* (April 2015).

Outline of the report

Section 1 describes the methodology of each data source used for STI surveillance in the Netherlands. In Section 2, the characteristics of the STI clinic attendees and data from sexual health consultations among young people (Sense) in 2014 are presented, along with data from general practices for 2009-2013 and trends in specific risk groups between 2004 and 2014. Sections 3-5 present data on bacterial STI (chlamydia, gonorrhoea and syphilis) and Sections 6-10 focus on viral STI (HIV, genital warts, genital herpes and hepatitis B and C). Section 11 shows the Burden of Disease for STIs since 2007. Conclusions and recommendations are given in Section 12.

1 Methodology of STI and HIV surveillance

The tables and figures in this report are based on a variety of data sources in order to present an up-to-date overview of the sexually transmitted infections (STI)/human immunodeficiency virus (HIV) situation in the Netherlands. The foundation of this overview is the systematic surveillance of high-risk groups carried out by the nationwide system of STI clinics. Data from general practices, who perform the bulk of STI consultations, are extrapolated from the Netherlands Institute for Health Services Research (NIVEL) Primary Care Database (NIVEL-PCD). We have also included data from the HIV treatment clinics (Stichting HIV Monitoring (SHM)) to gain insights into trends among HIV patients in care. Other data sources include Sense, weekly virological laboratory reports, the Gonococcal Resistance to Antimicrobials Surveillance programme (GRAS), antenatal screening, 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 in the Netherlands have been registered in an STI database at the National Institute for Public Health and the Environment (Rijksinstituut voor Volksgezondheid en Milieu, RIVM). In 2003, an STI sentinel surveillance system was put in place and this achieved national coverage with the inclusion of all STI clinics in 2004. Since 2006, reporting to the national STI surveillance system has been organized into eight regions. One of the STI clinics in each region is responsible for the coordination of STI surveillance (Figure 1.1). In total, 26 STI clinics, mostly within the Public Health Services' Centres for Sexual Health, provide low-threshold STI/HIV testing and care, which is free of charge and targeted at high-risk groups. People meeting any of the following criteria are considered to be at high risk of STI acquisition: (1) reporting STI-related symptoms, (2) notified or referred for STI testing, (3) aged below 25 years, (4) MSM, (5) involved in commercial sex, (6) originating from an HIV/STI-endemic area, (7) reporting three or more sexual partners in the previous six months, (8) reporting a partner from one of these risk groups. Since 2012, people who do not meet any of the risk criteria, but want to be tested anonymously, have no longer been eligible for STI testing at an STI clinic. Attendees are routinely tested for chlamydia, gonorrhoea and syphilis and there is an opt-out policy for HIV testing. Since 2012, attendees below the age of 25 years who do not meet any of the other high-risk criteria have been tested initially for chlamydia only. If the chlamydia test result is positive, further testing for gonorrhoea, syphilis and HIV will take place. These changes in testing policy in 2012 may have caused a break in trend data for this group. This needs to be taken into account when interpreting trends. Hepatitis B (HBV) and hepatitis C (HCV), genital warts, genital herpes, trichomonas and *Lymphogranuloma venereum* (LGV) are tested on indication only. Until 2010, ethnicity was self-reported. Since 1 January

Figure 1.1 The eight regions, with their coordinating STI clinics indicated

- Regio Noord - GGD Groningen
- Regio Noord-Holland en Flevoland - GGD Amsterdam
- Regio Noordelijk Zuid-Holland - GGD Den Haag, Dienst OCW
- Regio Zuidelijk Zuid-Holland - GGD Rotterdam-Rijnmond
- Regio Zeeland Brabant - GGD Hart voor Brabant
- Regio Utrecht - GG & GD Utrecht
- Regio Oost - GGD Nijmegen
- Regio Limburg, GGD Zuid Limburg

2011, ethnicity is based on the country of birth of the client and client's parents. The 2011-2014 data can therefore not be directly compared with those of previous years.
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 anonymized 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 the identification of clients who test repeatedly. However, since the scheme underwent an implementation phase in the first six months of 2014, the data that include these identification numbers are incomplete for 2014. We discuss the number of repeated testers and STI positivity by number of consultations in Section 2. Since the data with the identification numbers are incomplete for 2014, the number of repeated testers indicated may be an underestimation.
In this report, data from the national surveillance of STI clinics are presented with respect to the number and nature of new consultations and diagnoses. Trends in positivity rates by risk profile (based on demographic and behavioural indicators) are based on data from the STI clinics under national surveillance from 2004 to 2014. 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.

1.2 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 address themselves to 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 or sexual violence. Data on the number and the demographics of Sense visitors are presented. In 2014, demographic information and the subject of Sense consultations were added to the national STI/HIV database.

1.3 STI surveillance in general practice

Data on the incidence of STIs in general practice are obtained through the primary care surveillance network maintained at NIVEL, based on electronic patient registers in a network of general practices, the NIVEL-PCD (NIVEL Zorgregistraties eerste lijn).[1,2] The network uses routinely recorded data from health care providers to monitor health and the utilization of health services in a representative sample of the Dutch population. All complaints and illnes-

[1] See website: https://www.nivel.nl/NZR/zorgregistraties-eerstelijn.

[2] Verheij, R.A. Over NIVEL Zorgregistraties; geschiedenis en achtergrond. In: NIVEL Zorgregistraties eerste lijn [internet]. 2013 [updated 11-11-2014; accessed 09-04-2015]. URL: www.nivel.nl/node/3464

ses are recorded using the International Classification of Primary Care (ICPC-1). Since 2010, the network of general practices has gradually expanded from 120 to over 400 practices. Data on the incidence of STI episodes in the population covered by this network from 2009 to 2013 are included in this annual report. This is restricted to data from practices with good quality morbidity data, which numbered 69 in 2009, 103 in 2010, 191 in 2011, 312 in 2012 and 356 in 2013. From these data, incidence figures were calculated using an adjusted (improved) procedure based on the number of reported episodes per 1,000 patient-years.[3] Annual estimates of the total number of episodes seen at general practices in the Netherlands were made by extrapolating the incidence rates in these practices to the total number of Dutch residents, obtained from Statistics Netherlands (CBS), and are reported by gender.
For syphilis and HIV, the number of cases reported was too small for reliable estimates of the incidence at general practices. For HIV we report prevalence data based on estimates from the 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 looked at 'chlamydia-related' ICPC codes, which include the codes for vaginitis (X84), cervicitis (X85) and Pelvic Inflammatory Disease (PID) (X74) in women, and for orchitis/epididymitis (Y74) and other genital diseases (Y99) in men.[4] For each code we calculated the proportion of:

- ICPC-specific subcodes for chlamydia (subcodes are not consistently registered by all general practices and are not required to fulfil quality criteria).
- ICPC main codes with an appropriate chlamydia-related prescription, i.e. azithromycin or doxycycline, combined with an ICPC code for chlamydia-related diseases, urethritis or penile discharge in the prescription database, among practices with good quality morbidity and prescription data (from 67 to 340 practices in 2009-2013). This is different from previous years, when we included six different prescriptions.
- Laboratory results, i.e. a positive outcome of a chlamydia test, also restricted to a selection of practices with sufficient laboratory reports (from 26 to 140 practices in 2009-2013).

The sum of these proportions was used to estimate the number of chlamydia episodes within each of the five ICPC main codes.
More detailed data on STI consultations at general practices are also reported. These derive from a subgroup of practices within the NIVEL-PCD, who participate in a more intensive data collection programme for surveillance (NIVEL peilstations). Since 2008, the 45 general practices participating in this specific sentinel network have completed a questionnaire for new consultations concerning STI/HIV issues. The information recorded includes background details on patient characteristics with reference to ethnicity, sexual preference and sexual

[3] Nielen M.M.J., Spronk I., Davids R., Zwaanswijk M., Verheij R.A., Korevaar J.C. Verantwoording incidentie en prevalentie cijfers van gezondheidsproblemen in de Nederlandse huisartsenpraktijk in 2013. In: NIVEL Zorgregistraties eerste lijn [internet]. 2013 [updated 17-12-2014; accessed 09-04-2015]. URL: www.nivel.nl/node/3619

[4] van den Broek I.V.F., Verheij R.A., van Dijk C.E., Koedijk F.D.H., van der Sande M.A.B., van Bergen J.E.A.M. Trends in sexually transmitted infections in the Netherlands, combining surveillance data from general practices and sexually transmitted infection centers. BMC Family Practice, 2010, 11:39.

behaviour, the STI testing carried out and the diagnosis made.[5] We report the main results regarding patient profiles, testing rates and positivity, as well as trends from 2008 to 2013.

1.4 Laboratory surveillance

The only national laboratory surveillance data available for STI are those from the weekly virological reports, which include the total number of *Chlamydia trachomatis* positive tests. Data from 20 laboratories (covering an estimated 40 per cent of the virology laboratories in the Netherlands) consistently reporting since 2000 were analysed.[6] There is overlap between the laboratories reporting in this system and the laboratories connected to the STI clinics.

1.5 Antimicrobial resistance of gonococci

Concern that there was increasing resistance to quinolones at (inter)national level led to an RIVM laboratory survey of the resistance of gonococci in 2002. The results indicated a need for systematic nationwide surveillance of gonococcal antimicrobial resistance, and 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. The diagnosis of gonorrhoea is made by culture or PCR on patients' materials. Susceptibility testing of the isolates is performed by E-tests for 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 was also made optional. Resistance levels are calculated using the EUCAST breakpoints for resistance.[7]

1.6 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, the results from 1997–2014 are presented.

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[5] Trienekens S.C., van den Broek I.V., Donker G.A., van Bergen J.E., van der Sande M.A. Consultations for sexually transmitted infections in the general practice in the Netherlands: an opportunity to improve STI/HIV testing. BMJ Open. 2013 Dec 30;3(12):e003687. doi: 10.1136/bmjopen-2013-003687.

[6] Virologische weekstaten, http://www.rivm.nl/Onderwerpen/Onderwerpen/S/Surveillance_van_infectieziekten/Virologische_weekstaten, [accessed 29-3-2015].

[7] European Committee on Antimicrobial Susceptibility Testing (EUCAST). Breakpoint tables for interpretation of MICs and zone diameters. Version 3.1, 2013. Växjö: EUCAST; 2013. Available from: http://www.eucast.org/fileadmin/src/media/PDFs/EUCAST_files/Breakpoint_tables/Breakpoint_table_v_3.1.pdf [accessed 2-9-2014].

1.7 Antenatal screening

Each year, around 185,000 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 be tested. Almost all pregnant women in the Netherlands participate in this infectious diseases screening programme.[8,9] The screening programme is coordinated by the Centre for Population Screening (CvB) at the RIVM.

1.8 National registration of patients registered at HIV treatment centres

In January 2002, an anonymous HIV/AIDS reporting system for patients entering care was implemented in the Netherlands. Longitudinal data of all newly registered HIV-infected individuals are collected by SHM (www.hiv-monitoring.nl). The goal of SHM is to monitor HIV-infected individuals registered in the 27 recognized HIV treatment centres and four children's centres in the Netherlands in order to study changes in the epidemic, the natural history of HIV and the effects of treatment.
All HIV-infected individuals registered in this cohort are followed from the time of reporting in care. HIV-infected individuals in care who were diagnosed before the start of SHM have been included in the cohort retrospectively. HIV cases diagnosed before 1996 include only people who survived up to the start of the AIDS Therapy Evaluation in the Netherlands (ATHENA) clinical cohort in 1996. The epidemiological data on newly reported HIV infections, as well as trends in new AIDS diagnoses since 2000, are reported in collaboration with the CIb at the RIVM. Between 1987 and 2002, AIDS cases were reported on a voluntary basis to the Inspectorate of Health (National AIDS Registry, IGZ). With the start of the SHM monitoring system in 2002 the National AIDS Registry was ended. In this report, AIDS cases from 1999 or earlier are obtained from the National AIDS Registry. From 2000, AIDS cases recorded through the SHM monitoring system are used. Data on deaths among HIV/AIDS patients from 2002 onwards are obtained through the SHM; before 2002 from National Statistics Netherlands (www.cbs.nl).

[8] van der Ploeg C.P.B. (TNO), Schonbeck Y. (TNO), Hirschberg H. (RIVM). Procesmonitor PSIE 2013. Belangrijkste resultaten Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE). TNO/RIVM 2015.

[9] Op de Coul E.L.M. , van Weert J.W.M., Oomen P.J. et al. Prenatale screening op hiv, hepatitis B en syfilis in Nederland effectief. Ned Tijdsch Geneeskd 2010; 154(48): 2219–2225.

1.9 HIV incidence data

HIV incidence data are obtained from the Amsterdam Cohort Studies (ACS) on HIV/AIDS, which started in 1984 with men who have sex with men (MSM) and were expanded in 1985 to include drug users (DU). 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 men and women. In the past decade, the focus has broadened to include the epidemiology and natural history of blood-borne infections and STIs other than HIV. In recent years, this research has been extended to include prospective testing for STI and human papillomavirus infection.
From the outset, research in the ACS has taken a multidisciplinary approach. The collaborating institutes within the ACS framework are the Sanquin Blood Supply Foundation, the Public Health Service of Amsterdam (PHS Amsterdam; GGD Amsterdam), the Academic Medical Centre of the University of Amsterdam, the University Medical Centre Utrecht, the Jan van Goyen Medical Centre, the HIV Focus centre (DC clinics) in Amsterdam, and Stichting HIV Monitoring (SHM). The ACS infrastructure is financed primarily through a contribution from the RIVM; each participating institute also makes a financial contribution. The scientific studies are funded separately by external bodies.

1.10 Notification of hepatitis B and C

The obligatory notification includes epidemiological data on newly diagnosed acute HBV infections (since 1976), chronic HBV infections and acute HCV infections (both since April 1999). Since 2002, all PHS have notified HBV and HCV infections by using the web-based application OSIRIS.

1.11 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 commercial sex workers (CSW). Heterosexuals with an STI indication were also considered a risk group until October 2007, and drug users until January 2012. PHS and STI clinics offer free vaccination according to the six-month schedule. Participants are tested serologically for markers of a previous or current HBV infection during their consultation for a first vaccination. Data are collected from a registration system especially developed for the vaccination programme. Although universal childhood vaccination was adopted in 2011, the current targeted risk group vaccination programme will be continued in the coming years.

1.12 Blood donors

Since 1985, blood donated by (new and regular) blood donors has been screened for HIV, HBV, HCV 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 here (www.sanquin.nl).

1.13 Burden of Disease

The Burden of Disease (BoD) of chlamydia, gonorrhoea, HBV, HCV, HIV and syphilis was determined by calculating Disability Adjusted Life Years (DALY). The DALY is the sum of the number of 'Years of Life Lost' (YLL; premature mortality) and the number of 'Years Lived with Disability' (YLD; morbidity) associated with all health outcomes attributed to a specific STI. The result is a single measure that quantifies the years of healthy life lost due to a certain STI. Several methods are available for BoD estimation. In this report, the European BCoDE model and the pathogen- and incidence-based approach are used, which incorporates all health outcomes that can be causally attributed to all new cases of a specific STI. In 2014, for the first time, the Netherlands calculated the BoD for all infectious diseases for which the BCoDE method was already available, including STIs. For detailed information regarding the BoD calculation, the RIVM report 'State of Infectious Diseases in the Netherlands, 2013' can be consulted.[10, 11]
The pathogen is used as the starting point for the BoD calculation. In this way, the focus is on all health outcomes that can be causally attributed to that specific pathogen. For this approach, 'outcome trees' are developed for each STI. Outcome trees represent the natural history of a disease, linking incident cases to all associated health outcomes, including acute effects, sequelae and death. Outcome trees provide a representation of disease progression by ordering all relevant health outcomes associated with the pathogen along a timeline. The chance of developing a subsequent health outcome is quantified by transition probabilities. As opposed to working with prevalence data, the burden is calculated using incidence data. In this way, all new cases of a particular STI are counted, and the burden associated with all potential health outcomes (including those that might occur in future years) attributable to the initial infection is included, and assigned to the year of initial infection. However, the incidence approach does not take into account the BoD among patients who have contracted the STI in

[10] van Lier A., McDonald S., Bouwknegt M., Bijkerk P., Havelaar A. et al. (2014 (RIVM report 150205001) http://www.rivm.nl/bibliotheek/rapporten/150205001.pdf) Disease burden of infectious disease in the Netherlands. In: Bijkerk P., van Lier A., McDonald S., Kardamanidis K., Fanoy E.B. et al. State of infectious diseases in the Netherlands, 2013. Bilthoven: National Institute for Public Health and the Environment (RIVM).

[11] Bijkerk P., van Lier A., McDonald S., Wallinga J., de Melker H.E. (2014 (Appendix RIVM report 150205001). http://www.rivm.nl/bibliotheek/rapporten/appendix150205001.pdf) Appendix: State of infectious diseases in the Netherlands, 2013. Bilthoven: National Institute for Public Health and the Environment (RIVM).

the past, and still suffer from the health consequences (e.g. HIV and HBV). The incidence data are derived from different data sources depending on the specific STI. For chlamydia and gonorrhoea, incidence data reported by STI clinics (2007-2014) and estimated incidence rates based on data from the NIVEL-PCD (2009-2013) are combined. For HBV and HCV, notification data on acute cases from Osiris (2007-2014) are used; for HIV, data on newly diagnosed cases are retrieved from the SHM (2007-2014). For syphilis, incidence data registered by STI clinics are used (2007-2014). Multiplication factors (derived by disease surveillance specialists through literature review and expert opinion) are applied to adjust for underestimation, asymptomatic cases and incomplete coverage of the incidence data sources. Underestimation can be the result of under-ascertainment (caused by cases that do not contact health services) and/or under-reporting (caused by cases that do contact health services, but whose conditions are incorrectly reported). The resulting 'estimated annual number of new cases' is averaged over the periods 2007-2011 and 2012-2014 to smooth out any annual fluctuations.
The estimated number of DALYs is presented per year and per 1,000 cases to reflect the BoD at the population level (depending on morbidity, mortality and the number of new cases per year) and at the individual level (depending on morbidity and mortality only), respectively. Version 0.94 of the BCoDE software toolkit is used to estimate the BoD. It should be noted that in future years, the underlying models might be further optimized.

2 STI and Sense consultations

2.1 Key points

STI clinics

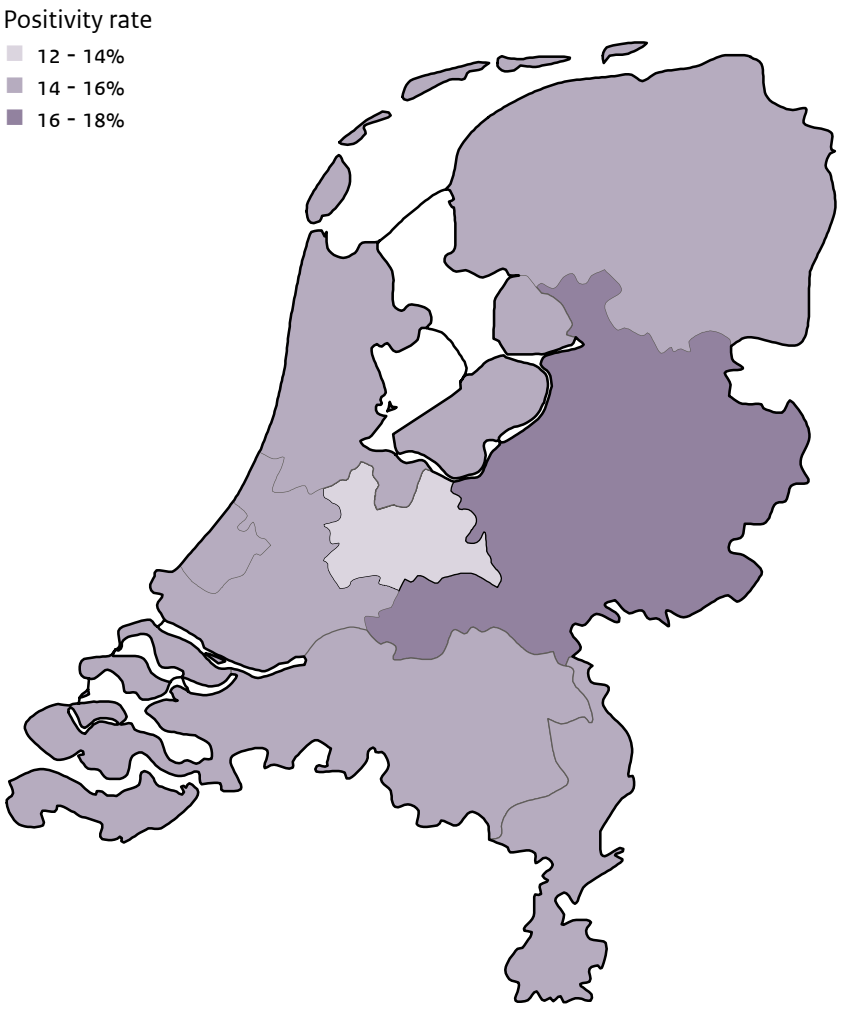
- In 2014, 141,191 new consultations were registered by STI clinics under national surveillance, an increase of 5.7 per cent over 2013. The increase was highest among MSM (8.9 per cent); there was no increase among heterosexual men.
- In 2014, 17,612 young people (<25 years) with no other risk factors were tested for chlamydia only; 5,584 (31.7 per cent) of those used a chlamydia home sampling kit provided by the STI clinic.
- The key characteristics of attendees were as follows: young age (48.9 per cent under 25 years), Dutch origin (68.9 per cent), female (49.8 per cent), three or more sexual partners in the previous six months (53.5 per cent), previously tested for HIV (58.3 per cent), STI/HIV-related symptoms (32.0 per cent), and no condom use at last casual sex contact (64.4 per cent).
- The percentage of attendees with at least one STI increased slightly: from 14.7 per cent in 2013 to 15.5 per cent in 2014. This increase was highest among heterosexual men (13.9 per cent in 2013 and 15.2 per cent in 2014).
- The STI positivity rate was higher among low-educated attendees (19.5 per cent) than among high-educated attendees (14.1 per cent), especially in the younger age groups.
- In 66 per cent of all consultations (n=93,001) a unique ID number was registered, which allows the monitoring of repeated testing. Of all the consultations by heterosexual men, 8 per cent were by men who had already been tested in 2014. Among MSM and women, the proportions were 24 and 11 per cent, respectively. Among MSM, the percentage of positive STI tests increased with the number of visits.
- The percentage of STI clinic attendees who reported having been notified of their possible exposure to STI has increased from 10.8 per cent in 2010 to 17.0 per cent in 2014. In 2014, this percentage was highest among heterosexual men (21.3 per cent, compared with MSM: 19.7 per cent; women: 13.4 per cent).
- Among all individuals diagnosed with an STI, 34.2 per cent were detected through partner notification (31.4 per cent in 2013).
- In 2014, the number of Sense consultations declined by 31 per cent to 8,106, of which 83 per cent were by women. Among women, the most common topic was birth control, among men sexuality.

General practice

- The number of STI-related episodes at general practices (based on ICPC codes for episodes of fear of STI and diagnosed STI) was estimated at 290,000 in the Netherlands in 2013, an increase of 20 per cent since 2009. Of these episodes, 47 per cent were in men and 53 per cent in women.
- There were an estimated 122,000 STI diagnoses (chlamydia, gonorrhoea, syphilis, HIV, trichomonas, genital herpes, genital warts or non-specific urethritis) registered at general practices in 2013.
- The more detailed data from the questionnaires completed by the sentinel practices in the NIVEL-PCD also show that patients with STI-related consultations at general practices were more often women than men (61 versus 39 per cent in 2013). The majority (80 per cent) were of Dutch descent and 39 per cent were under 25 years of age. Seven per cent of male STI patients reported a homosexual preference, which is much lower than at STI clinics, where 40 per cent of male clients reported being MSM. The most common reason for visiting a general practice for STI issues was STI symptoms or complaints (52 per cent).
- In 2013, general practices requested an STI test (chlamydia, gonorrhoea, syphilis or HBV) in 72 per cent of STI consultations, and an HIV test in 19 per cent. The HIV test request rate continues to decline for heterosexual men and women, while this is not the case for MSM. The overall STI test positivity rate (chlamydia, gonorrhoea, syphilis, HBV, HIV) was 33 per cent, but the rate was higher in MSM (90 per cent) and notified people (72 per cent).

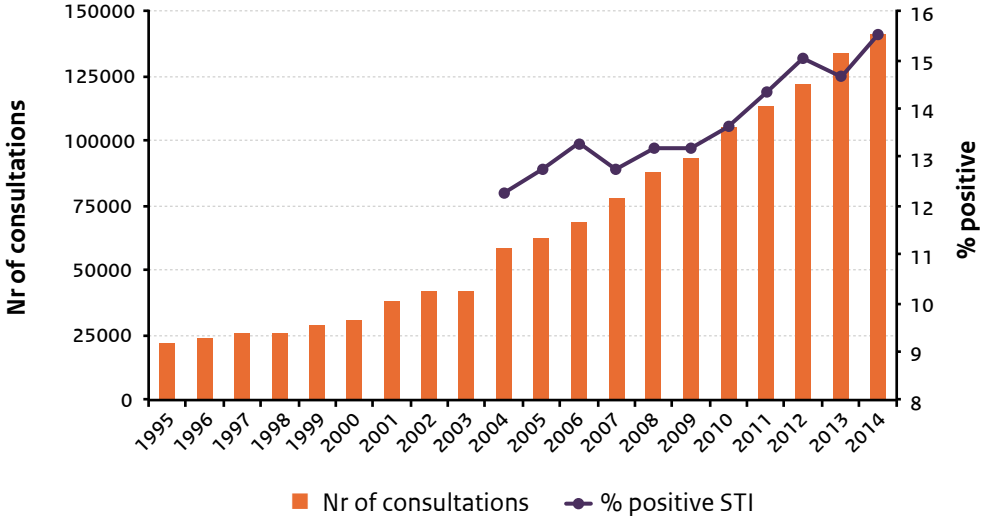
2.2 Consultations and characteristics of STI clinic attendees

Figure 2.1 Positivity rates of STI by region, the Netherlands, 2014



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

Figure 2.2 Number of consultations and percentage of positive STI in the national STI surveillance in the Netherlands, 1995–2014



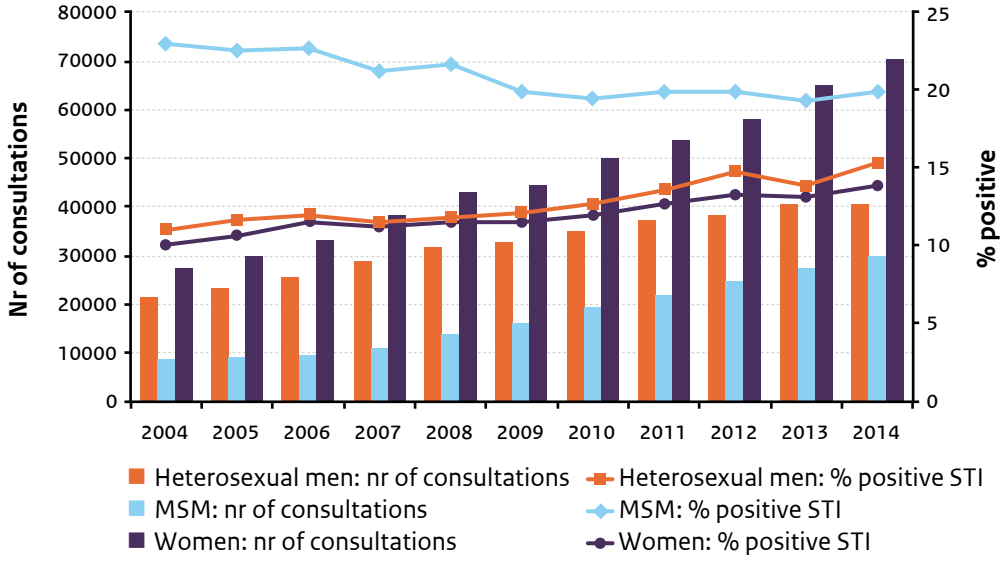
Footnote: 1995–2002: STI registration; 2000: STI clinic Erasmus Medical Centre Rotterdam was included; 2003: Implementation of STI sentinel surveillance network; 2004–2014: National STI surveillance network. STI include: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Table 2.1 Number of consultations by sexual risk group, 2007–2014

Gender and sexual preference	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)
Heterosexual men	28,689 (36.8)	31,770 (35.9)	32,584 (34.9)	35,112 (33.4)	37,434 (33.1)	38,516 (31.8)	40,872 (30.6)	40,856 (28.9)
MSM	11,048 (14.2)	13,764 (15.6)	16,332 (17.5)	19,579 (18.6)	21,783 (19.2)	24,640 (20.3)	27,497 (20.6)	29,939 (21.2)
Women	38,209 (48.9)	42,796 (48.4)	44,291 (47.5)	50,177 (47.8)	53,849 (47.6)	58,040 (47.9)	65,104 (48.7)	70,219 (49.7)
Transgender*	29 (0.04)	34 (0.04)	47 (0.1)	76 (0.1)	46 (0.04)	42 (0.03)	54 (0.0)	59 (0.0)
Unknown*	87 (0.1)	71 (0.1)	77 (0.1)	72 (0.1)	68 (0.1)	40 (0.03)	58 (0.0)	118 (0.1)
Total	**78,062**	**88,435**	**93,331**	**105,016**	**113,180**	**121,278**	**133,585**	**141,191**

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

Figure 2.3 Number of consultations and percentage of positive STI tests in the national STI surveillance in the Netherlands by gender and sexual preference, 2004–2014

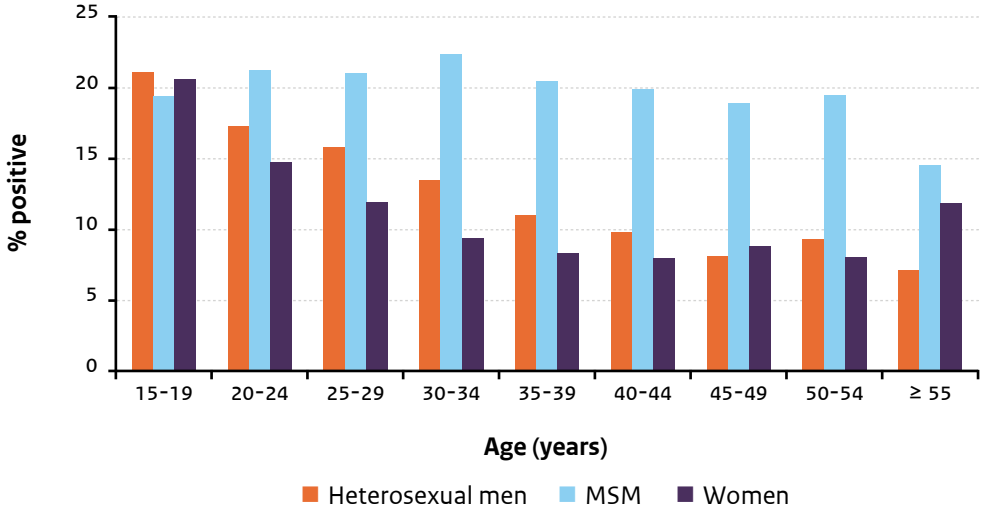


Footnote: STI include: chlamydia, gonorrhoea, infectious syphilis, HIV and infectious hepatitis B.

Table 2.2 Number of consultations by age, gender and sexual preference, 2014

Age (years)	Heterosexual men n (%)	MSM n (%)	Women n (%)	Total n (%)
≤ 14	4 (0.0)	3 (0.0)	71 (0.1)	78 (0.1)
15–19	2,183 (5.3)	682 (2.3)	8,026 (11.4)	10,891 (7.7)
20–24	16,955 (41.5)	4,332 (14.5)	36,739 (52.3)	58,026 (41.1)
25–29	9,840 (24.1)	4,562 (15.2)	12,933 (18.4)	27,335 (19.4)
30–34	4,320 (10.6)	3,844 (12.8)	4,505 (6.4)	12,669 (9.0)
35–39	2,286 (5.6)	3,685 (12.3)	2,390 (3.4)	8,361 (5.9)
40–44	1,746 (4.3)	3,339 (11.2)	1,951 (2.8)	7,036 (5.0)
45–49	1,403 (3.4)	3,493 (11.7)	1,774 (2.5)	6,670 (4.7)
50–54	1,024 (2.5)	2,694 (9.0)	1,144 (1.6)	4,862 (3.4)
≥ 55	1,094 (2.7)	3,304 (11.0)	683 (1.0)	5,081 (3.6)
Unknown	1 (0.0)	1 (0.0)	3 (0.0)	5 (0.0)
Total	**40,856**	**29,939**	**70,219**	**141,014**

Figure 2.4 Percentage of positive tests in the national STI surveillance in the Netherlands by age and sexual preference, 2014



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

Table 2.3 Number of consultations by ethnicity, generation, gender and sexual preference, 2014

Ethnicity	Heterosexual men n (%)	MSM n (%)	Women n (%)	Total n (%)
The Netherlands	**26,047 (63.8)**	**21,279 (71.1)**	**49,893 (71.1)**	**97,219 (68.9)**
Turkey	**1,045 (2.6)**	**388 (1.3)**	**636 (0.9)**	**2,069 (1.5)**
First generation	304 (29.1)	155 (39.9)	107 (16.8)	566 (27.4)
Second generation	740 (70.8)	231 (59.5)	528 (83.0)	1,499 (72.5)
Unknown	1 (0.1)	2 (0.5)	1 (0.2)	4 (0.2)
North Africa/Morocco	**1,604 (3.9)**	**336 (1.1)**	**1,136 (1.6)**	**3,076 (2.2)**
First generation	400 (24.9)	171 (50.9)	184 (16.2)	755 (24.5)
Second generation	1,200 (74.8)	164 (48.8)	948 (83.5)	2,312 (75.2)
Unknown	4 (0.2)	1 (0.3)	4 (0.4)	9 (0.3)
Surinam	**3,029 (7.4)**	**907 (3.0)**	**3,679 (5.2)**	**7,615 (5.4)**
First generation	988 (32.6)	474 (52.3)	968 (26.3)	2,430 (31.9)
Second generation	2,033 (67.1)	431 (47.5)	2,694 (73.2)	5,158 (67.7)
Unknown	8 (0.3)	2 (0.2)	17 (0.5)	27 (0.4)

Table 2.3 (continued) Number of consultations by ethnicity, generation, gender and sexual preference, 2014

Ethnicity	Heterosexual men n (%)	MSM n (%)	Women n (%)	Total n (%)
Netherlands Antilles/Aruba	**1,590 (3.9)**	**612 (2.0)**	**1,621 (2.3)**	**3,823 (2.7)**
First generation	909 (57.2)	461 (75.3)	763 (47.1)	2,133 (55.8)
Second generation	680 (42.8)	151 (24.7)	854 (52.7)	1,685 (44.1)
Unknown	1 (0.1)	0 (0.0)	4 (0.2)	5 (0.1)
Eastern Europe	**557 (1.4)**	**666 (2.2)**	**2,608 (3.7)**	**3,831 (2.7)**
First generation	445 (79.9)	607 (91.1)	2,349 (90.1)	3,401 (88.8)
Second generation	111 (19.9)	58 (8.7)	252 (9.7)	421 (11.0)
Unknown	1 (0.2)	1 (0.2)	7 (0.3)	9 (0.2)
Sub-Saharan Africa	**1,449 (3.5)**	**265 (0.9)**	**1,410 (2.0)**	**3,124 (2.2)**
First generation	789 (54.5)	170 (64.2)	651 (46.2)	1,610 (51.5)
Second generation	658 (45.4)	93 (35.1)	757 (53.7)	1,508 (48.3)
Unknown	2 (0.1)	2 (0.8)	2 (0.1)	6 (0.2)
Latin America	**637 (1.6)**	**942 (3.1)**	**1,561 (2.2)**	**3,140 (2.2)**
First generation	434 (68.1)	853 (90.6)	1,149 (73.6)	2,436 (77.6)
Second generation	203 (31.9)	87 (9.2)	409 (26.2)	699 (22.3)
Unknown	0 (0.0)	2 (0.2)	3 (0.2)	5 (0.2)
Europe other	**2,170 (5.3)**	**2,278 (7.6)**	**3,576 (5.1)**	**8,024 (5.7)**
First generation	1,199 (55.3)	1,768 (77.6)	1,733 (48.5)	4,700 (58.6)
Second generation	965 (44.5)	508 (22.3)	1,836 (51.3)	3,309 (41.2)
Unknown	6 (0.3)	2 (0.1)	7 (0.2)	15 (0.2)
Asia	**1,960 (4.8)**	**1,653 (5.5)**	**2,827 (4.0)**	**6,440 (4.6)**
First generation	956 (48.8)	894 (54.1)	986 (34.9)	2,836 (44.0)
Second generation	1,000 (51.0)	757 (45.8)	1,835 (64.9)	3,592 (55.8)
Unknown	4 (0.2)	2 (0.1)	6 (0.2)	12 (0.2)
Else	**353 (0.9)**	**342 (1.1)**	**627 (0.9)**	**1,322 (0.9)**
First generation	179 (50.7)	279 (81.6)	255 (40.7)	713 (53.9)
Second generation	173 (49.0)	63 (18.4)	371 (59.2)	607 (45.9)
Unknown	1 (0.3)	0 (0.0)	1 (0.2)	2 (0.2)
Unknown	**415 (1.0)**	**271 (0.9)**	**645 (0.9)**	**1,331 (0.9)**
Total	**40,856**	**29,939**	**70,219**	**141,014**

Figure 2.5 Percentage of positive STI tests in the national STI surveillance in the Netherlands by ethnicity and sexual preference, 2014

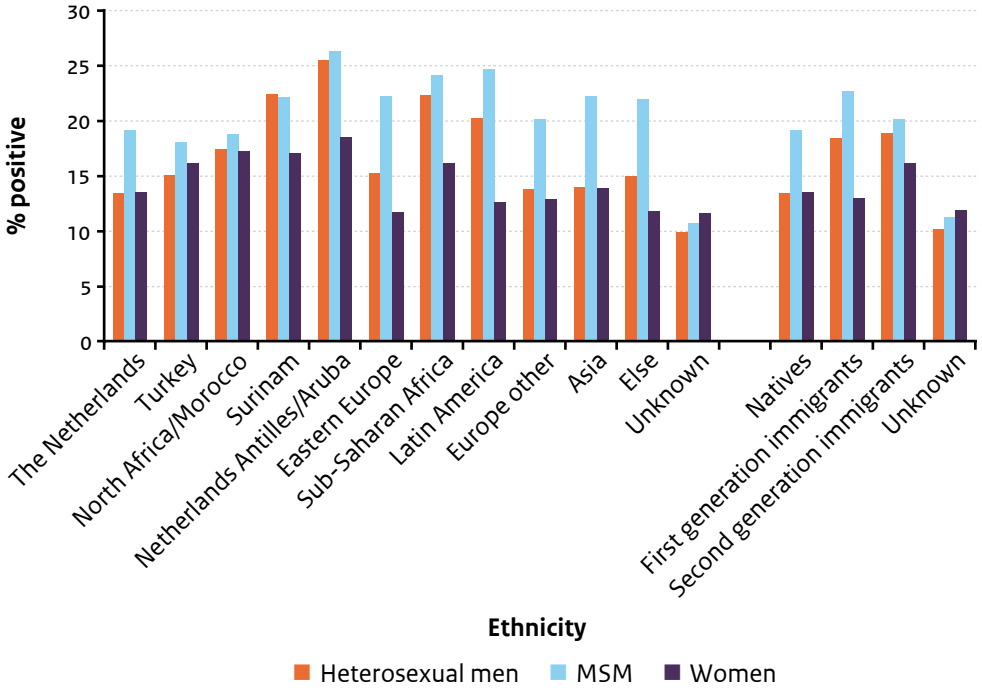


Table 2.4 Number of consultations by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men n (%)	MSM n (%)	Women n (%)	Total n (%)
Number of partners in past 6 months				
0 partners	202 (0.5)	143 (0.5)	447 (0.6)	792 (0.6)
1 partner	7,202 (17.6)	2,807 (9.4)	19,564 (27.9)	29,573 (21.0)
2 partners	8,615 (21.1)	3,319 (11.1)	18,674 (26.6)	30,608 (21.7)
3 or more partners	24,319 (59.5)	22,665 (75.7)	28,523 (40.6)	75,507 (53.5)
Unknown	518 (1.3)	1,005 (3.4)	3,011 (4.3)	4,534 (3.2)
Condom use if last sexual contact was steady*				
No	13,428 (77.9)	7,674 (71.7)	25,361 (81.6)	46,463 (78.8)
Yes	3,711 (21.5)	2,877 (26.9)	5,556 (17.9)	12,144 (20.6)
Unknown	89 (0.5)	145 (1.4)	147 (0.5)	381 (0.6)

Table 2.4 (continued) Number of consultations by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men n (%)	MSM n (%)	Women n (%)	Total n (%)
Condom use if last sexual contact was casual*				
No	15,337 (67.4)	8,638 (49.6)	25,710 (69.6)	49,685 (64.4)
Yes	7,246 (31.8)	8,503 (48.8)	10,943 (29.6)	26,692 (34.6)
Unknown	178 (0.8)	275 (1.6)	279 (0.8)	732 (0.9)
Previous gonorrhoea/chlamydia/syphilis in anamnesis				
No	33,538 (82.1)	21,601 (72.2)	57,031 (81.2)	112,170 (79.5)
Yes	3,885 (9.5)	7,195 (24.0)	8,252 (11.8)	19,332 (13.7)
Do not know	1,630 (4.0)	388 (1.3)	2,102 (3.0)	4,120 (2.9)
Unknown	1,803 (4.4)	755 (2.5)	2,834 (4.0)	5,392 (3.8)
Previous HIV test				
No	20,268 (49.6)	3,461 (11.6)	33,133 (47.2)	56,862 (40.3)
Yes, positive	44 (0.1)	4,248 (14.2)	86 (0.1)	4,378 (3.1)
Yes, negative	19,888 (48.7)	21,995 (73.5)	35,676 (50.8)	77,559 (55.0)
Yes, result unknown	63 (0.2)	56 (0.2)	118 (0.2)	237 (0.2)
Unknown	593 (1.5)	179 (0.6)	1,206 (1.7)	1,978 (1.4)
CSW				
No	40,441 (99.0)	29,162 (97.4)	64,312 (91.6)	133,915 (95.0)
Yes, in past 6 months	197 (0.5)	519 (1.7)	5,446 (7.8)	6,162 (4.4)
Unknown	218 (0.5)	258 (0.9)	461 (0.7)	937 (0.7)
Client of CSW, men				
No	36,367 (89.0)	28,545 (95.3)		64,912 (91.7)
Yes, in past 6 months	4,218 (10.3)	734 (2.5)		4,952 (7.0)
Unknown	271 (0.7)	660 (2.2)		931 (1.3)
Swinger**				
No	15,666 (91.3)	8,268 (86.2)	23,929 (90.7)	47,863 (90.1)
Yes	1,459 (8.5)	1,074 (11.2)	2,355 (8.9)	4,888 (9.2)
Unknown	26 (0.2)	252 (2.6)	110 (0.4)	388 (0.7)

Table 2.4 (continued) Number of consultations by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men n (%)	MSM n (%)	Women n (%)	Total n (%)
Injecting drug use				
No	39,901 (97.7)	29,146 (97.4)	66,124 (94.2)	135,171 (95.9)
Yes, ever	83 (0.2)	153 (0.5)	105 (0.1)	341 (0.2)
Yes, in past 6 months	24 (0.1)	140 (0.5)	32 (0.0)	196 (0.1)
Unknown	848 (2.1)	500 (1.7)	3,958 (5.6)	5,306 (3.8)
Socioeconomic status				
Very high	5,386 (13.2)	4,345 (14.5)	9,642 (13.7)	19,373 (13.7)
High	10,693 (26.2)	8,234 (27.5)	18,834 (26.8)	37,761 (26.8)
Medium	11,496 (28.1)	7,747 (25.9)	19,896 (28.3)	39,139 (27.8)
Low	6,757 (16.5)	5,218 (17.4)	10,966 (15.6)	22,941 (16.3)
Very low	4,161 (10.2)	2,407 (8.0)	5,862 (8.3)	12,430 (8.8)
Unknown	2,363 (5.8)	1,988 (6.6)	5,019 (7.1)	9,370 (6.6)
Educational level#				
High	16,651 (40.8)	11,624 (38.8)	28,182 (40.1)	56,457 (40.0)
Low	10,475 (25.6)	5,661 (18.9)	16,250 (23.1)	32,386 (23.0)
Other	301 (0.7)	289 (1.0)	678 (1.0)	1,268 (0.9)
Unknown	13,429 (32.9)	12,365 (41.3)	25,109 (35.8)	50,903 (36.1)

* Type of sexual contact was missing for 3% (n=4,869).
** Voluntary question, answered by 38% (n=53,139).
\# Low level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

Table 2.5 Reported indication by gender and sexual preference, 2014

Indication	Heterosexual men n (%)	MSM n (%)	Women n (%)	Total n (%)
STI/HIV-endemic area	11,871 (29.1)	5,769 (19.3)	15,478 (22.0)	33,118 (23.5)
Symptoms	13,614 (33.3)	7,152 (23.9)	24,313 (34.6)	45,079 (32.0)
Partner in risk group	10,899 (26.7)	28,524 (95.3)	18,133 (25.8)	57,556 (40.8)
Notified	8,689 (21.3)	5,903 (19.7)	9,416 (13.4)	24,008 (17.0)
No indication	620 (1.5)	0 (0.0)	1,223 (1.7)	1,843 (1.3)

Footnote 1: Percentages do not add up to 100% since one client can have more than one indication.
Footnote 2: Other indications not shown in the table are: aged 24 years or younger, 3 or more partners in previous 6 months, MSM, CSW (women), client of CSW (men).

Figure 2.6 Percentage of positive STI tests in the national STI surveillance in the Netherlands by risk factor and sexual preference, 2014

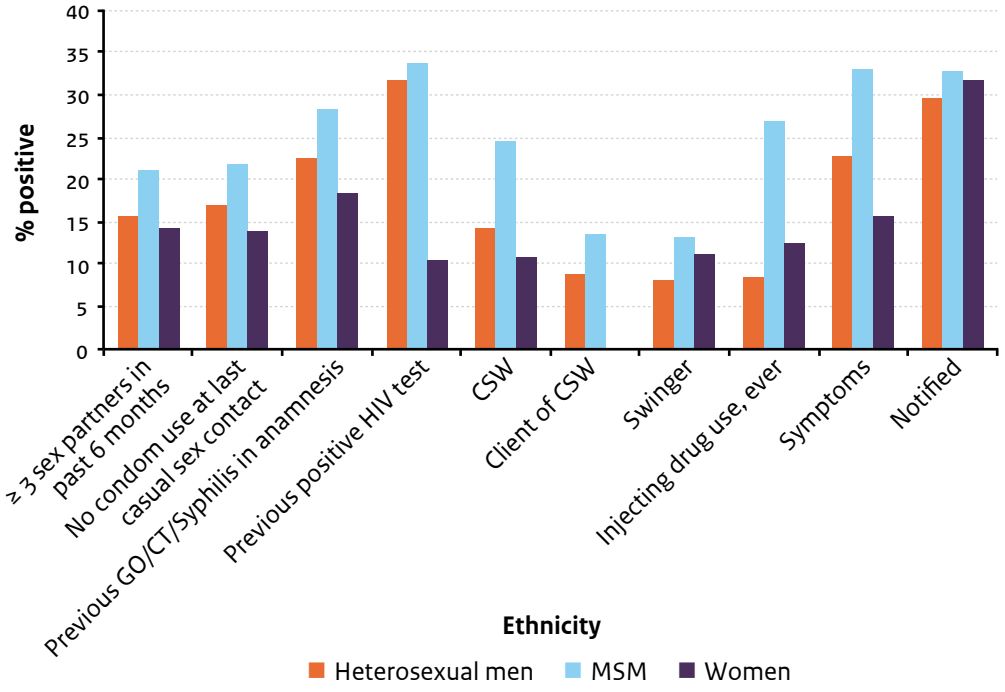


Table 2.6 Number of consultations and percentage of positive tests by age, level of education, gender and sexual preference, 2014

Age group (years)	Heterosexual men		MSM		Women	
	Low level of education* n (%)	High level of education** n (%)	Low level of education* n (%)	High level of education** n (%)	Low level of education* n (%)	High level of education** n (%)
≤ 14	4 (0.0)	0 (0.0)	1 (0.0)	2 (0.0)	47 (17.0)	12 (0.0)
15–19	1,025 (24.4)	669 (14.3)	265 (24.9)	262 (15.3)	3,132 (25.4)	3,040 (15.8)
20–24	4,324 (22.4)	7,922 (15.6)	1,024 (24.5)	2,001 (17.0)	7,442 (20.3)	16,976 (13.2)
25–29	2,127 (20.4)	4,000 (14.0)	837 (22.7)	2,013 (18.5)	2,272 (15.9)	4,860 (11.8)
30–34	961 (17.7)	1,510 (11.0)	602 (26.1)	1,581 (20.5)	1,001 (10.9)	1,407 (10.0)

Table 2.6 (continued) Number of consultations and percentage of positive tests by age, level of education, gender and sexual preference, 2014

Age group (years)	Heterosexual men		MSM		Women	
	Low level of education* n (%)	High level of education** n (%)	Low level of education* n (%)	High level of education** n (%)	Low level of education* n (%)	High level of education** n (%)
35–39	600 (13.8)	766 (9.4)	581 (20.0)	1,362 (18.1)	649 (11.2)	610 (7.0)
40–44	491 (12.0)	559 (8.2)	559 (20.6)	1,122 (18.7)	595 (8.2)	452 (7.5)
45–49	383 (9.1)	498 (6.8)	635 (19.7)	1,194 (16.8)	538 (12.5)	399 (7.5)
50–54	290 (12.8)	341 (9.4)	497 (22.1)	943 (17.6)	360 (9.2)	282 (8.2)
≥ 55	270 (5.9)	385 (9.9)	660 (12.4)	1,144 (15.9)	213 (14.6)	144 (13.9)
Unknown	0 (0.0)	1 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)	0 (0.0)
Total	**10,475 (19.6)**	**16,651 (13.7)**	**5,661 (21.4)**	**11,624 (17.9)**	**16,250 (18.7)**	**28,182 (12.7)**

* Low level of education: no education, elementary school, lbo, mavo, vmbo, mbo.
** High level of education: havo, vwo, university of applied sciences, university.

Table 2.7a Number of STI diagnoses and percentage of positive tests by gender and sexual preference, 2014

Diagnosis	Heterosexual men n (% pos.)	MSM n (% pos.)	Women n (% pos.)	Total n (% pos.)
Chlamydia	5,671 (13.9)	3,045 (10.2)	9,037 (12.9)	17,753 (12.6)
Gonorrhoea	712 (1.9)	2,844 (9.5)	1,038 (1.8)	4,594 (3.6)
Infectious syphilis*	32 (0.1)	693 (2.3)	17 (0.03)	742 (0.6)
HIV	25 (0.1)	278 (1.1)	20 (0.0)	323 (0.3)
Infectious hepatitis B	72 (0.4)	41 (0.4)	30 (0.1)	143 (0.3)
Genital warts	843 (2.1)	463 (1.5)	723 (1.0)	2,029 (1.4)

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

Table 2.7b Number of STI diagnoses by gender and sexual preference, 2014

Diagnosis	Heterosexual men	MSM	Women	Total
Syphilis				
primary	13	245	2	260
secondary	8	179	4	191
latens recens	11	269	11	291
latens tarda	25	117	27	169
not specified	6	45	4	55
Genital herpes				
primary: HSV1	42	42	102	186
primary: HSV2	68	66	107	241
primary: HSV unknown	9	7	21	37
recurrent	9	3	15	27
Hepatitis B, recovered	413	582	395	1,390
Hepatitis C	0	19	0	19
Non specified urethritis	903	487	3	1,393
Candidiasis	145	38	634	817
Bacterial vaginosis	3	1	1,637	1,641
Trichomoniasis	12	1	138	151
Scabies	17	25	5	47
Pubic Lice	0	15	0	15
Ulcus e.c.i.	3	9	12	24
Lymphogranuloma venereum	1	152	0	153
Proctitis	0	211	6	217

2.3 Repeated testing at the STI clinic

Table 2.8 Number of clients repeatedly visiting the STI clinic in 2014 and percentage of positive STI tests at each visit, by gender and sexual preference, 2014

Nr. of consultation	Heterosexual men n (%)	% STI	MSM n (%)	% STI	Women n (%)	% STI	Total n (%)	% STI
1st	23,908 (91.8)	14.7	14,884 (75.6)	20.2	42,037 (88.9)	13.4	80,829 (86.9)	15.1
2nd	1,797 (6.9)	16.8	3,466 (17.6)	22.8	4,336 (9.2)	12.6	9,599 (10.3)	17.1
3rd	261 (1.0)	14.9	918 (4.7)	26.6	696 (1.5)	11.5	1,875 (2.0)	19.3
4th	58 (0.2)	15.5	289 (1.5)	27.0	154 (0.3)	9.7	501 (0.5)	20.4

Footnote 1: number of visits in heterosexual men and MSM reach up to 9 and in women up to 7, 5th-9th number of consultation not shown.
Footnote 2: data collection incomplete, missing n=48,013 (34%).

Table 2.9 Characteristics of clients at each consultation by gender and sexual preference, 2014

	Heterosexual men n (%)	MSM n (%)	Women n (%)	Total n (%)
Age < 25 years				
1st	11,116 (46.5)	2,651 (17.8)	27,173 (64.6)	40,940 (50.7)
2nd	777 (43.2)	421 (12.1)	2,534 (58.4)	3,732 (38.9)
3rd	114 (43.7)	81 (8.8)	386 (55.5)	581 (31.0)
Notified for STI/HIV				
1st	5,354 (22.4)	3,106 (20.9)	5,914 (14.1)	14,374 (17.8)
2nd	474 (26.4)	912 (26.3)	673 (15.5)	2,059 (21.5)
3rd	75 (28.7)	246 (26.8)	92 (13.2)	413 (22.0)
≥ 3 sexual contacts in the past 6 months				
1st	14,558 (60.9)	11,249 (75.6)	17,567 (41.8)	43,374 (53.7)
2nd	1,322 (73.6)	2,853 (82.3)	2,578 (59.5)	6,753 (70.4)
3rd	201 (77.0)	804 (87.6)	467 (67.1)	1,472 (78.5)
STI-related symptoms				
1st	8,106 (33.9)	3,767 (25.3)	15,142 (36.0)	27,015 (33.4)
2nd	767 (42.7)	1,042 (30.1)	1,884 (43.5)	3,693 (38.5)
3rd	130 (49.8)	324 (35.3)	289 (41.5)	743 (39.6)

Table 2.9 (continued) Characteristics of clients at each consultation by gender and sexual preference, 2014

	Heterosexual men n (%)	MSM n (%)	Women n (%)	Total n (%)
CSW				
1st	125 (0.5)	272 (1.8)	2,466 (5.9)	2,863 (3.5)
2nd	15 (0.8)	73 (2.1)	655 (15.1)	743 (7.7)
3rd	5 (1.9)	20 (2.2)	211 (30.3)	236 (12.6)
Client of CSW, men				
1st	2,347 (9.8)	377 (2.5)		2,724 (7.0)
2nd	197 (11.0)	66 (1.9)		263 (5.0)
3rd	31 (11.9)	9 (1.0)		40 (3.4)
Previous gonorrhoea/chlamydia/syphilis in anamnesis				
1st	2,010 (8.4)	3,104 (20.9)	4,160 (9.9)	9,274 (11.5)
2nd	527 (29.3)	1,475 (42.6)	1,243 (28.7)	3,245 (33.8)
3rd	115 (44.1)	588 (64.1)	266 (38.2)	969 (51.7)
Known HIV positive				
1st	23 (0.1)	1,976 (13.3)	33 (0.1)	2,032 (2.5)
2nd	4 (0.2)	823 (23.7)	6 (0.1)	833 (8.7)
3rd	0 (0.0)	366 (39.9)	3 (0.4)	369 (19.7)
STI/HIV-endemic area				
1st	6,715 (28.1)	2,904 (19.5)	8,582 (20.4)	18,201 (22.5)
2nd	610 (33.9)	796 (23.0)	1,290 (29.8)	2,696 (28.1)
3rd	127 (48.7)	239 (26.0)	299 (43.0)	665 (35.5)
Casual partner at last sexual contact				
1st	13,554 (56.7)	8,872 (59.6)	22,957 (54.6)	45,383 (56.1)
2nd	1,155 (64.3)	2,013 (58.1)	2,587 (59.7)	5,755 (60.0)
3rd	172 (65.9)	562 (61.2)	407 (58.5)	1,141 (60.9)
No condom use at last casual contact				
1st	9,262 (68.3)	4,342 (48.9)	16,524 (72.0)	30,128 (66.4)
2nd	769 (66.6)	939 (46.6)	1,698 (65.6)	3,406 (59.2)
3rd	113 (65.7)	265 (47.2)	244 (60.0)	622 (54.5)

Footnote 1: number of visits in heterosexual men and MSM reach up to 9 and in women up to 7, 4th-9th consultation not shown.
Footnote 2: data collection incomplete, missing n= 48,013 (34%).

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 among MSM in the national STI surveillance in the Netherlands by age group, 2004-2014

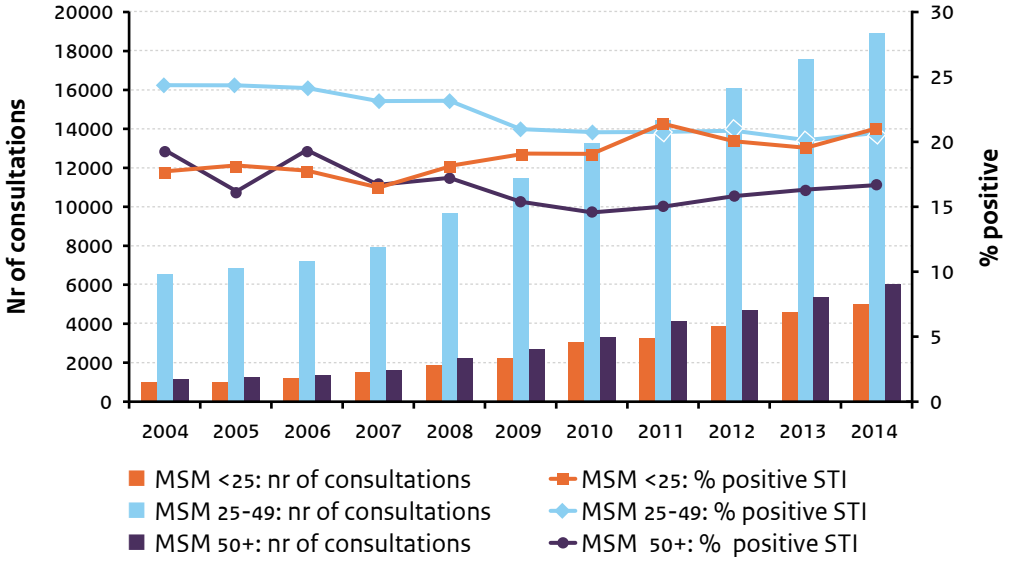
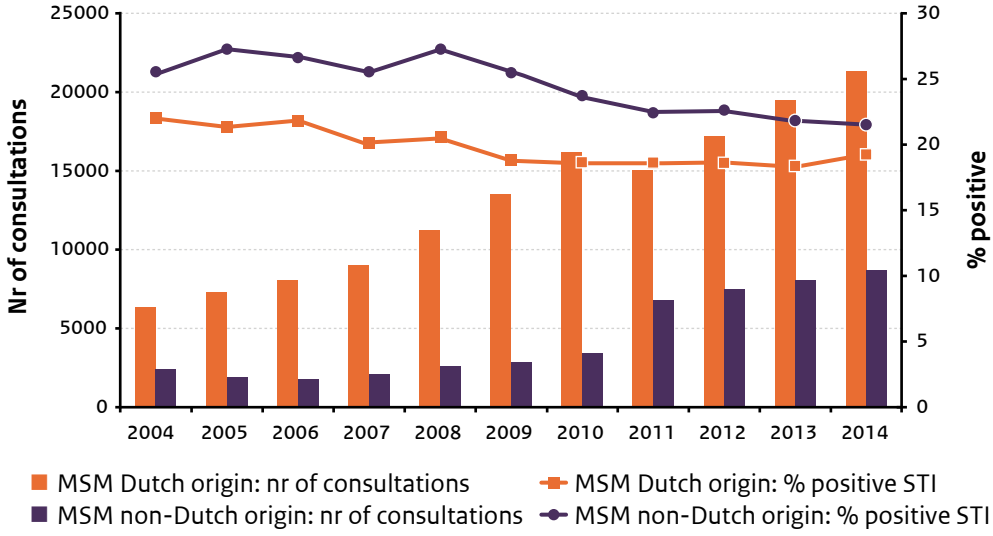


Figure 2.8 Number of consultations and percentage of positive STI tests in the national STI surveillance in the Netherlands among MSM by ethnicity, 2004-2014



Footnote: Until 2010, ethnicity was self-reported. Since 1 January 2011, ethnicity has been based on the country of birth of the client and client's parents; the 2011-2014 data can therefore not be directly compared with previous years.

Figure 2.9 Number of STI consultations and percentage of positive STI tests in the national STI surveillance in the Netherlands among MSM by HIV status, 2004–2014

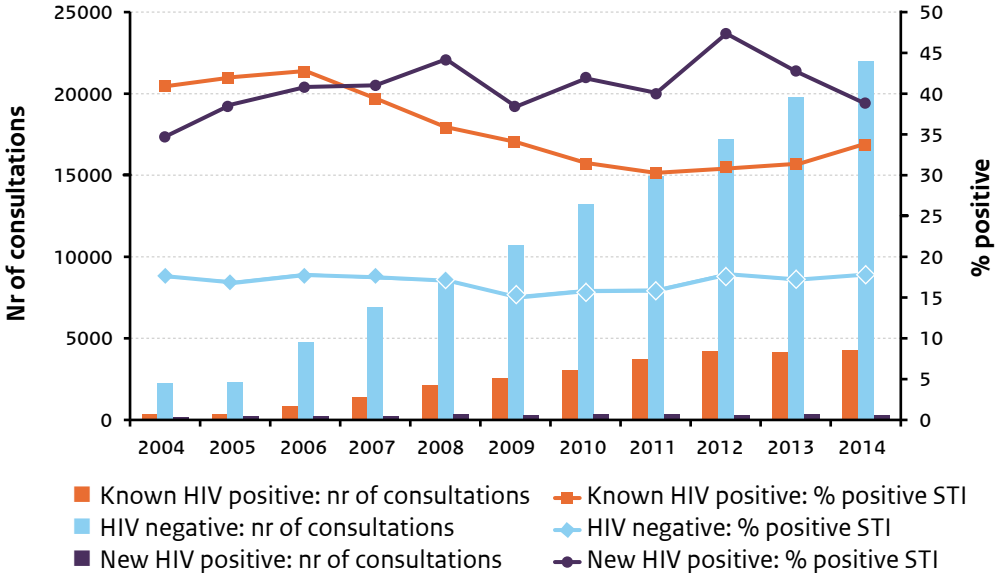


Figure 2.10 Number of consultations and percentage of positive STI tests in the national STI surveillance in the Netherlands among commercial sex workers, 2004–2014

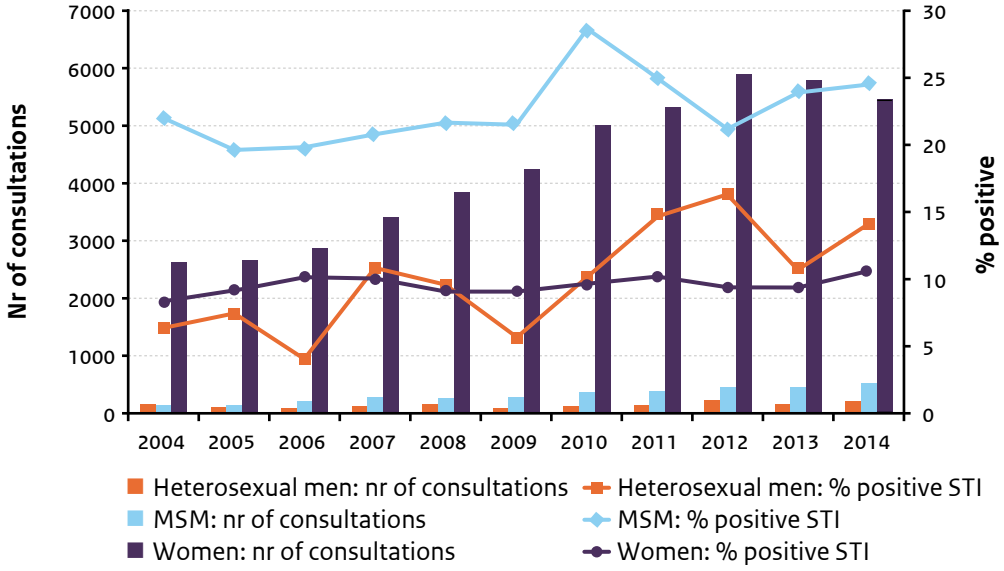


Figure 2.11 Number of consultations and percentage of positive STI tests in the national STI surveillance in the Netherlands among young age groups, 2004–2014

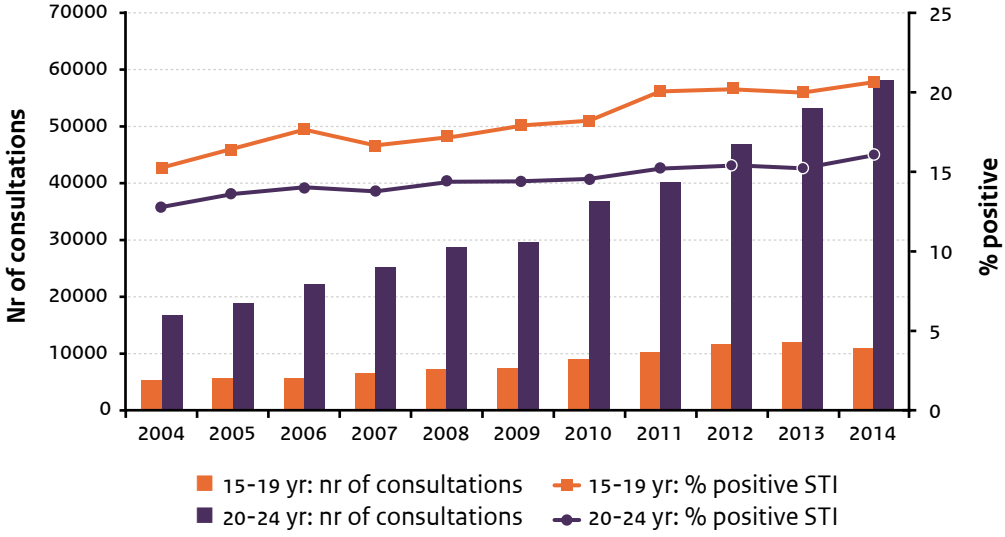
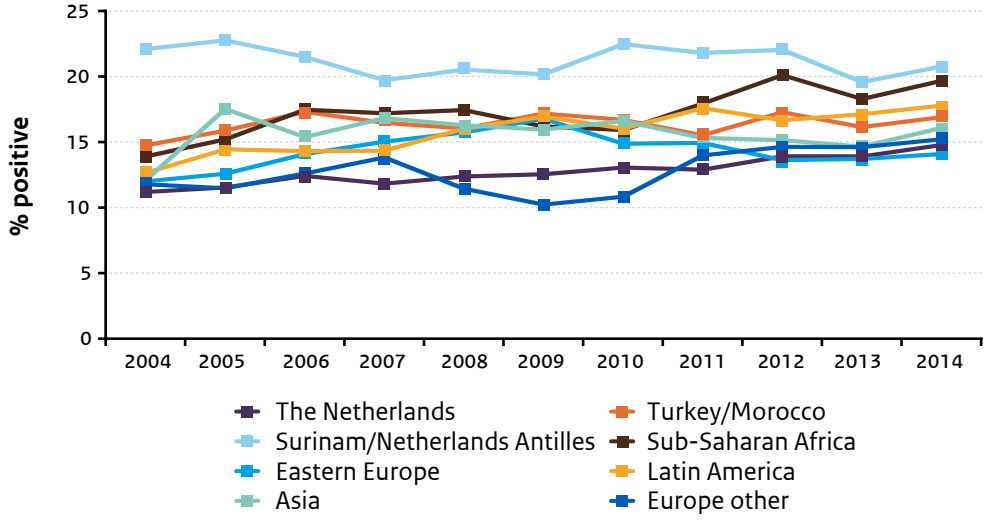


Figure 2.12 Percentage of positive STI tests in the national STI surveillance in the Netherlands by ethnicity, 2004–2014



Footnote: Until 2010, ethnicity was self-reported. Since 1 January 2011, ethnicity has been based on the country of birth of the client and client's parents; the 2011-2014 data can therefore not be directly compared with previous years.

2.4.2 Partner notification trends

Figure 2.13 Number and percentage of STI clinic clients who reported being notified for potential risk of exposure to STI, 2010-2014

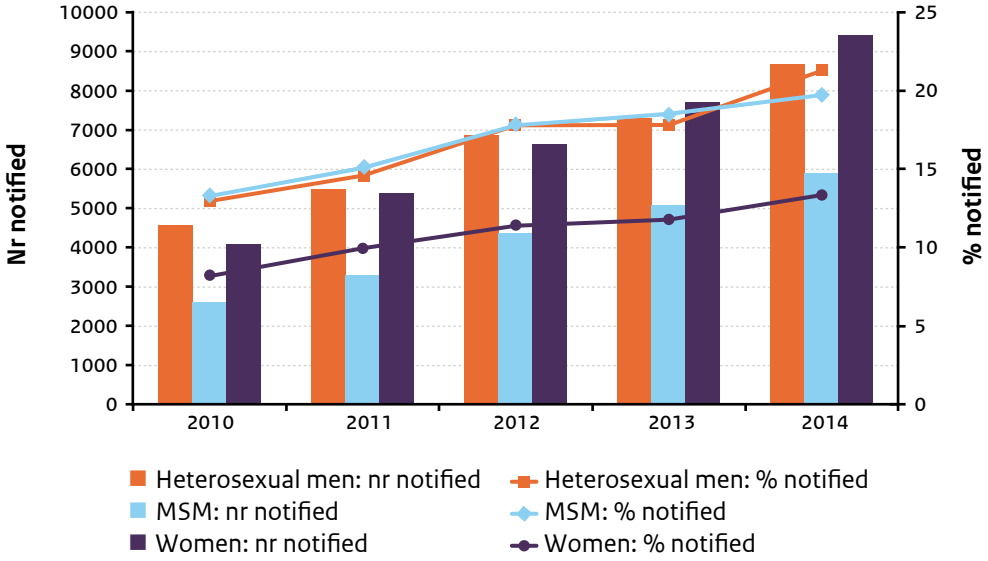
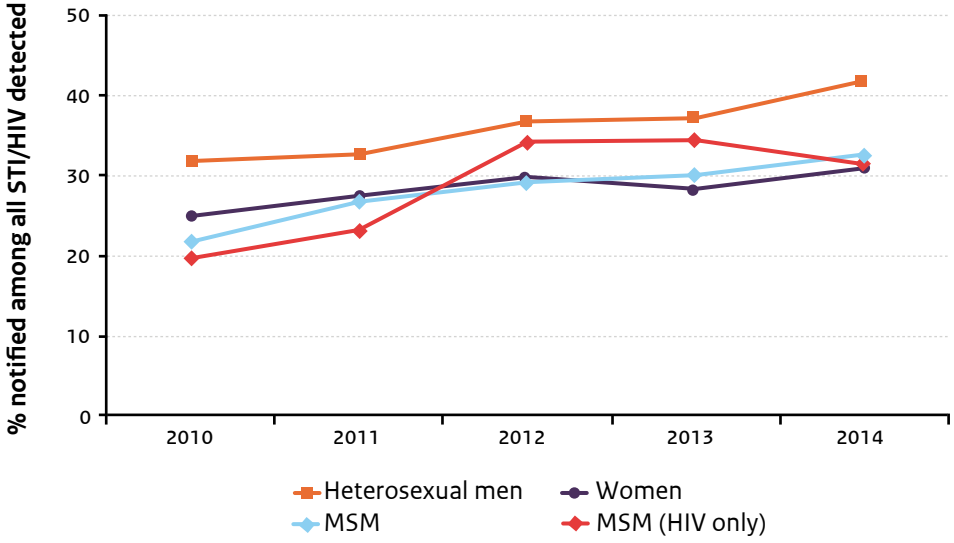
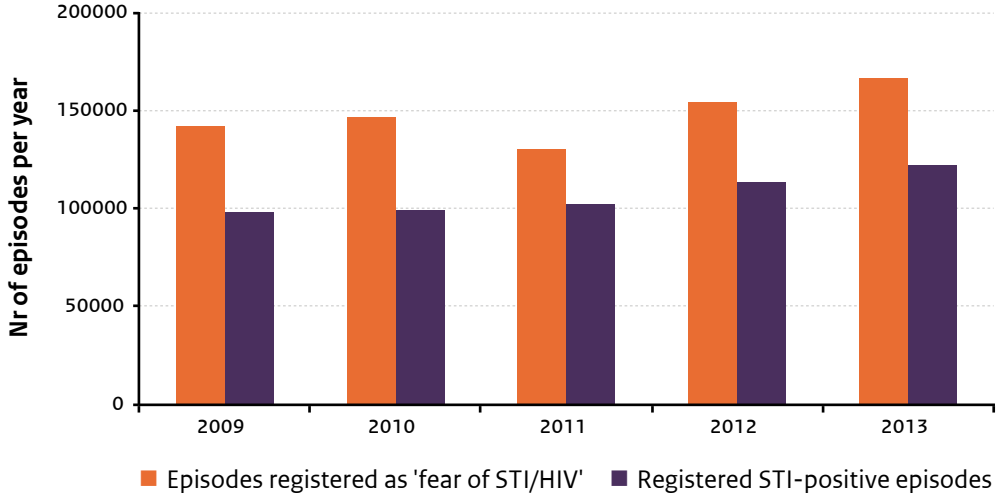


Figure 2.14 Percentage of STI detected through partner notification among heterosexual men, MSM and women, and percentage of HIV detected through partner notification among MSM, 2010-2014



2.5 General practice

Figure 2.15 Estimated annual number of registered episodes of fear of STI/HIV and positive diagnoses of STIs at GPs, based on extrapolation from the GP practices in the NIVEL-PCD (2009-2013)



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

Table 2.10 Annual reporting rate (number of STI-related episodes per 1,000 persons) of diagnoses and fear of STI/HIV at GPs in the Netherlands by gender, based on extrapolation from the GP practices in the NIVEL-PCD (2009-2013)

	Men n/1,000	Women n/1,000	Total n/1,000
2009	13.0	16.4	14.7
2010	13.8	16.2	15.0
2011	12.9	15.4	14.2
2012	14.8	17.8	16.3
2013	16.5	18.7	17.6

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 the NIVEL-PCD), from 2008-2013

	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)	2013 n (%)
Gender and sexual preference					
Women	310 (57)	315 (59)	356 (60)	318 (57)	328 (61)
Heterosexual men	202 (37)	185 (35)	195 (33)	179 (32)	197 (36)
MSM	22 (4)	16 (3)	23 (4)	28 (5)	14 (3)
Men unknown pref	11 (2)	14 (3)	18 (3)	20 (4)	1 (0)
Ethnic background					
Dutch	446 (82)	460 (87)	497 (84)	437 (78)	430 (80)
Non-Dutch non-Western	91 (17)	58 (11)	92 (15)	93 (17)	84 (16)
Non-Dutch Western	0 (0)	0 (0)	0 (0)	0 (0)	4 (1)
Unknown	9 (2)	13 (2)	6 (1)	15 (3)	22 (4)
Age group					
< 25 years	212 (39)	220 (42)	245 (41)	186 (33)	210 (39)
≥ 25 years	334 (61)	310 (58)	350 (59)	373 (67)	330 (61)
Recent sexual contacts*					
Steady partner	278 (51)	260 (49)	283 (48)	279 (50)	246 (46)
Casual partner(s)	209 (38)	199 (38)	233 (39)	214 (38)	214 (40)
Paid sex contacts	8 (1)	8 (2)	5 (1)	5 (1)	4 (1)
Unknown	71 (13)	78 (15)	74 (12)	78 (14)	76 (14)
Reason for STI-consultation					
STI-related complaints	255 (47)	230 (43)	244 (41)	246 (44)	280 (52)
Notified	48 (9)	60 (11)	73 (12)	75 (13)	70 (13)
Check-up	118 (22)	98 (18)	104 (17)	86 (15)	80 (15)
Recent risk	73 (13)	69 (13)	98 (16)	76 (14)	58 (11)
Fear for STI	39 (7)	24 (5)	17 (3)	16 (3)	10 (2)
Other/unknown	13 (2)	49 (9)	59 (10)	60 (11)	42 (11)
Total	**546**	**530**	**595**	**559**	**540**

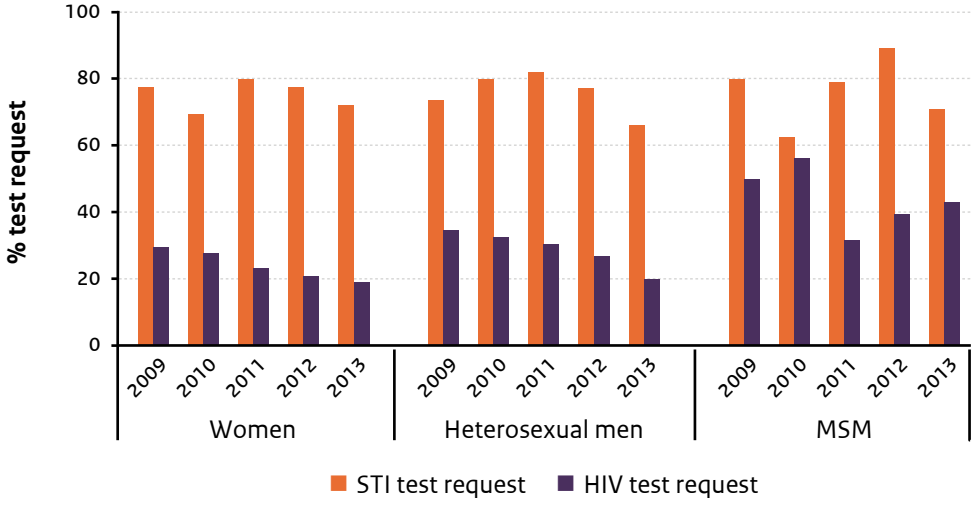
* Some patients are in multiple categories.

Table 2.12 Testing rate and positivity rate for STI (chlamydia, gonorrhoea, syphilis, hepatitis B) and HIV, and positivity rate among persons tested (Sentinel practices, NIVEL-PCD), 2013

	STI test		HIV test
	n tests (%)	n pos (%)	n tests (%)
Gender and sexual preference			
Women	246 (75)	69 (28)	53 (16)
Heterosexual men	131 (66)	38 (29)	40 (20)
MSM	10 (71)	7 (70)	6 (43)
Ethnic background			
Dutch	309 (72)	87 (28)	81 (19)
Non-Dutch non-Western	59 (70)	17 (29)	21 (25)
Age group			
< 25 years	160 (76)	52 (33)	27 (13)
≥ 25 years	228 (69)	62 (27)	74 (22)
Recent sexual contacts*			
Steady partner	166 (67)	45 (27)	36 (15)
Casual partner(s)	183 (86)	55 (30)	56 (26)
Paid sex contacts	3 (75)	0 (0)	3 (75)
Unknown	36 (47)	14 (39)	6 (8)
Reason for STI-consultation			
STI-related complaints	177 (63)	58 (33)	28 (10)
Notified	53 (76)	29 (55)	9 (13)
Check-up	77 (96)	15 (19)	37 (46)
Recent risk	56 (97)	11 (20)	17 (29)
Fear for STI	8 (80)	1 (13)	3 (30)
Other/unknown	17 (40)	2 (12)	7 (17)
Total	**432 (80)**	**116 (27)**	**132 (24)**

* Some patients are included in more than one category.

Figure 2.16 Testing rate for STI (chlamydia, gonorrhoea, syphilis, hepatitis B) and HIV in the Dutch Sentinel Practices, NIVEL-PCD, 2009-2013



2.6 Sense

Figure 2.17 Number of Sense consultations by gender, 2010–2014

Footnote: Three transgenders were excluded from the analyses.

Table 2.13 Number of Sense consultations by age and gender, 2014

Age (years)	Men n (%)	Women n (%)	Total n (%)
≤ 14	29 (2.1)	151 (2.2)	180 (2.2)
15–19	269 (19.7)	2,012 (29.8)	2,281 (28.1)
20–24	723 (53.0)	3,972 (58.9)	4,695 (57.9)
≥ 25	343 (25.1)	607 (9.0)	950 (11.7)
Total	**1,364**	**6,742**	**8,106**

Footnote: Three transgenders were excluded from the analyses.

Table 2.14 Number of Sense consultations by country of birth and gender, 2014

Country of birth	Men n (%)	Women n (%)	Total n (%)
The Netherlands	1,150 (84.3)	5,533 (82.1)	6,683 (82.4)
Netherlands Antilles	16 (1.2)	131 (1.9)	147 (1.8)
Surinam	13 (1.0)	77 (1.1)	90 (1.1)
Morocco	4 (0.3)	19 (0.3)	23 (0.3)
Turkey	9 (0.7)	19 (0.3)	28 (0.3)
Else	172 (12.6)	963 (14.3)	1,135 (14.0)
Total	**1,364**	**6,742**	**8,106**

Footnote: Three transgenders were excluded from the analyses.

Table 2.15 Subject discussed during Sense consultations by gender, 2014

Subjects	Men n (%)	Women n (%)	Total n (%)
STI	295 (20.7)	613 (8.3)	908 (10.3)
Sexuality	730 (51.1)	1,391 (18.8)	2,121 (24.0)
Birth control	13 (0.9)	2,673 (36.1)	2,686 (30.4)
Unwanted sexual behaviour/ sexual violence	71 (5.0)	608 (8.2)	679 (7.7)
Unintended pregnancy	5 (0.4)	1,106 (14.9)	1,111 (12.6)
Fertility	0 (0.0)	14 (0.2)	14 (0.2)
Else	277 (19.4)	684 (9.2)	961 (10.9)
Unknown	37 (2.6)	316 (4.3)	353 (4.0)
Total	**1,428 (100.0)**	**7,405 (100.0)**	**8,833 (100.0)**

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

BACTERIAL STI

3 Chlamydia, including lymphogranuloma venereum

3.1 Key points

- In 2014, 17,753 chlamydia cases were diagnosed at STI clinics; the overall test positivity rate was 12.6 per cent. Of all cases, 59.2 per cent were under 25 years old, 50.9 per cent were women, 31.9 per cent were heterosexual men and 17.2 per cent were MSM.
- The positivity rate in 2014 was higher than in 2013: 12.6 compared with 11.8 per cent. The increase was present in MSM (9.6 to 10.2), heterosexual men (12.8 to 13.9) and women (12.2 to 12.9). This increasing trend is consistent with previous years, except for the 'dip' in 2013.
- The highest positivity rates were observed in heterosexual women and men aged 15–19 years (19.6 per cent in both groups).
- The positivity rate was particularly high in the following groups: people of Surinamese/Dutch Antillean origin (17.0 per cent), people reporting a previous STI (gonorrhoea, chlamydia and/or syphilis; 20.3 per cent of heterosexual men and 16.2 per cent of women), low-educated people (17.3 per cent) and known HIV-positive MSM (17.6 per cent).
- Condom use (at last sexual contact), with either a casual or a steady partner, was related to lower chlamydia positivity (10.4 per cent versus 13.7 per cent in those without condom use).
- MSM with a chlamydia infection have a relatively high risk of co-infections: in 2014, 20.4 per cent also had gonorrhoea, 4.4 per cent syphilis and 2.2 per cent a new HIV diagnosis. In women and heterosexual men, these rates were 4.6, 0.01 and 0.03 per cent, respectively.
- At general practices, the number of chlamydia episodes, estimated from data from the NIVEL-PCD, was 38,000 in 2013, with a reporting rate of 2.3 per 1,000 people; higher in women than in men (2.6 versus 1.9/1,000).
- After a decrease in 2013 (184 cases in 2012 and 106 cases in 2013), the number of LGV cases increased again in 2014 to 152. The positivity rate increased as well, from 6.7 per cent in 2013 to 7.5 per cent in 2014. LGV was tested in 1,911 of the 2,215 cases of anorectal chlamydia infection in MSM (86 per cent). The profile of LGV cases was similar to that of previous years: 76 per cent were known HIV-positive; in 2.6 per cent (four patients) a new HIV infection was diagnosed.

3.2 STI clinics: characteristics, risk groups and trends

Figure 3.1 Positivity rates of chlamydia by region, the Netherlands, 2014

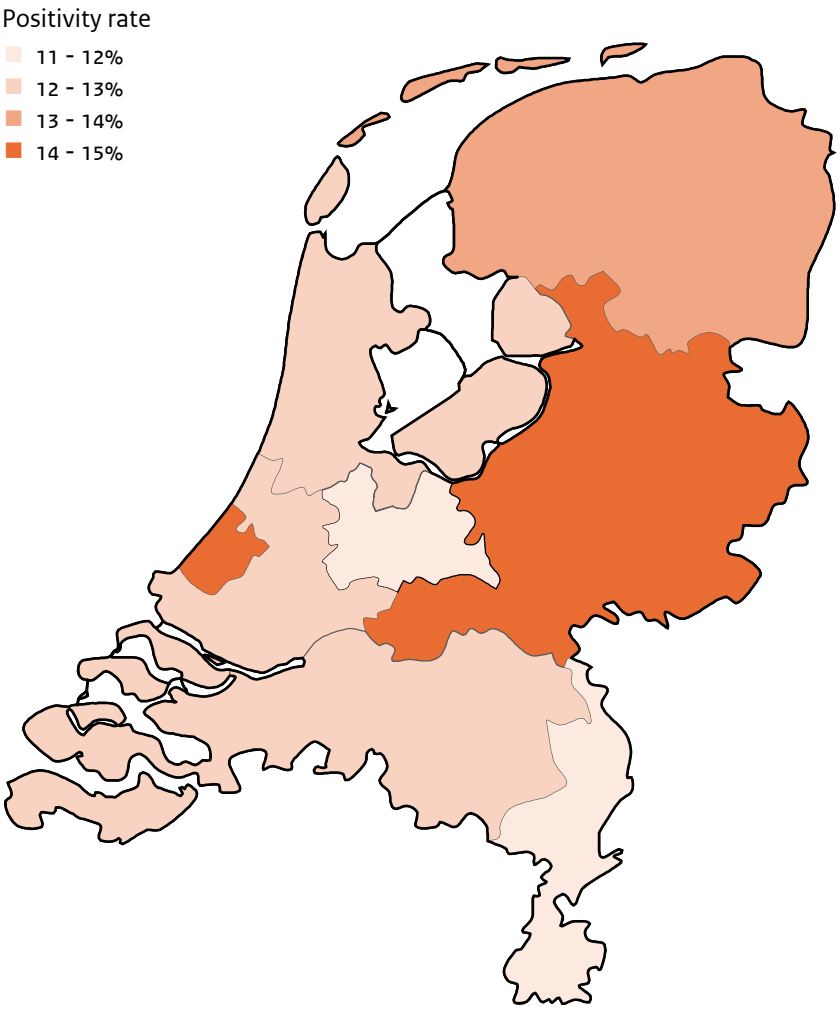


Figure 3.2 Total number of tests and positivity rate of chlamydia by gender and sexual preference, 2004–2014

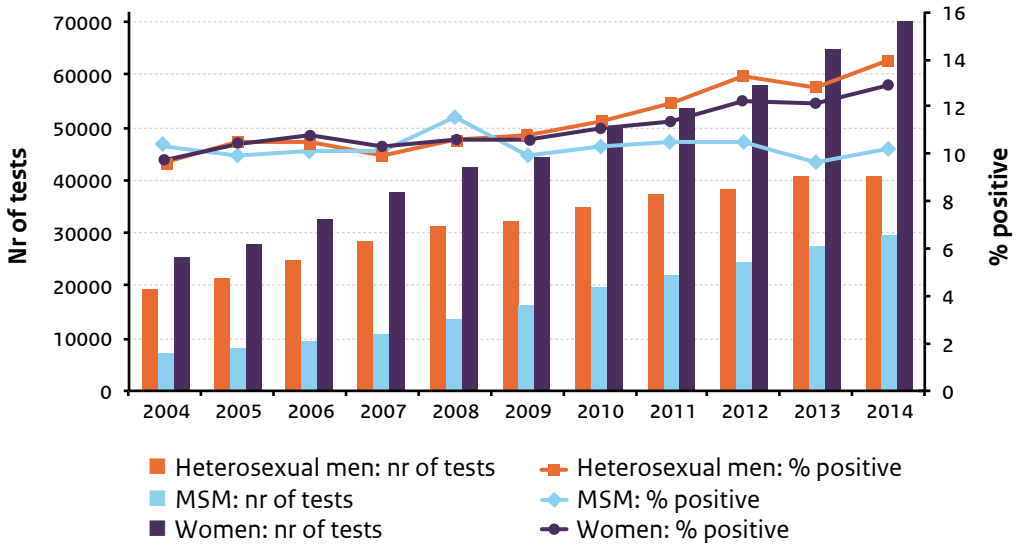


Table 3.1 Number of positive tests and persons tested for chlamydia by age, gender and sexual preference, 2014

Age (years)	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
≤ 14	0	4	0	3	11	71
15–19	427	2,180	66	680	1,568	8,018
20–24	2,789	16,941	457	4,317	5,194	36,695
25–29	1,435	9,817	497	4,549	1,419	12,916
30–34	502	4,300	400	3,836	356	4,495
35–39	210	2,280	384	3,666	156	2,380
40–44	120	1,732	336	3,329	100	1,945
45–49	76	1,394	353	3,479	110	1,768
50–54	66	1,020	282	2,680	65	1,138
≥ 55	46	1,086	270	3,284	58	678
Unknown	0	1	0	1	0	3
Total	**5,671**	**40,755**	**3,045**	**29,824**	**9,037**	**70,107**

Figure 3.3 Percentage of positive tests of chlamydia by age, gender and sexual preference, 2014

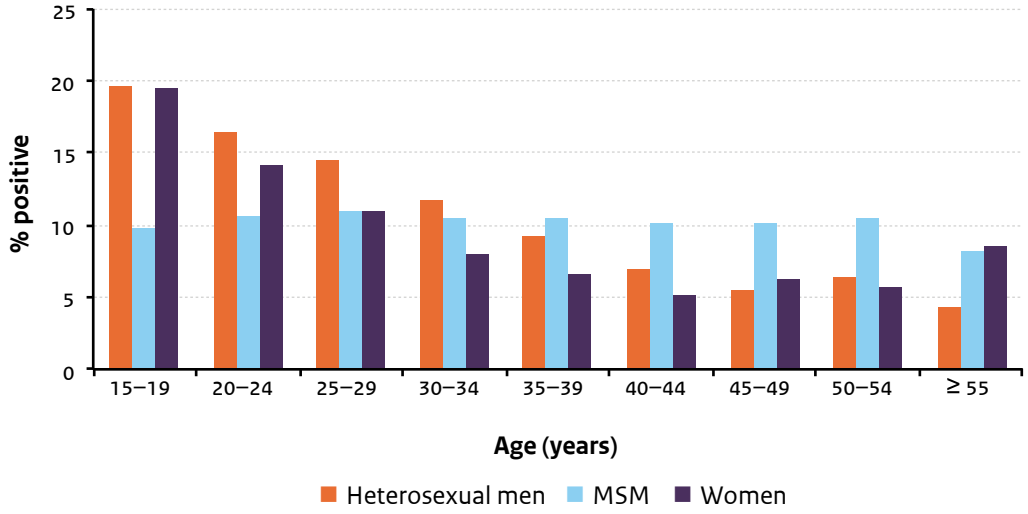


Figure 3.4 Trends in positivity rate in women and heterosexual men by age group, 2004–2014

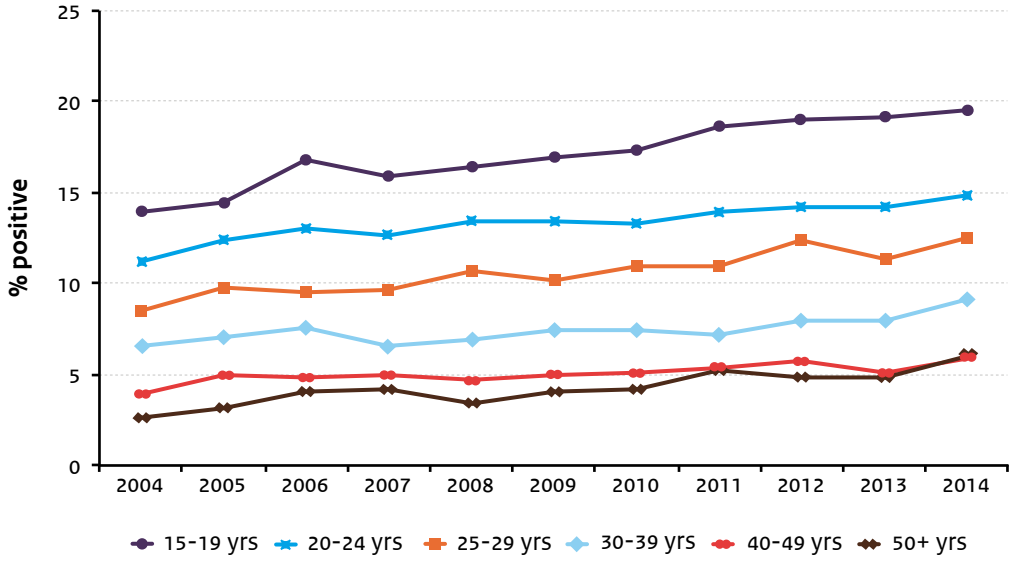


Table 3.2 Number of positive tests and persons tested for chlamydia by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
The Netherlands	3,335	25,975	2,119	21,180	6,398	49,812
Turkey	129	1,040	33	387	94	633
North Africa/Morocco	237	1,603	26	335	181	1,135
Surinam	579	3,027	120	903	551	3,673
Netherlands Antilles/Aruba	344	1,587	77	612	267	1,619
Sub-Saharan Africa	267	1,446	30	263	198	1,407
Eastern Europe	67	556	75	665	244	2,604
Latin America	112	637	110	939	175	1,559
Europe other	263	2,165	205	2,275	420	3,572
Asia	252	1,954	204	1,652	364	2,824
Other	49	352	35	342	73	627
Unknown	37	413	11	271	72	642
Natives	3,335	25,975	2,119	21,180	6,398	49,812
First generation migrants	1,002	6,587	653	5,817	1,012	9,131
Second generation migrants	1,295	7,752	261	2,542	1,548	10,471
Unknown	39	441	12	285	79	693
Total	**5,671**	**40,755**	**3,045**	**29,824**	**9,037**	**70,107**

Figure 3.5 Percentage of positive tests for chlamydia by ethnicity, gender and sexual preference, 2014

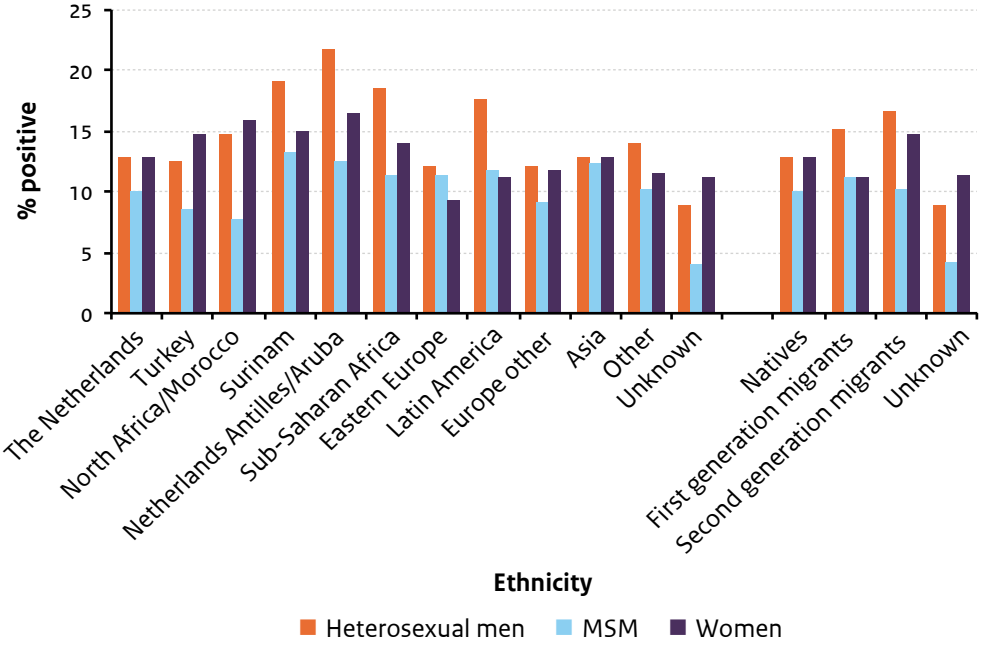


Table 3.3 Number of positive tests and persons tested for chlamydia by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men n positive/N	%	MSM n positive/N	%	Women n positive/N	%
Number of partners in past 6 months						
0 partners	10/195	5.1	2/139	1.4	27/436	6.2
1 partner	955/7,172	13.3	214/2,786	7.7	2,488/19,516	12.7
2 partners	1,200/8,584	14.0	279/3,308	8.4	2,592/18,656	13.9
3 or more partners	3,463/24,292	14.3	2,442/22,620	10.8	3,682/28,504	12.9
Unknown	43/512	8.4	108/971	11.1	248/2,995	8.3
Condom use if last sexual contact was casual*						
No	2,368/15,307	15.5	989/8,612	11.5	3,475/25,677	13.5
Yes	839/7,225	11.6	806/8,490	9.5	1,166/10,938	10.7
Unknown	22/178	12.4	23/274	8.4	35/276	12.7

Table 3.3 (continued) Number of positive tests and persons tested for chlamydia by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Condom use if last sexual contact was steady*						
No	1,963/13,400	14.6	827/7,641	10.8	3,501/25,310	13.8
Yes	347/3,700	9.4	253/2,869	8.8	622/5,550	11.2
Unknown	20/89	22.5	11/141	7.8	21/147	14.3
Previous gonorrhoea/chlamydia/syphilis in anamnesis						
No	4,402/33,454	13.2	1,934/21,551	9.0	7,015/56,947	12.3
Yes	785/3,873	20.3	1,007/7,150	14.1	1,338/8,237	16.2
Don't know	230/1,628	14.1	44/387	11.4	313/2,101	14.9
Unknown	254/1,800	14.1	60/736	8.2	371/2,822	13.1
Previous HIV test						
No	2,999/20,239	14.8	336/3,452	9.7	4,783/33,088	14.5
Yes, positive	6/43	14.0	747/4,239	17.6	4/86	4.7
Yes, negative	2,583/19,822	13.0	1,939/21,909	8.9	4,086/35,618	11.5
Yes, result unknown	3/62	4.8	8/56	14.3	10/118	8.5
Unknown	80/589	13.6	15/168	8.9	154/1,197	12.9
CSW						
No	5,615/40,342	13.9	2,956/29,058	10.2	8,558/64,210	13.3
Yes, in past 6 months	20/197	10.2	64/519	12.3	430/5,442	7.9
Unknown	36/216	16.7	25/247	10.1	49/455	10.8
Client of CSW, men						
No	5,328/36,298	14.7	2,925/28,443	10.3		
Yes, in past 6 months	304/4,188	7.3	60/733	8.2		
Unknown	39/269	14.5	60/648	9.3		
Swinger**						
No	2,266/15,620	14.5	827/8,247	10.0	3,386/23,895	14.2
Yes	75/1,458	5.1	92/1,074	8.6	171/2,354	7.3
Unknown	3/26	11.5	24/252	9.5	8/110	7.3

Table 3.3 (continued) Number of positive tests and persons tested for chlamydia by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men n positive/N	%	MSM n positive/N	%	Women n positive/N	%
Socioeconomic status						
Very high	653/5,378	12.1	420/4,339	9.7	1,198/9,636	12.4
High	1,434/10,660	13.5	843/8,195	10.3	2,443/18,803	13.0
Medium	1,632/11,474	14.2	800/7,716	10.4	2,613/19,857	13.2
Low	967/6,745	14.3	562/5,204	10.8	1,423/10,950	13.0
Very low	655/4,156	15.8	236/2,399	9.8	789/5,853	13.5
Unknown	330/2,342	14.1	184/1,971	9.3	571/5,008	11.4
Educational level#						
High	2,145/16,604	12.9	1,083/11,565	9.4	3,432/28,140	12.2
Low	1,809/10,454	17.3	609/5,638	10.8	2,760/16,217	17.0
Other	34/299	11.4	37/288	12.8	55/677	8.1
Unknown	1,683/13,398	12.6	1,316/12,333	10.7	2,790/25,073	11.1

* Type of sexual contact was missing for 3% (n=4,805) of persons tested for chlamydia.
** Voluntary question, answered by 38% (n=53,036) of persons tested for chlamydia.
# Low level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

Table 3.4 Concurrent STI by gender and sexual preference among persons diagnosed with chlamydia, 2014

Concurrent infection	Heterosexual men (N=5,671) n (%)	MSM (N=3,045) n (%)	Women (N=9,037) n (%)
Gonorrhoea	261 (4.6)	622 (20.4)	413 (4.6)
Infectious syphilis	1 (0.0)	125 (4.1)	1 (0.0)
HIV newly diagnosed	0 (0.0)	67 (2.2)	5 (0.1)
Genital herpes	10 (0.2)	19 (0.6)	24 (0.3)
Genital warts	102 (1.8)	59 (1.9)	108 (1.2)
Infectious hepatitis B	14 (0.2)	12 (0.4)	1 (0.0)
Hepatitis C	0 (0.0)	3 (0.1)	0 (0.0)

Table 3.5 Location of chlamydia infection by gender and sexual preference, 2014

Location	Heterosexual men (N=5,671) n (%)	MSM (N=3,045) n (%)	Women (N=9,037) n (%)
Urogenital only	5,584 (98.5)	675 (22.2)	6,657 (73.7)
Anorectal only	22 (0.4)	1,738 (57.1)	335 (3.7)
Oral only	8 (0.1)	134 (4.4)	133 (1.5)
Urogenital and anorectal	8 (0.1)	319 (10.5)	1,285 (14.2)
Urogenital and oral	9 (0.2)	18 (0.6)	361 (4.0)
Anorectal and oral	0 (0.0)	131 (4.3)	21 (0.2)
Urogenital and anorectal and oral	1 (0.0)	19 (0.6)	178 (2.0)
Pooled samples*	39 (0.7)	11 (0.4)	67 (0.7)

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

Table 3.6 Number and percentage of positive tests for chlamydia by location, gender and sexual preference, 2007–2014

	2007 n pos. (%)	2008 n pos. (%)	2009 n pos. (%)	2010 n pos. (%)	2011 n pos. (%)	2012 n pos. (%)	2013 n pos. (%)	2014 n pos. (%)
Heterosexual men								
Urogenital	2,807 (9.9)	3,343 (10.6)	3,480 (10.8)	3,922 (11.3)	4,434 (11.9)	5,052 (13.2)	5,154 (12.7)	5,606 (13.8)
Anorectal	0 (0.0)	2 (0.8)	7 (1.6)	13 (2.8)	17 (2.8)	22 (3.3)	25 (2.9)	31 (3.5)
Oral	10 (1.3)	6 (1.1)	4 (0.5)	10 (1.0)	11 (0.8)	18 (1.3)	20 (1.2)	18 (1.0)
MSM								
Urogenital	454 (4.2)	651 (4.8)	661 (4.1)	790 (4.1)	852 (3.9)	875 (3.6)	954 (3.5)	1,034 (3.5)
Anorectal	710 (10.4)	1,046 (11.7)	1,081 (9.5)	1,381 (9.5)	1,537 (9.1)	1,800 (9.1)	1,856 (8.2)	2,213 (8.2)
Oral	35 (1.5)	72 (2.1)	81 (1.5)	134 (1.8)	218 (1.2)	272 (1.3)	264 (1.1)	299 (1.2)

Table 3.6 (continued) Number and percentage of positive tests for chlamydia by location, gender and sexual preference, 2007–2014

	2007 n pos. (%)	2008 n pos. (%)	2009 n pos. (%)	2010 n pos. (%)	2011 n pos. (%)	2012 n pos. (%)	2013 n pos. (%)	2014 n pos. (%)
Women								
Urogenital	3,757 (9.9)	4,385 (10.3)	4,521 (10.3)	5,386 (10.7)	6,109 (11.4)	6,736 (11.6)	7,498 (11.5)	8,497 (12.1)
Anorectal	306 (9.4)	328 (9.4)	380 (9.2)	439 (9.2)	551 (9.3)	740 (9.5)	1,028 (10.2)	1,829 (12.0)
Oral	139 (2.9)	134 (2.3)	214 (2.9)	239 (2.6)	416 (2.8)	586 (3.4)	719 (3.3)	703 (2.9)

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. Therefore, the fluctuation of positivity rates through the years has to be interpreted with caution.
Footnote 2: Please note that people can have positive tests at multiple locations.

3.3 General practice

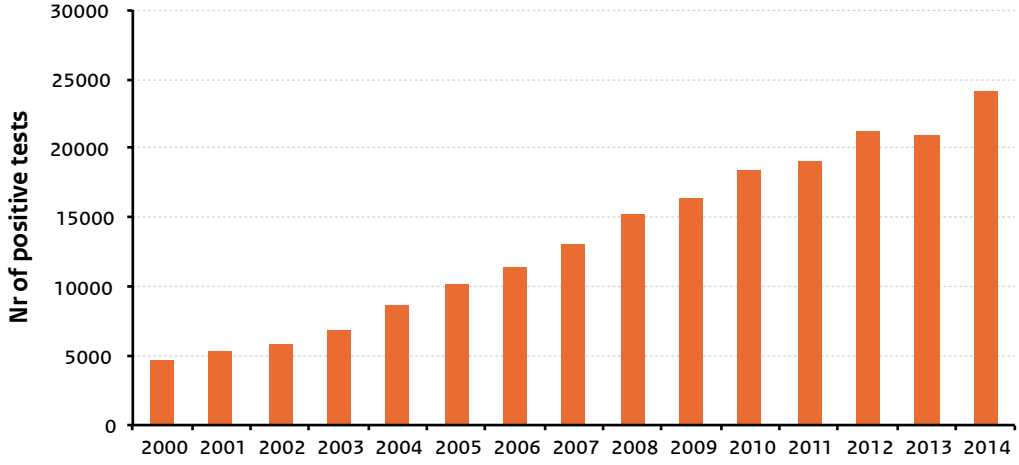
Figure 3.6 Estimated annual number of reported episodes of chlamydia at GPs by gender, based on extrapolation from practices in the NIVEL-PCD (2009-2013)

Table 3.7 Annual reporting rate (number of episodes per 1,000 persons) of chlamydia at GPs in the Netherlands by gender, based on extrapolation from the GP practices in the NIVEL-PCD (2009-2013)

	Men n/1,000	Women n/1,000	Total n/1,000
2009	1.7	2.5	2.1
2010	1.8	2.3	2.1
2011	1.7	2.4	2.0
2012	1.7	2.9	2.3
2013	1.9	2.6	2.3

3.4 Laboratory surveillance

Figure 3.7 Number of positive tests for *Chlamydia trachomatis* from approximately 21 medical microbiology laboratories, 2000-2014



(Source: 'Virologische weekstaten')

3.5 Lymphogranuloma venereum

Figure 3.8 Number of tests for *Lymphogranuloma venereum* and positivity rate in the STI clinics, 2006–2014

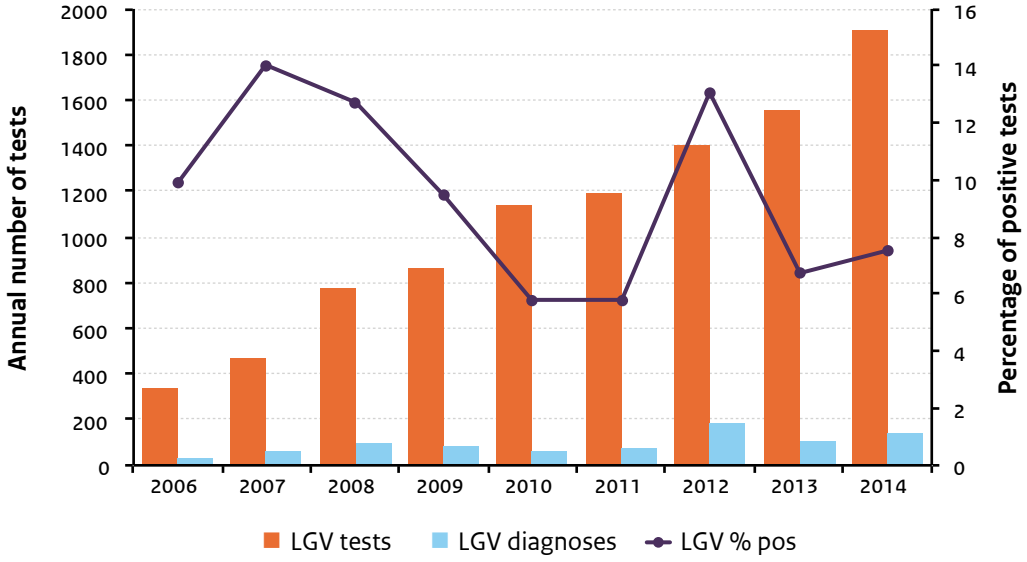


Table 3.8 Characteristics of MSM diagnosed with LGV, 2008–2014

	2008 (N=100) n (%)	2009 (N=84) n (%)	2010 (N=66) n (%)	2011 (N=70) n (%)	2012 (N=184) n (%)	2013 (N=106) n (%)	2014 (N=152*) n (%)
Median age (range)	41.6 (26–63)	41.0 (20–61)	41 (21-65)	40 (21-67)	41 (19-67)	43 (19-69)	42 (21-63)
Dutch ethnicity	74 (74.0)	64 (76.2)	56 (84.8)	40 (57.1)	117 (63.6)	71 (67.0)	101 (66.4)
Known HIV positive	71 (71.0)	59 (70.2)	49 (74.2)	55 (78.6)	140 (76.1)	83 (78.3)	116 (76.3)
LGV with anorectal chlamydia infection only	96 (96.0)	75 (89.3)	58 (87.9)	53 (75.7)	153 (83.2)	97 (91.5)	126 (82.9)
LGV with urethral chlamydia infection only	3 (3.0)	0 (0.0)	0 (0.0)	2 (2.9)	0 (0.0)	1 (0.9)	2 (1.3)
LGV with anorectal and urethral chlamydia	1 (1.0)	9 (10.7)	8 (12.1)	5 (7.1)	22 (12.0)	8 (7.5)	18 (11.8)
Concurrent gonorrhoea	26 (26.0)	24 (28.6)	14 (21.2)	17 (24.3)	47 (25.5)	30 (28.3)	40 (26.3)
Concurrent syphilis	11 (11.0)	3 (3.6)	5 (7.6)	9 (12.9)	17 (9.2)	9 (8.5)	11 (7.2)
Concurrent new HIV diagnosis	2 (2.0)	2 (2.4)	1 (1.5)	2 (2.9)	9 (4.9)	2 (1.9)	4 (2.6)

* In addition one case was reported in a heterosexual man; for six cases there was no location of chlamydia infection reported.

4 Gonorrhoea

4.1 Key points

- In 2014, 4,594 patients (61.9 per cent MSM, 22.6 per cent women and 15.5 per cent heterosexual men) were diagnosed with gonorrhoea at STI clinics in the Netherlands.
- The overall positivity rate remained stable between 3.4 and 3.6 per cent from 2012 to 2014. The positivity rate was 9.5 per cent among MSM, 1.9 per cent among heterosexual men and 1.8 per cent among women.
- Increases in the gonorrhoea positivity rate in 2014 were limited to 15–19-year-olds and those over 40 years of age.
- Whereas in heterosexual men the positivity rate was highest among those aged 15-19 years (3.4 per cent), the positivity rate in women was highest among those aged 50-54 years (3.4 per cent). In women aged 15-19 years, the positivity rate was 3.2 per cent.
- The positivity rate was particularly high in the following groups: heterosexual men and known HIV-positive MSM (16.3 and 16.4 per cent, respectively), MSM who had had a previous STI (14.7 per cent), MSM who had worked as CSW in the previous six months (13.9 per cent), and women and heterosexual men of Dutch Antillean/Aruban (4.8 and 6.8 per cent, respectively) or Surinamese descent (3.8 and 5.2 per cent respectively). In MSM, ethnic groups who showed high gonorrhoea positivity (higher than 10 per cent) were Sub-Saharan Africans, people from the Netherlands Antilles and Aruba and Latin Americans.
- Of the individuals diagnosed with gonorrhoea, 28.2 per cent had a chlamydia co-infection and 1.2 per cent were newly diagnosed with HIV.
- At general practices, the number of gonorrhoea episodes, estimated from data from the NIVEL-PCD, was 8,300 in 2013, with a reporting rate of 0.5 per 1,000 people. The reporting rate was higher in men than in women (0.6 versus 0.4/1,000).
- Resistance to ceftriaxone (the first-choice treatment in the Netherlands) was not found; however, two isolates reached the limit value for resistance. For cefotaxime (also a third-generation cephalosporin) 3.1 per cent of the isolates had an MIC higher than 0.125 mg/L and were considered resistant. 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, 2014

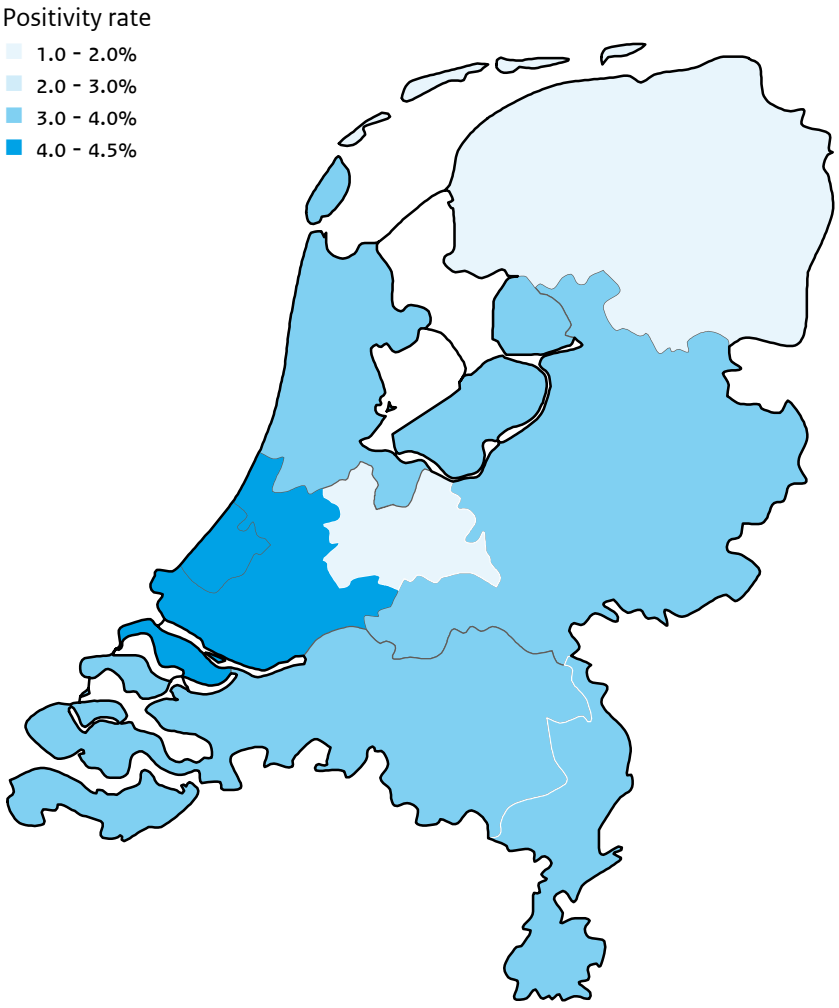


Figure 4.2 Total number of tests and positivity rate of gonorrhoea by gender and sexual preference, 2004–2014

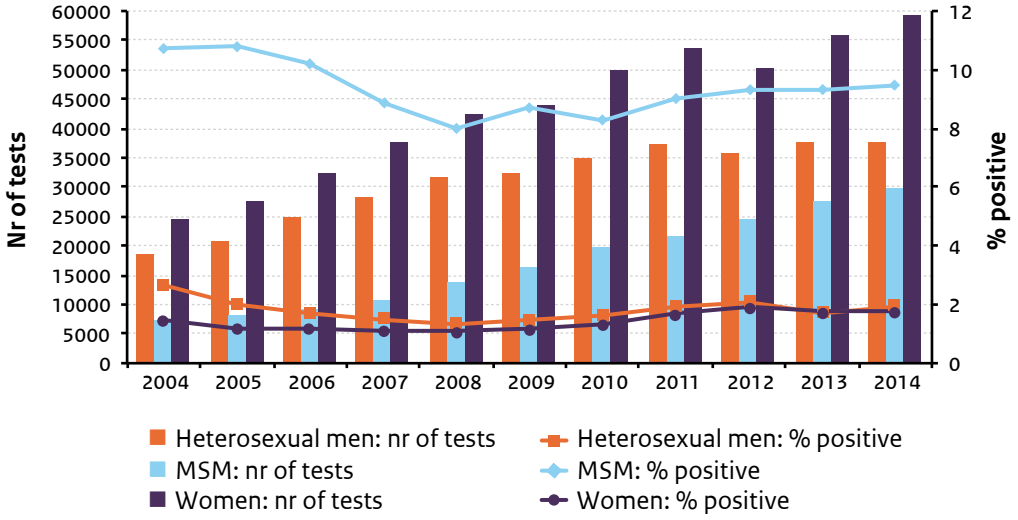
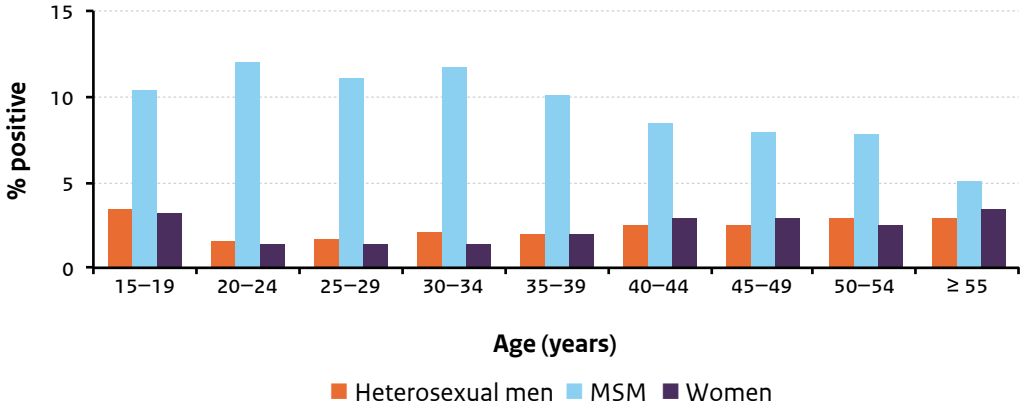


Table 4.1 Number of positive tests and persons tested for gonorrhoea by age, gender and sexual preference, 2014

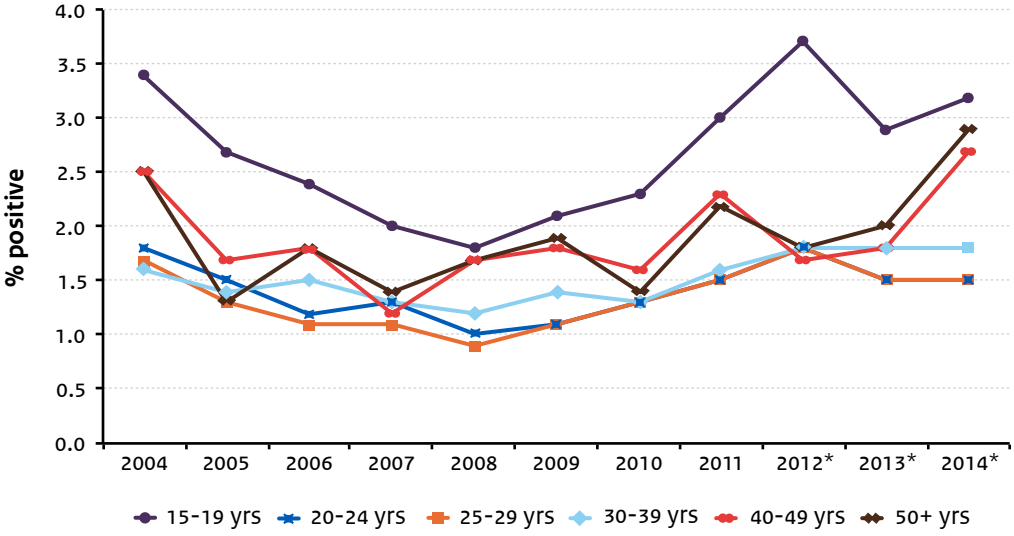
Age (years)	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
≤ 14	0	3	0	3	2	62
15–19	60	1,780	71	680	201	6,363
20–24	220	14,573	520	4,314	403	28,181
25–29	159	9,543	502	4,552	163	12,154
30–34	91	4,300	452	3,836	65	4,487
35–39	44	2,280	368	3,665	46	2,381
40–44	42	1,730	283	3,329	55	1,943
45–49	35	1,394	274	3,478	51	1,769
50–54	30	1,020	207	2,678	29	1,137
≥ 55	31	1,086	167	3,285	23	678
Unknown	0	1	0	1	0	2
Total	**712**	**37,710**	**2,844**	**29,821**	**1,038**	**59,157**

Figure 4.3 Percentage of positive tests for gonorrhoea by age, gender and sexual preference, 2014



Footnote: Since 2012, attendees below the age of 25 years with no further risk factors are only tested for chlamydia. This results in a decrease of the total number of persons tested for gonorrhoea in this age group, and in a possible increase in positivity rate.

Figure 4.4a Trends in positivity rate for gonorrhoea in women and heterosexual men by age-group, 2004–2014



* Since 2012, attendees below the age of 25 years with no further risk factors are only tested for chlamydia. This results in a decrease of the total number of persons tested for gonorrhoea in this age group, and in a possible increase in positivity rate.

Figure 4.4b Trends in positivity rate for gonorrhoea in MSM by age-group, 2004–2014

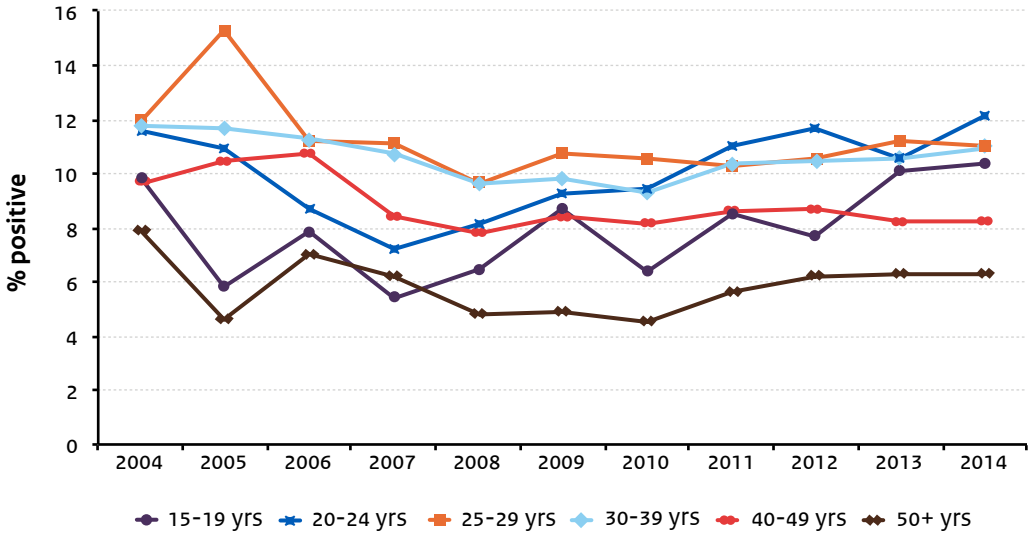


Table 4.2 Number of positive tests and persons tested for gonorrhoea by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
The Netherlands	207	23,268	1,951	21,177	549	39,819
Turkey	39	1,024	34	386	13	605
North Africa/Morocco	57	1,583	33	335	22	1,113
Surinam	156	3,013	85	904	140	3,640
Netherlands Antilles/Aruba	106	1,565	78	612	77	1,594
Sub-Saharan Africa	48	1,433	39	263	40	1,379
Eastern Europe	9	546	69	665	66	2,572
Latin America	19	628	112	939	27	1,537
Asia	21	1,921	156	1,652	37	2,707
Europe other	41	2,060	236	2,275	58	3,190
Other	4	333	34	342	1	540
Unknown	5	336	17	271	8	461

Table 4.2 (continued) Number of positive tests and persons tested for gonorrhoea by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
Natives	207	23,268	1,951	21,177	549	39,819
First generation migrants	234	6,517	615	5,818	209	8,936
Second generation migrants	264	7,563	258	2,541	270	9,894
Unknown	7	362	20	285	10	508
Total	**712**	**37,710**	**2,844**	**29,821**	**1,038**	**59,157**

Figure 4.5 Percentage of positive tests for gonorrhoea by ethnicity, gender and sexual preference, 2014

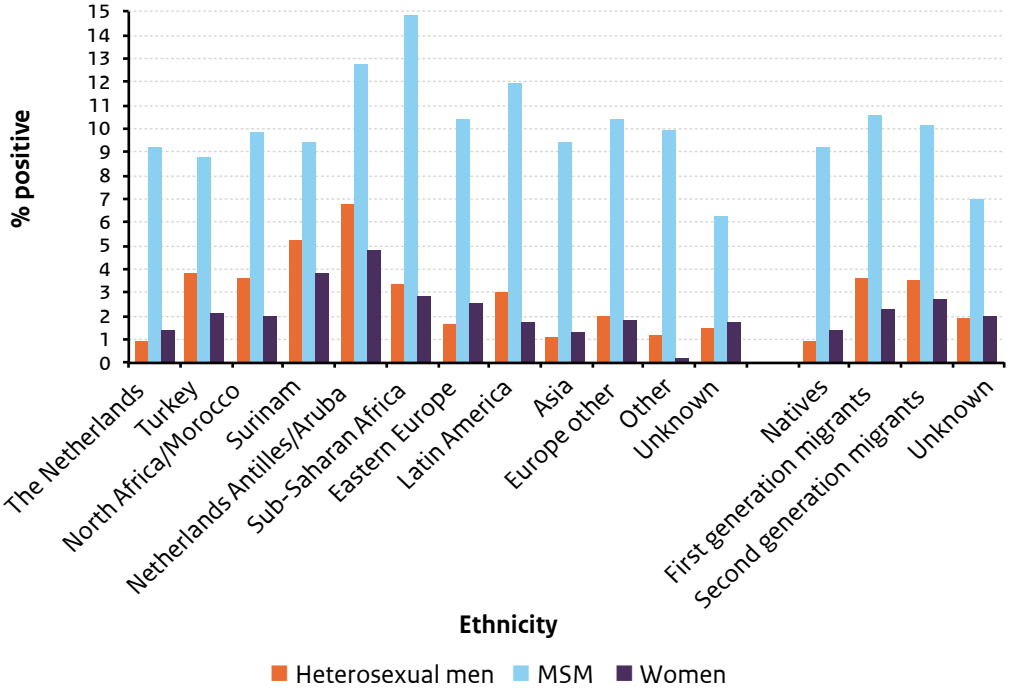


Table 4.3 Number and percentage of positive tests and total persons tested for gonorrhoea by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men n positive/N	%	MSM n positive/N	%	Women n positive/N	%
Number of partners in past 6 months						
0 partners	2/148	1.4	1/139	0.7	3/296	1.0
1 partner	113/5,790	2.0	160/2,784	5.7	249/14,479	1.7
2 partners	167/7,073	2.4	245/3,306	7.4	229/13,114	1.7
3 or more partners	413/24,241	1.7	2,322/22,618	10.3	469/28,393	1.7
Unknown	17/458	3.7	116/974	11.9	88/2,875	3.1
Condom use if last sexual contact was steady*						
No	235/12,136	1.9	763/7,644	10.0	470/21,173	2.2
Yes	29/3,251	0.9	258/2,868	9.0	78/4,740	1.6
Unknown	1/81	1.2	10/141	7.1	5/132	3.8
Condom use if last sexual contact was casual*						
No	316/14,425	2.2	909/8,611	10.6	272/21,441	1.3
Yes	114/6,971	1.6	783/8,486	9.2	188/10,045	1.9
Unknown	4/158	2.5	22/274	8.0	4/232	1.7
Previous gonorrhoea/chlamydia/syphilis in anamnesis						
No	533/31,029	1.7	1,730/21,548	8.0	726/48,003	1.5
Yes	132/3,688	3.6	1,054/7,149	14.7	248/7,365	3.4
Don't know	16/1,399	1.1	19/387	4.9	12/1,556	0.8
Unknown	31/1,594	1.9	41/737	5.6	52/2,233	2.3
Previous HIV test						
No	281/17,731	1.6	225/3,450	6.5	325/24,737	1.3
Yes, positive	7/43	16.3	697/4,239	16.4	6/76	7.9
Yes, negative	412/19,344	2.1	1,915/21,907	8.7	680/33,248	2.0
Yes, result unknown	2/62	3.2	3/56	5.4	1/113	0.9
Unknown	10/530	1.9	4/169	2.4	26/983	2.6
CSW						
No	695/37,377	1.9	2,757/29,056	9.5	850/53,498	1.6
Yes, in past 6 months	10/194	5.2	72/519	13.9	183/5,437	3.4
Unknown	7/139	5.0	15/246	6.1	5/222	2.3

Table 4.3 (continued) Number and percentage of positive tests and total persons tested for gonorrhoea by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW, men						
No	625/33,350	1.9	2,772/28,440	9.7		
Yes, in past 6 months	81/4,172	1.9	37/733	5.0		
Unknown	6/188	3.2	35/648	5.4		
Swinger**						
No	318/14,544	2.2	809/8,248	9.8	425/21,102	2.0
Yes	46/1,458	3.2	53/1,074	4.9	104/2,352	4.4
Unknown	2/23	8.7	11/252	4.4	5/102	4.9
Socioeconomic status						
Very high	75/4,970	1.5	377/4,336	8.7	100/7,925	1.3
High	135/9,789	1.4	769/8,196	9.4	239/15,746	1.5
Medium	167/10,374	1.6	721/7,716	9.3	257/16,035	1.6
Low	114/6,366	1.8	507/5,203	9.7	179/9,557	1.9
Very low	144/4,009	3.6	254/2,398	10.6	128/5,229	2.4
Unknown	77/2,202	3.5	216/1,972	11.0	135/4,665	2.9
Educational level#						
High	141/15,128	0.9	982/11,562	8.5	204/23,192	0.9
Low	345/9,716	3.6	606/5,635	10.8	482/14,431	3.3
Other	6/272	2.2	29/288	10.1	8/488	1.6
Unknown	220/12,594	1.7	1,227/12,336	9.9	344/21,046	1.6

* Type of sexual contact was missing for 3% (n=3,822) of persons tested for gonorrhoea.
** Voluntary question, answered by 39% (n=49,155) of persons tested for gonorrhoea.
# Low level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

Table 4.4 Concurrent STI by gender and sexual preference among persons diagnosed with gonorrhoea, 2014

Concurrent infection	Heterosexual men (N=712) n (%)	MSM (N=2,844) n (%)	Women (N=1,038) n (%)
Chlamydia	261 (36.7)	622 (21.9)	413 (39.8)
Infectious syphilis	3 (0.4)	115 (4.0)	0 (0.0)
HIV newly diagnosed	1 (0.1)	56 (2.0)	0 (0.0)
Genital herpes	1 (0.1)	12 (0.4)	4 (0.4)
Genital warts	10 (1.4)	54 (1.9)	12 (1.2)
Infectious hepatitis B	1 (0.1)	2 (0.1)	0 (0.0)
Hepatitis C	0 (0.0)	3 (0.1)	0 (0.0)

Table 4.5 Location of gonorrhoea infection by gender and sexual preference, 2014

Location	Heterosexual men (N=712) n (%)	MSM (N=2,844) n (%)	Women (N=1,038) n (%)
Urogenital only	645 (90.6)	257 (9.0)	516 (49.7)
Anorectal only	8 (1.1)	867 (30.5)	49 (4.7)
Oral only	39 (5.5)	742 (26.1)	168 (16.2)
Urogenital and anorectal	4 (0.6)	244 (8.6)	119 (11.5)
Urogenital and oral	6 (0.8)	94 (3.3)	102 (9.8)
Anorectal and oral	4 (0.6)	435 (15.3)	8 (0.8)
Urogenital and anorectal and oral	4 (0.6)	203 (7.1)	70 (6.7)
Pooled samples*	2 (0.3)	2 (0.1)	6 (0.6)

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

Table 4.6 Number and percentage of positive tests for gonorrhoea by location, gender and sexual preference, 2006–2014

	2006 n pos. (%)*	2007 n pos. (%)*	2008 n pos. (%)*	2009 n pos. (%)*	2010 n pos. (%)*	2011 n pos. (%)*	2012 n pos. (%)*	2013 n pos. (%)*	2014 n pos. (%)*
Heterosexual men									
Urogenital	424 (1.7)	429 (1.5)	401 (1.3)	471 (1.5)	518 (1.5)	684 (1.8)	708 (2.0)	582 (1.5)	661 (1.8)
Anorectal	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.5)	10 (2.1)	14 (2.3)	9 (1.5)	10 (1.3)	20 (2.3)
Oral	8 (0.8)	7 (0.8)	17 (2.7)	11 (1.2)	26 (2.2)	27 (1.8)	26 (1.7)	34 (2.0)	53 (2.7)
MSM									
Urogenital	494 (5.3)	430 (4.0)	453 (3.4)	475 (3.0)	521 (2.7)	610 (2.8)	673 (2.8)	703 (2.6)	798 (2.7)
Anorectal	485 (7.0)	554 (6.7)	573 (5.4)	698 (5.3)	779 (4.7)	1,024 (5.4)	1,230 (5.6)	1,453 (5.8)	1,749 (6.3)
Oral	184 (2.7)	209 (2.6)	353 (3.3)	651 (4.8)	820 (4.7)	999 (4.9)	1,232 (5.4)	1,348 (5.1)	1,474 (5.1)
Women									
Urogenital	326 (1.0)	358 (1.0)	362 (0.9)	426 (1.0)	546 (1.1)	752 (1.4)	789 (1.6)	771 (1.4)	809 (1.4)
Anorectal	65 (1.0)	88 (1.2)	81 (1.1)	106 (1.4)	105 (1.2)	133 (1.4)	128 (1.1)	165 (1.2)	248 (1.5)
Oral	63 (0.8)	89 (0.9)	121 (1.2)	154 (1.3)	185 (1.4)	267 (1.7)	269 (1.5)	329 (1.5)	349 (1.4)

Footnote: 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 at all three locations. Therefore, the fluctuation of positivity rates through the years has to be interpreted with caution.

* Numbers do not add up to 100% since one client can have a positive test result at more than one location.

4.3 General practice

Figure 4.6 Estimated annual number of episodes of gonorrhoea at GPs by gender, based on extrapolation from practices in the NIVEL-PCD (2009-2013)

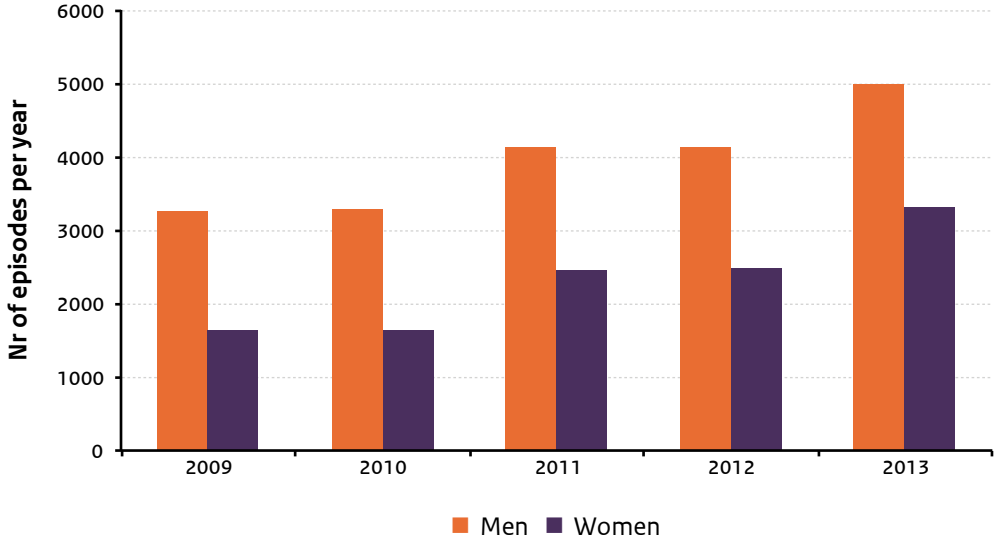
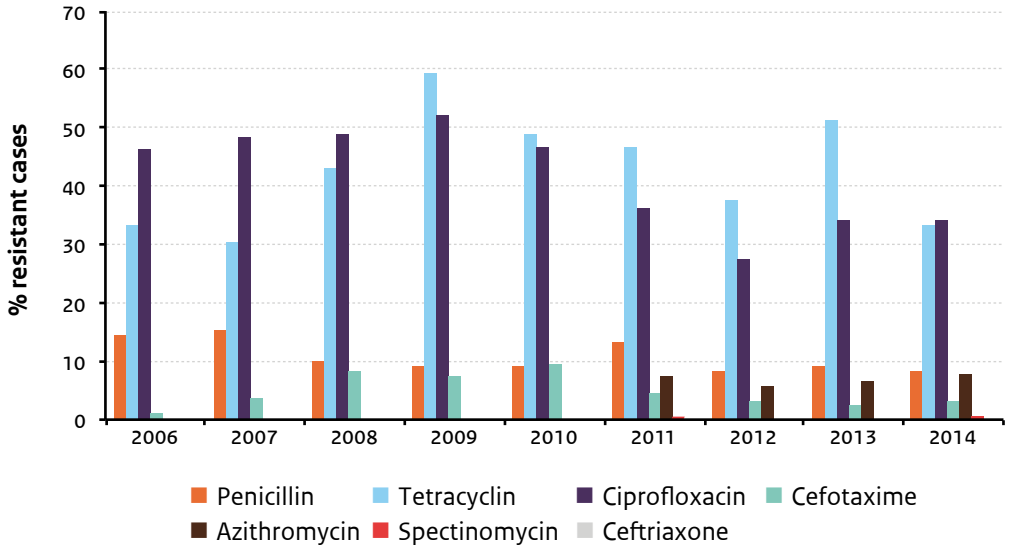


Table 4.7 Annual reporting rate (number of episodes per 1,000 persons) of gonorrhoea at GPs in the Netherlands by gender, based on extrapolation from the GP practices in the NIVEL-PCD (2009-2013)

	Men n/1,000	Women n/1,000	Total n/1,000
2009	0.4	0.2	0.3
2010	0.4	0.2	0.3
2011	0.5	0.3	0.4
2012	0.5	0.3	0.4
2013	0.6	0.4	0.5

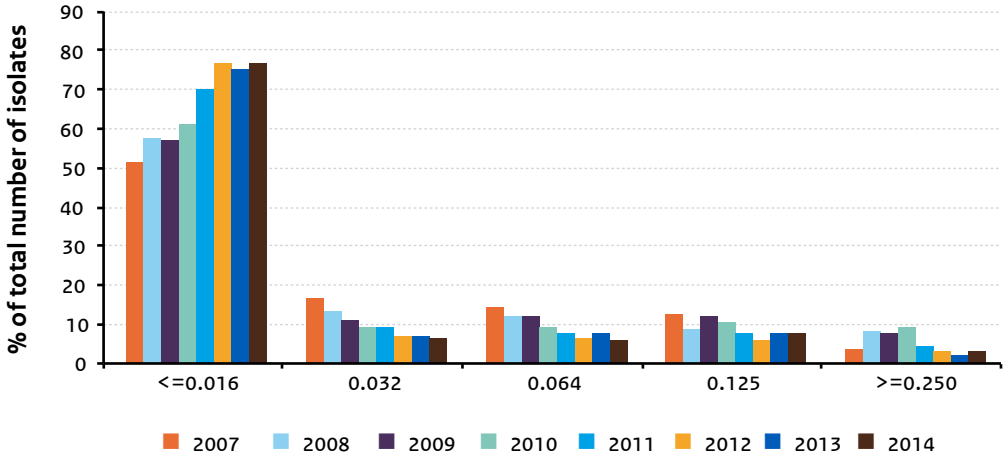
4.4 Antimicrobial resistance of gonococci in the Netherlands

Figure 4.7 Gonococcal resistance (following EUCAST breakpoints) in the Netherlands, proportion of resistant cases 2006–2014



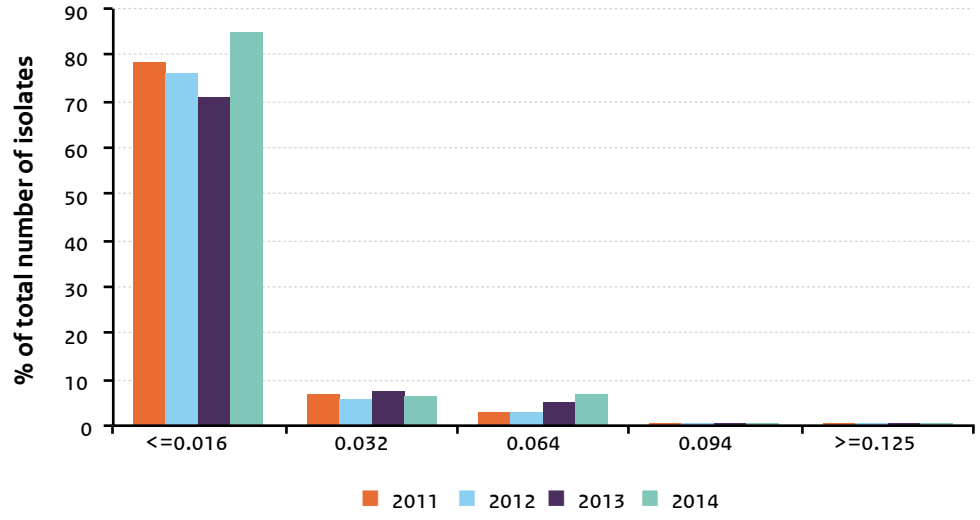
(Source: GRAS, STI clinics)
Footnote 1: Resistant following EUCAST criteria, however no clinical resistance has been reported yet.
Footnote 2: In 2011, ceftriaxone, azithromycin and spectinomycin were added to the panel and testing for penicillin and tetracyclin became optional. In 2014, testing for spectinomycin became optional.

Figure 4.8a MIC (Minimum Inhibitory Concentration) distribution for cefotaxim (3rd generation cephalosporin), 2007-2014



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

Figure 4.8b MIC (Minimum Inhibitory Concentration) distribution for ceftriaxone (3rd generation cephalosporin), 2011-2014



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

5 Syphilis

5.1 Key points

- In 2014, 742 clients (93.4 per cent MSM, 4.3 per cent heterosexual men, 2.3 per cent women) were diagnosed with infectious syphilis at STI clinics in the Netherlands.
- Among MSM, the infectious syphilis positivity rate dropped from 4.3 per cent in 2007 to 2.0 per cent in 2011-2013. In 2014, the positivity rate increased slightly, to 2.3 per cent. The greatest increase was seen among HIV-positive MSM: from 5.8 per cent in 2013 to 6.6 per cent in 2014.
- Of all infectious syphilis cases among MSM, 40.6 per cent were diagnosed in known HIV-positives and 2.7 per cent in newly diagnosed HIV cases.
- As in previous years, the positivity rate of infectious syphilis was higher in known HIV-positive MSM (6.6 per cent) than in MSM who had previously tested HIV-negative (1.5 per cent).
- Of all MSM diagnosed with infectious syphilis, 18.0 per cent had a co-infection with chlamydia and 16.6 per cent had a co-infection with gonorrhoea.
- Data from screening of pregnant women showed an estimated prevalence of syphilis of 0.08 per cent in 2013/2014.

5.2 STI clinics: characteristics, risk groups and trends

Figure 5.1 Positivity rates of infectious syphilis by region, the Netherlands, 2014

Figure 5.2 Total number of tests and positivity rate of infectious syphilis by gender and sexual preference, 2004–2014

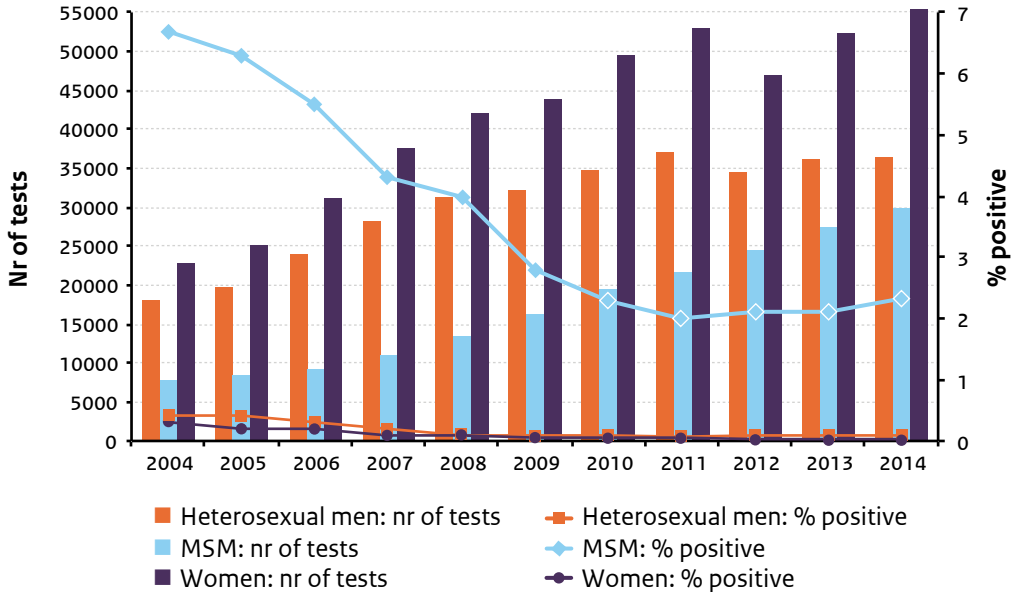


Table 5.1 Number of positive tests and persons tested for infectious syphilis by age, gender and sexual preference, 2014

Age (years)	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
≤ 14	0	1	0	3	0	53
15–19	0	1,626	10	679	1	5,601
20–24	3	13,599	63	4,307	5	25,434
25–29	5	9,405	69	4,547	3	11,907
30–34	4	4,287	96	3,831	1	4,472
35–39	5	2,282	85	3,674	1	2,373
40–44	5	1,732	113	3,329	3	1,932
45–49	5	1,395	97	3,482	1	1,761
50–54	3	1,017	82	2,687	1	1,135
≥ 55	2	1,086	78	3,300	1	675
Unknown	0	0	0	1	0	2
Total	**32**	**36,430**	**693**	**29,840**	**17**	**55,345**

Figure 5.3 Percentage of positive tests for infectious syphilis by age, gender and sexual preference, 2014

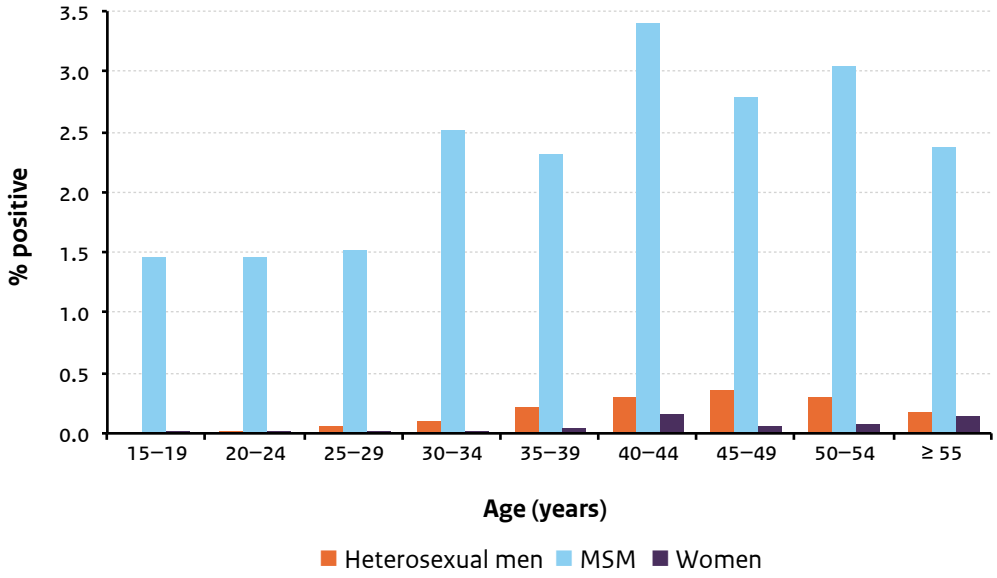


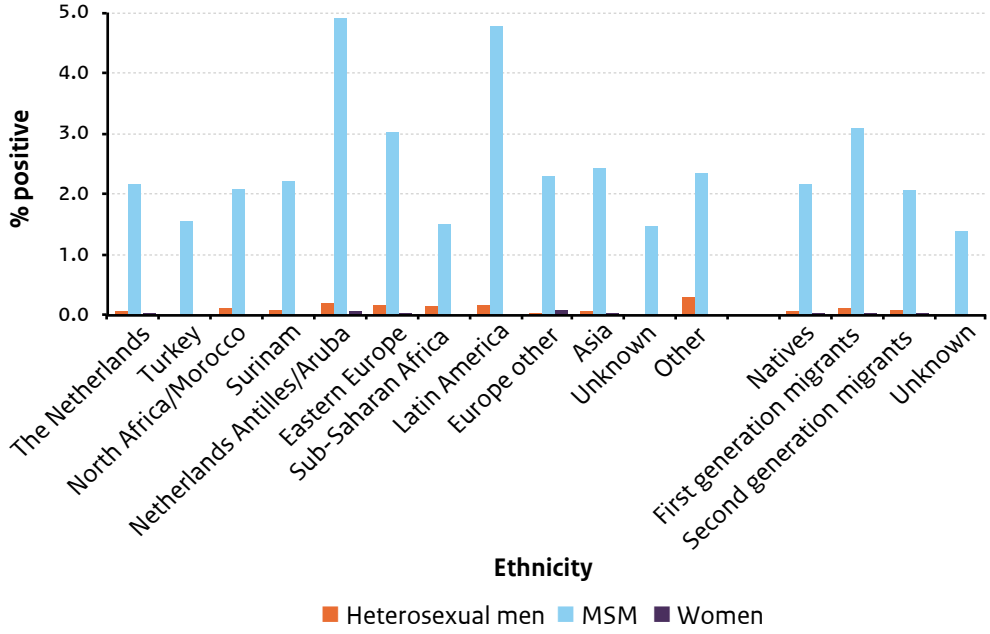
Table 5.2 Number of positive tests and persons tested for infectious syphilis by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
The Netherlands	17	22,126	457	21,203	11	36,351
Turkey	0	1,023	6	387	0	600
North Africa/Morocco	2	1,577	7	336	0	1,106
Surinam	3	3,006	20	903	0	3,624
Netherlands Antilles/Aruba	3	1,556	30	611	1	1,575
Eastern Europe	1	541	20	664	1	2,553
Sub-Saharan Africa	2	1,426	4	264	0	1,365
Latin America	1	626	45	940	0	1,519
Europe other	1	1,987	52	2,272	3	3,041
Asia	1	1,908	40	1,648	1	2,658
Unknown	0	329	4	271	0	444
Other	1	325	8	341	0	509

Table 5.2 (continued) Number of positive tests and persons tested for infectious syphilis by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
Natives	17	22,126	457	21,203	11	36,351
First generation migrants	8	6,475	180	5,814	3	8,811
Second generation migrants	7	7,474	52	2,538	3	9,691
Unknown	0	355	4	285	0	492
Total	**32**	**36,430**	**693**	**29,840**	**17**	**55,345**

Figure 5.4 Percentage of positive tests for infectious syphilis by ethnicity, gender and sexual preference, 2014



Footnote: Until 2010, ethnicity was self-reported. Since 1 January 2011, ethnicity has been based on the country of birth of the client and client's parents; the 2011-2014 data can therefore not be directly compared with previous years.

Table 5.3 Number and percentage of positive tests and total persons tested for infectious syphilis by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men n positive/N	%	MSM n positive/N	%	Women n positive/N	%
Number of partners in past 6 months						
0 partners	0/136	0.0	2/139	1.4	0/231	0.0
1 partner	9/5,192	0.2	57/2,781	2.0	9/12,667	0.1
2 partners	8/6,497	0.1	87/3,308	2.6	2/11,410	0.0
3 or more partners	14/24,156	0.1	522/22,619	2.3	6/28,219	0.0
Unknown	1/449	0.2	25/993	2.5	0/2,818	0.0
Condom use if last sexual contact was steady*						
No	10/11,601	0.1	185/7,646	2.4	8/19,600	0.0
Yes	3/3,050	0.1	58/2,866	2.0	1/4,399	0.0
Unknown	0/79	0.0	4/145	2.8	0/124	0.0
Condom use if last sexual contact was casual*						
No	12/14,079	0.1	223/8,619	2.6	6/20,137	0.0
Yes	6/6,867	0.1	186/8,481	2.2	0/9,733	0.0
Unknown	0/157	0.0	8/274	2.9	0/222	0.0
Previous gonorrhoea/chlamydia/syphilis in anamnesis						
No	26/30,079	0.1	429/21,544	2.0	15/45,076	0.0
Yes	4/3,569	0.1	255/7,160	3.6	2/6,883	0.0
Don't know	1/1,324	0.1	0/388	0.0	0/1,420	0.0
Unknown	1/1,458	0.1	9/748	1.2	0/1,966	0.0
Previous HIV test						
No	13/16,704	0.1	53/3,446	1.5	10/22,182	0.0
Yes, positive	4/43	9.3	281/4,240	6.6	0/72	0.0
Yes, negative	14/19,110	0.1	357/21,921	1.6	7/32,105	0.0
Yes, result unknown	0/58	0.0	2/56	3.6	0/84	0.0
Unknown	1/515	0.2	0/177	0.0	0/902	0.0
CSW						
No	31/36,104	0.1	678/29,066	2.3	15/49,784	0.0
Yes, in past 6 months	0/192	0.0	12/519	2.3	2/5,393	0.0
Unknown	1/134	0.7	3/255	1.2	0/168	0.0

Table 5.3 (continued) Number and percentage of positive tests and total persons tested for infectious syphilis by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW, men						
No	29/32,081	0.1	672/28,451	2.4		
Yes, in past 6 months	2/4,171	0.0	9/733	1.2		
Unknown	1/178	0.6	12/656	1.8		
Swinger**						
No	9/13,853	0.1	193/8,236	2.3	3/19,108	0.0
Yes	2/1,454	0.1	5/1,073	0.5	3/2,347	0.1
Unknown	0/21	0.0	2/252	0.8	0/21,549	0.0
Socioeconomic status						
Very high	5/4,857	0.1	106/4,337	2.4	0/7,517	0.0
High	9/9,373	0.1	200/8,206	2.4	8/14,558	0.1
Medium	7/9,976	0.1	177/7,716	2.3	5/14,756	0.0
Low	3/6,191	0.0	101/5,205	1.9	2/9,091	0.0
Very low	3/3,885	0.1	54/2,397	2.3	1/4,895	0.0
Unknown	5/2,148	0.2	55/1,979	2.8	1/4,528	0.0
Educational level#						
High	9/14,325	0.1	219/11,579	1.9	6/20,940	0.0
Low	14/9,392	0.1	141/5,638	2.5	4/13,461	0.0
Other	0/268	0.0	7/289	2.4	0/470	0.0
Unknown	9/12,445	0.1	326/12,334	2.6	7/20,474	0.0

* Type of sexual contact was missing for 2.9% (n=3,470) of persons tested for syphilis.
** Voluntary question, answered by 47% (N=67,893) of persons tested for syphilis.
# Low level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

Table 5.4 Concurrent STI by gender and sexual preference among persons diagnosed with infectious syphilis, 2014

Concurrent infection	Heterosexual men (N=32) n (%)	MSM (N=693) n (%)	Women (N=17) n (%)
Chlamydia	1 (3.1)	125 (18.0)	1 (5.9)
Gonorrhoea	3 (9.4)	115 (16.6)	0 (0.0)
HIV newly diagnosed	2 (6.3)	18 (2.6)	0 (0.0)
Genital herpes	1 (3.1)	8 (1.2)	1 (5.9)
Genital warts	0 (0.0)	14 (2.0)	1 (5.9)
Infectious hepatitis B	0 (0.0)	2 (0.3)	0 (0.0)
Hepatitis C	0 (0.0)	2 (0.3)	0 (0.0)

5.3 Antenatal screening

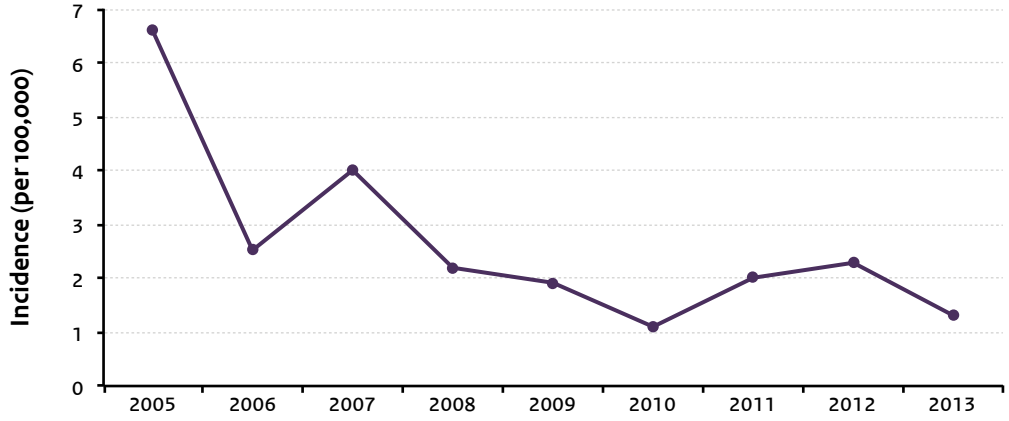
Table 5.5 Syphilis prevalence estimates in pregnant women, based on test results of antenatal screening, 2006–2014

Year	Nr. of women screened	Positive result 12 weeks test	Confirmed positive test results (%)	Prevalence estimate [min–max]
2006	185,941	320	142 (44%)	0.12 [0.08–0.13]
2007	186,137	331	181 (55%)	0.14 [0.10–0.15]
2008	190,139	359	197 (55%)	0.16 [0.10–0.17]
2009	185,219	398	257 (65%)	0.20 [0.14–0.21]
2009/10	187,478	391	272 (74%)	0.15 [0.15-0.16]
2010/11	182,199	349	211 (65%)	0.12 [0.12-0.13]
2011#	88,478		74	0.08
2012/13	173,878		101	0.06
2013/14	176,070		135	0.08

(Sources: C.P.B. van der Ploeg (TNO), Y. Schonbeck (TNO), H. Hirschberg (RIVM). Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE). Procesmonitor 2013. TNO/RIVM 2015)
Footnote 1: Terminated pregnancies (induced or spontaneous) are excluded until 2012.
Footnote 2: Since 2009, time periods of data collection range from June to June the subsequent year.
Footnote 3: Since the second half of 2011, the prevalence calculation is based on the final conclusion made by the laboratory ('lab-conclusion') and passed to the RIVM-DVP (Dienst Vaccinvoorziening & Preventieprogramma's). If the lab-conclusion is missing, then the result of the confirmation test is used. In previous reports, prevalence was shown as a range from minimum to maximum prevalence. Minimum prevalence: number of confirmed positive test results divided by the total number of registered pregnant women; maximum prevalence: under the assumption that all pregnant women with a positive result without a confirmation test would also have a positive confirmation test. After 2011, only the middle of the range was shown (the mid-prevalence).
Data from July-December 2011

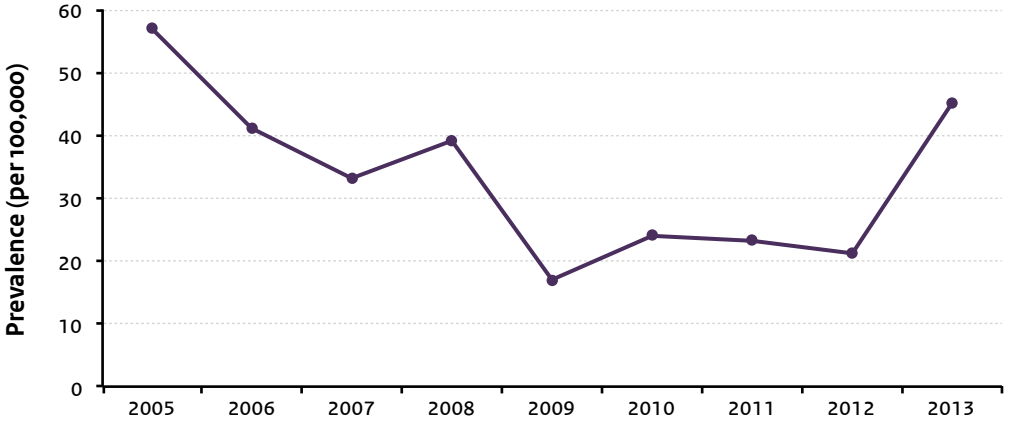
5.4 Blood donors

Figure 5.5a Syphilis incidence (per 100,000) among regular blood donors in the Netherlands, 2005–2013



(Source: Sanquin)

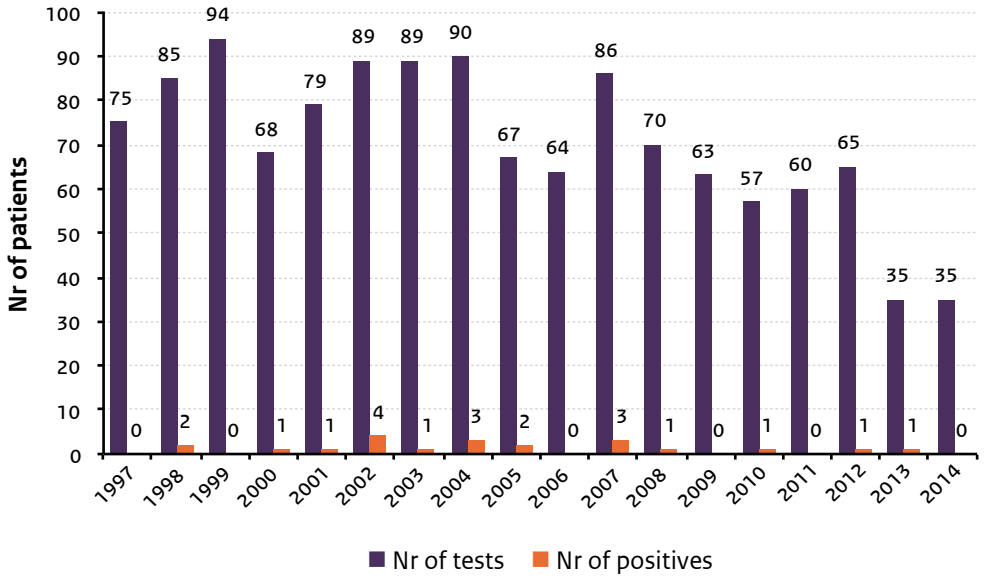
Figure 5.5b Syphilis prevalence (per 100,000) among new blood donors in the Netherlands, 2005–2013



(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, 1997–2014



(Source: CIb/IDS)

VIRAL STI

6 HIV and AIDS

6.1 Key points

STI clinics

- In 2014, 323 individuals were newly diagnosed with HIV at STI clinics in the Netherlands (86 per cent MSM, 8 per cent heterosexual men and 6 per cent women). Among MSM, there were 278 HIV diagnoses: 12 per cent fewer than in 2013.
- The positivity rate among MSM decreased from 3.0 per cent in 2008 to 1.1 per cent in 2014.
- Among newly diagnosed HIV-positive MSM, 24 per cent had a concurrent chlamydia infection and 20 per cent a gonorrhoea infection. Among all known HIV-positive MSM, 34 per cent were diagnosed with chlamydia, gonorrhoea, syphilis or hepatitis B.

HIV treatment centres

- A cumulative 22,948 HIV patients in care were reported up to December 2014, of whom 90 per cent were still alive. In 2014, 1,076 new HIV patients were reported in care: 9 per cent fewer than in 2013 (1,180). Of the newly registered patients, 719 were newly diagnosed in 2014 (incomplete due to reporting delay). The proportion of MSM (68 per cent) stabilized in 2014 for the first time after the increase since 2003. The proportion of heterosexuals (males and females) was 25 per cent in 2014.
- Of HIV-positive MSM in care, 42 per cent were diagnosed at STI clinics in 2014, 31 per cent at general practices and 19 per cent in hospitals. Of heterosexual males, 52 per cent were diagnosed in hospitals, 36 per cent by GPs and 5 per cent at STI clinics. Of women, 47 per cent were diagnosed at a hospital, 28 per cent by a GP and 8 per cent at an STI clinic.
- Of patients diagnosed in 2014, 42 per cent were diagnosed late (<350 CD4 cell counts/mm^3). This proportion was lower for MSM (29 per cent) than for women (52 per cent) and heterosexual men (78 per cent).

General practice

- At general practices, the number of prevalent HIV cases, estimated from data from the NIVEL-PCD, was 24,922 in 2013, with a reporting rate of 1.5 per 1,000 people. The reporting rate was higher in men than in women (2.5 versus 0.5/1,000).

6.2 STI clinics: characteristics, risk groups and trends

Figure 6.1 Total number of tests and positivity rate of HIV by gender and sexual preference, 2004–2014

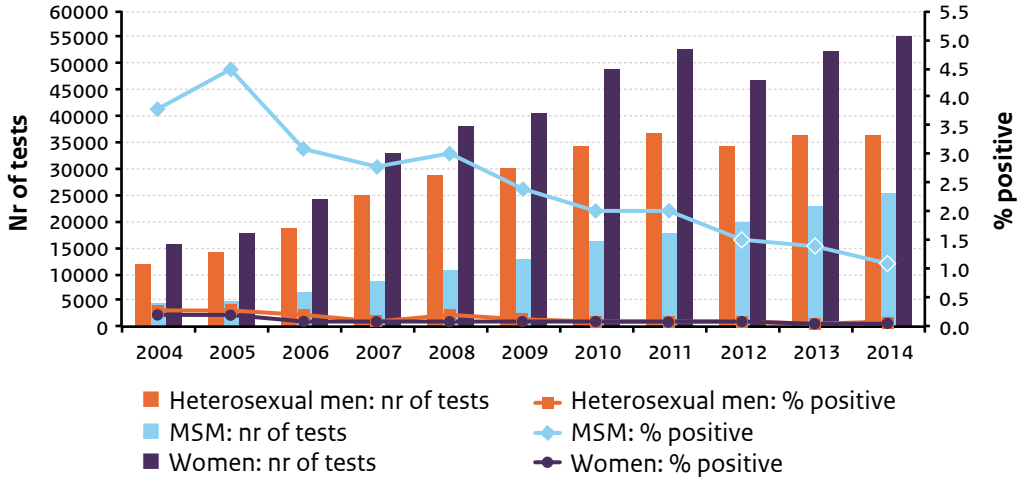


Table 6.1 Number of positive tests and persons tested for HIV by age, gender and sexual preference, 2014

Age (years)	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
≤ 14	0	1	0	3	0	47
15–19	0	1,609	1	678	0	5,544
20–24	3	13,568	34	4,184	7	25,367
25–29	4	9,369	53	4,209	3	11,855
30–34	4	4,273	44	3,278	1	4,444
35–39	0	2,265	42	3,029	3	2,364
40–44	4	1,725	34	2,592	1	1,915
45–49	3	1,394	28	2,623	1	1,748
50–54	4	1,008	19	1,996	1	1,132
≥ 55	3	1,076	23	2,714	3	676
Unknown	0	0	0	1	0	2
Total	**25**	**36,288**	**278**	**25,307**	**20**	**55,094**

Figure 6.2 Percentage of positive HIV tests by age, gender and sexual preference, 2014

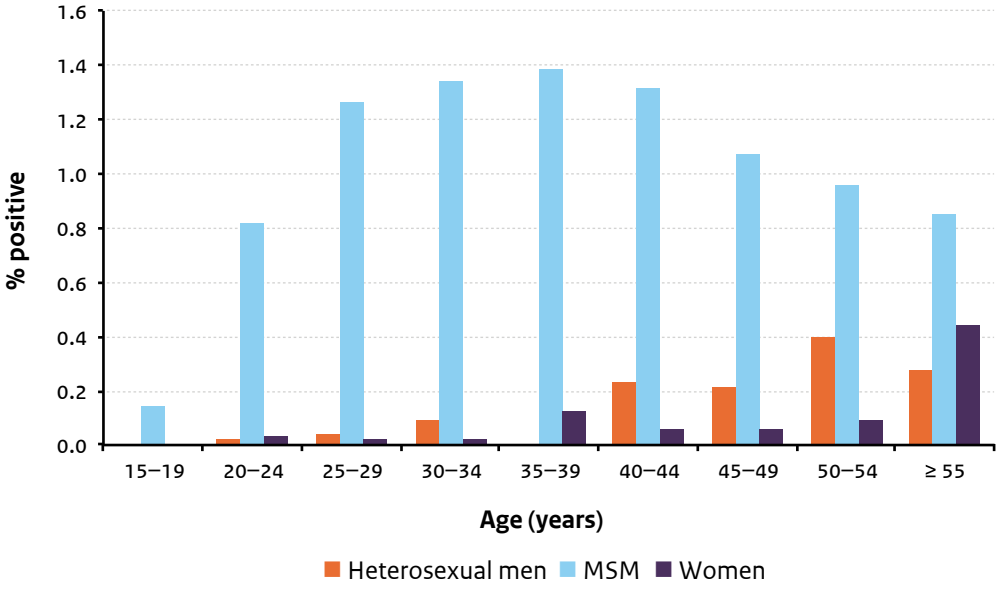


Table 6.2 Number of positive tests and persons tested for HIV by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n pos.	N tested	n pos.	N tested	n pos.	N tested
The Netherlands	4	22,069	162	18,277	9	36,224
Turkey	1	1,019	4	360	0	592
North Africa/Morocco	3	1,569	4	304	0	1,095
Surinam	5	2,980	14	708	4	3,591
Netherlands Antilles/Aruba	3	1,543	7	485	0	1,570
Eastern Europe	1	539	17	546	2	2,548
Sub-Saharan Africa	3	1,414	2	220	4	1,352
Latin America	4	623	16	664	0	1,508
Europe other	0	1,976	20	1,858	1	3,022
Asia	1	1,903	28	1,369	0	2,640
Other	0	323	4	270	0	505
Unknown	0	330	0	246	0	447

Table 6.2 (continued) Number of positive tests and persons tested for HIV by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n pos.	N tested	n pos.	N tested	n pos.	N tested
Natives	7	21,082	180	16,506	4	32,783
First generation migrants	7	6,772	99	3,923	18	9,217
Second generation migrants	1	7,526	30	2,018	4	9,136
Unknown	0	736	6	558	0	969
Total	**25**	**36,288**	**278**	**25,307**	**20**	**55,094**

Figure 6.3 Percentage of positive HIV tests by ethnicity, gender and sexual preference, 2014

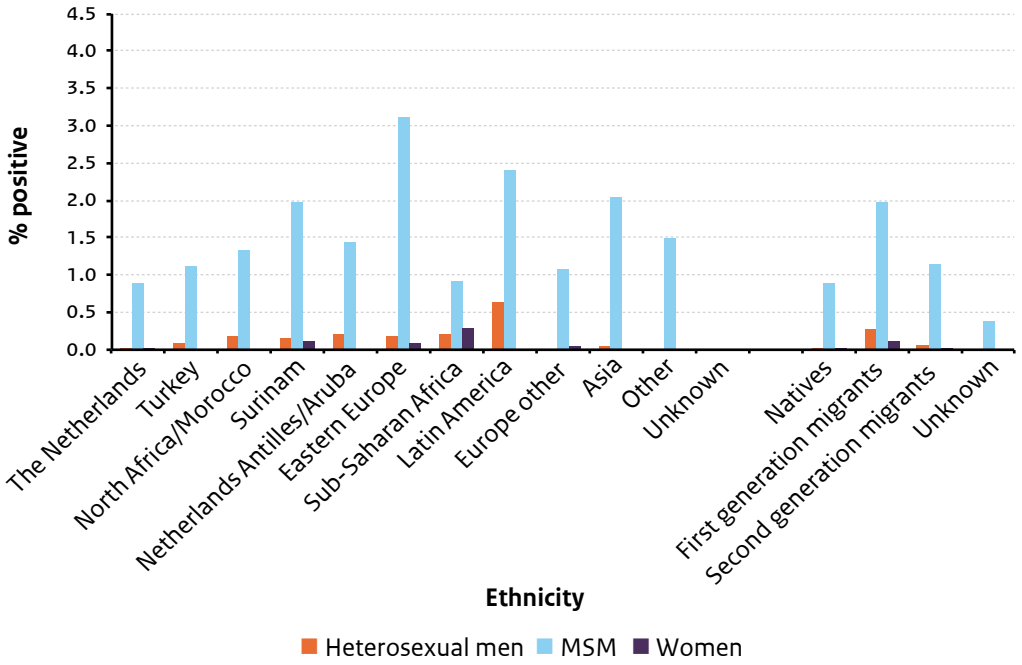


Table 6.3 Number and percentage of positive tests and total persons tested for HIV by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Number of partners in past 6 months						
0 partners	0/138	0.0	3/119	2.5	1/234	0.4
1 partner	9/5,166	0.2	36/2,531	1.4	8/12,584	0.1
2 partners	5/6,464	0.1	23/2,934	0.8	3/11,368	0.0
3 or more partners	11/24,069	0.1	209/18,915	1.1	6/28,103	0.0
Unknown	0/451	0.0	7/808	0.9	2/2,805	0.1
Condom use if last sexual contact was steady*						
No	16/11,569	0.1	84/6,494	1.3	9/19,507	0.0
Yes	0/3,042	0.0	32/2,468	1.3	1/4,370	0.0
Unknown	0/76	0.0	1/114	0.9	1/124	0.8
Condom use if last sexual contact was casual*						
No	4/14,013	0.0	73/6,973	1.0	5/20,054	0.0
Yes	5/6,837	0.1	70/7,445	0.9	4/9,697	0.0
Unknown	0/156	0.0	7/241	2.9	0/220	0.0
Previous gonorrhoea/chlamydia/syphilis in anamnesis						
No	22/29,981	0.1	185/19,232	1.0	17/44,906	0.0
Yes	1/3,536	0.0	82/5,021	1.6	2/6,820	0.0
Don't know	1/1,320	0.1	6/373	1.6	0/1,414	0.0
Unknown	1/1,451	0.1	5/681	0.7	1/1,954	0.1
Previous HIV test						
No	14/16,658	0.1	39/3,367	1.2	8/22,104	0.0
Yes, positive	0/8	0.0	0/21	0.0	0/25	0.0
Yes, negative	9/19,050	0.0	231/21,697	1.1	9/31,984	0.0
Yes, result unknown	1/56	1.8	4/53	7.5	2/84	2.4
Unknown	1/516	0.2	4/169	2.4	1/897	0.1
CSW						
No	24/35,961	0.1	267/24,666	1.1	15/49,560	0.0
Yes, in past 6 months	1/192	0.5	9/438	2.1	4/5,368	0.1
Unknown	0/135	0.0	2/203	1.0	1/166	0.6
Client of CSW, men						
No	20/31,940	0.1	266/24,091	1.1		
Yes, in past 6 months	5/4,171	0.1	5/666	0.8		
Unknown	0/177	0.0	7/550	1.3		

Table 6.3 (continued) Number and percentage of positive tests and total persons tested for HIV by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men n positive/N	%	MSM n positive/N	%	Women n positive/N	%
Swinger**						
No	9/13,834	0.1	94/7,392	1.3	5/19,048	0.0
Yes	1/1,451	0.1	5/1,029	0.5	1/2,343	0.0
Unknown	0/20	0.0	0/0	0.0	0/96	0.0
Socioeconomic status						
Very high	1/4,839	0.0	34/3,587	0.9	3/7,488	0.0
High	3/9,350	0.0	81/6,992	1.2	2/14,522	0.0
Medium	3/9,946	0.0	63/6,594	1.0	4/14,696	0.0
Low	6/6,148	0.1	37/4,385	0.8	2/9,032	0.0
Very low	4/3,861	0.1	34/2,043	1.7	3/4,862	0.1
Unknown	8/2,144	0.4	29/1,706	1.7	6/4,494	0.1
Educational level#						
High	4/14,305	0.0	85/10,338	0.8	3/20,911	0.0
Low	9/9,371	0.1	67/4,962	1.4	6/13,391	0.0
Other	1/264	0.4	7/225	3.1	0/466	0.0
Unknown	11/12,348	0.1	119/9,782	1.2	11/20,326	0.1

* Type of sexual contact was missing for 2.3% (n=3,243) of persons tested for HIV.
** Voluntary question, answered by 39% (N=45,213) of persons tested for HIV.
# Low level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

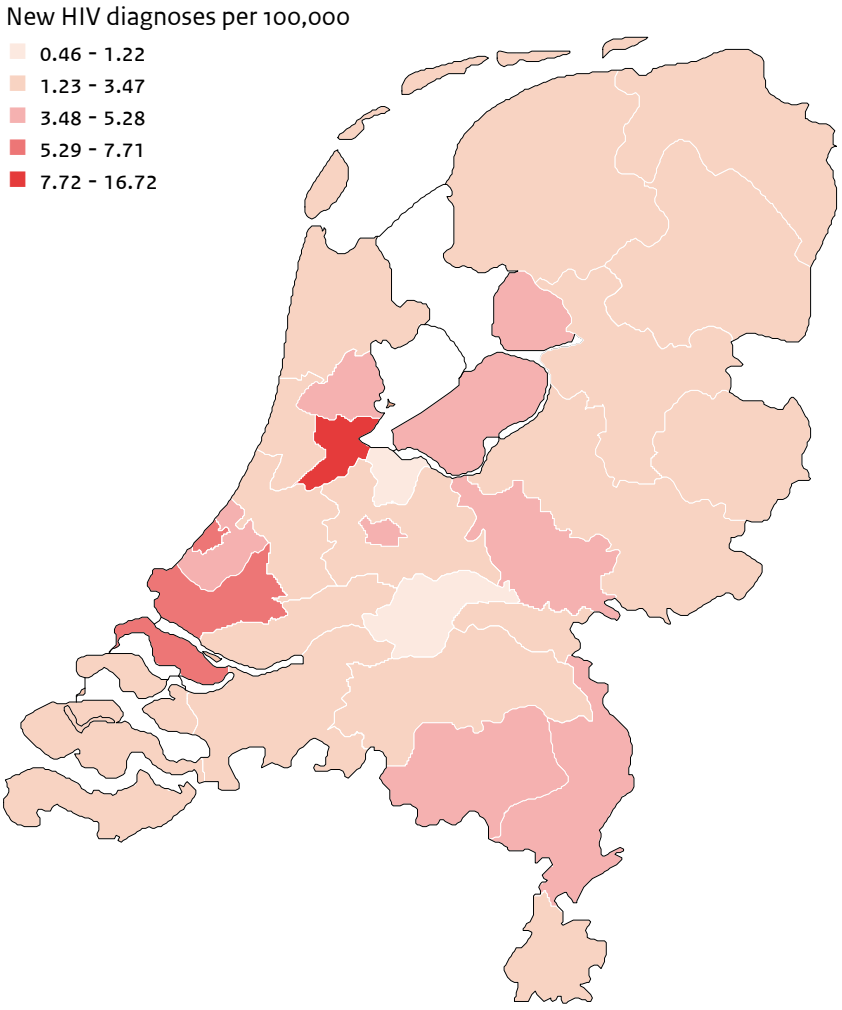
Table 6.4 Concurrent STI by gender and sexual preference among persons newly diagnosed with HIV at the STI clinics, 2014

Concurrent infection	Heterosexual men (N=25) n (%)	MSM (N=278) n (%)	Women (N=20) n (%)
Chlamydia	0 (0.0)	67 (24.1)	5 (25.0)
Gonorrhoea	1 (4.0)	56 (20.1)	0 (0.0)
Infectious syphilis	2 (8.0)	18 (6.5)	0 (0.0)
Genital herpes	2 (8.0)	2 (0.7)	1 (5.0)
Genital warts	0 (0.0)	6 (2.2)	0 (0.0)
Infectious hepatitis B	1 (4.0)	5 (1.8)	0 (0.0)
Hepatitis C	0 (0.0)	1 (0.4)	0 (0.0)

6.3 HIV treatment centres

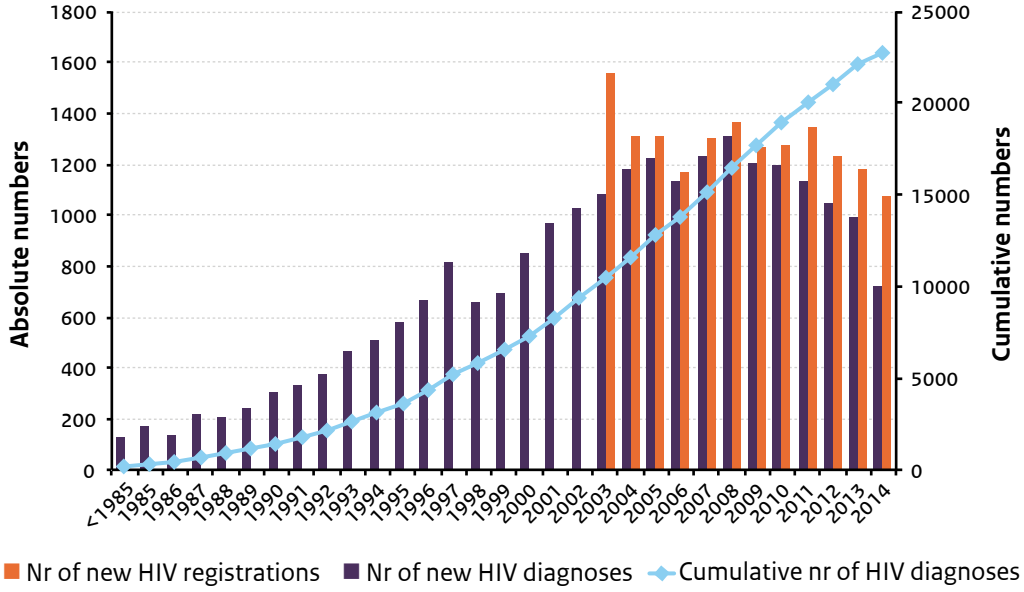
6.3.1 Newly diagnosed HIV cases in care in 2014

Figure 6.4 Number of new HIV diagnoses per 100,000 inhabitants per region, the Netherlands, 2014



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

Figure 6.5 Number of newly diagnosed HIV cases and newly registered HIV patients by year, <1985–2014



(Sources: ATHENA national observational cohort: national registration from 2002 to date; Stichting HIV Monitoring, 2014 incomplete)

Table 6.5a Number of HIV cases diagnosed in 2014 by age and gender

Age (years)	Men (%)	Women (%)	Total (%)
0–14	1 (0.2)	1 (1.1)	2 (0.3)
15–19	11 (1.8)	4 (4.2)	15 (2.1)
20–24	42 (6.7)	10 (10.5)	52 (7.2)
25–29	79 (12.7)	15 (15.8)	94 (13.1)
30–39	172 (27.6)	22 (23.2)	194 (27.0)
40–49	169 (27.1)	23 (24.2)	192 (26.7)
50–59	92 (14.7)	14 (14.7)	106 (14.7)
60–69	49 (7.9)	6 (6.3)	55 (7.6)
70–79	9 (1.4)	0 (0.0)	9 (1.3)
≥ 80	0 (0.0)	0 (0.0)	0 (0.0)
Unknown	0 (0.0)	0 (0.0)	0 (0.0)
Total	**624**	**95**	**719**

Table 6.5b Cumulative number of HIV cases by age (at year of diagnosis) and gender up to 2014

Age (years)	Men (%)	Women (%)	Total (%)
0–14	177 (1.0)	160 (3.5)	337 (1.5)
15–19	275 (1.5)	271 (6.0)	546 (2.4)
20–24	1,429 (7.8)	667 (14.7)	2,096 (9.2)
25–29	2,617 (14.3)	991 (21.8)	3,608 (15.8)
30–39	6,533 (35.8)	1,489 (32.8)	8,022 (35.2)
40–49	4,624 (25.3)	593 (13.1)	5,217 (22.9)
50–59	1,970 (10.8)	264 (5.8)	2,234 (9.8)
60–69	540 (3.0)	81 (1.8)	621 (2.7)
70–79	91 (0.5)	14 (0.3)	105 (0.5)
≥ 80	2 (0.0)	2 (0.0)	4 (0.0)
Unknown	3 (0.0)	4 (0.1)	7 (0.0)
Total	**18,261**	**4,536**	**22,797**

Table 6.6a Number of HIV cases diagnosed in 2014 by main reported transmission risk group and gender

Transmission risk group	Men (%)	Women (%)	Total (%)
MSM	492 (78.8)	-	492 (68.4)
Heterosexual contact	92 (14.7)	85 (89.5)	177 (24.6)
Injecting drug use	0 (0.0)	0 (0.0)	0 (0.0)
Blood or blood products	7 (1.1)	2 (2.1)	9 (1.3)
Mother to child	1 (0.2)	1 (1.1)	2 (0.3)
Other/unknown	32 (5.1)	7 (7.4)	39 (5.4)
Total	**624**	**95**	**719**

Table 6.6b Cumulative number of HIV cases by main reported transmission risk group and gender up to 2014

Transmission risk group	Men (%)	Women (%)	Total (%)
MSM	13,194 (72.3)	-	13,194 (57.9)
Heterosexual contact	3,119 (17.1)	3,890 (85.8)	7,009 (30.7)
Injecting drug use	552 (3.0)	200 (4.4)	752 (3.3)
Blood or blood products	208 (1.1)	106 (2.3)	314 (1.4)
Mother to child	142 (0.8)	148 (3.3)	290 (1.3)
Other/unknown	1,046 (5.7)	192 (4.2)	1,238 (5.4)
Total	**18,261**	**4,536**	**22,797**

Table 6.7a Number of HIV cases diagnosed in 2014 by age and transmission risk group

Age (years)	MSM n (%)	Heterosexual contact n (%)	Other/ unknown n (%)
0–14	0 (0.0)	0 (0.0)	2 (4.0)
15–19	11 (2.2)	3 (1.7)	1 (2.0)
20–24	40 (8.1)	8 (4.5)	4 (8.0)
25–29	68 (13.8)	24 (13.6)	2 (4.0)
30–39	142 (28.9)	44 (24.9)	8 (16.0)
40–49	127 (25.8)	49 (27.7)	16 (32.0)
50–59	74 (15.0)	28 (15.8)	4 (8.0)
60–69	24 (4.9)	19 (10.7)	12 (24.0)
70–79	6 (1.2)	2 (1.1)	1 (2.0)
≥ 80	0 (0.0)	0 (0.0)	0 (0.0)
Unknown	0 (0.0)	0 (0.0)	0 (0.0)
Total	**492**	**177**	**50**

Table 6.7b Cumulative number of HIV cases by age and transmission risk group up to 2014

Age (years)	MSM n (%)	Heterosexual contact n (%)	Injecting drug use n (%)	Blood or blood products* n (%)	Mother to child n (%)	Other/ unknown n (%)
0–14	4 (0.0)	11 (0.2)	1 (0.1)	29 (9.2)	278 (95.9)	14 (1.1)
15–19	174 (1.3)	296 (4.2)	23 (3.1)	21 (6.7)	4 (1.4)	28 (2.3)
20–24	1,073 (8.1)	786 (11.2)	101 (13.4)	36 (11.5)	1 (0.3)	99 (8.0)
25–29	1,984 (15.0)	1,239 (17.7)	158 (21.0)	42 (13.4)	1 (0.3)	184 (14.9)
30–39	4,766 (36.1)	2,443 (34.9)	304 (40.4)	90 (28.7)	1 (0.3)	418 (33.8)
40–49	3,425 (26.0)	1,326 (18.9)	147 (19.5)	45 (14.3)	0 (0.0)	274 (22.1)
50–59	1,384 (10.5)	651 (9.3)	16 (2.1)	26 (8.3)	0 (0.0)	157 (12.7)
60–69	331 (2.5)	217 (3.1)	2 (0.3)	20 (6.4)	0 (0.0)	51 (4.1)
70–79	52 (0.4)	36 (0.5)	0 (0.0)	4 (1.3)	0 (0.0)	13 (1.1)
≥ 80	1 (0.0)	3 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Unknown	0 (0.0)	1 (0.0)	0 (0.0)	1 (0.3)	5 (1.7)	0 (0.0)
Total	**13,194**	**7,009**	**695**	**314**	**290**	**1,238**

* Including needle stick injury

Table 6.8a Number of HIV cases diagnosed in 2014 by region of origin and transmission risk group

Ethnicity	MSM n (%)	Heterosexual contact n (%)	Other/ unknown n (%)
The Netherlands	381 (77.4)	83 (46.9)	30 (60.0)
Western Europe	15 (3.0)	8 (4.5)	0 (0.0)
Central Europe	18 (3.7)	4 (2.3)	1 (2.0)
Eastern Europe	4 (0.8)	2 (1.1)	0 (0.0)
Sub-Saharan Africa	6 (1.2)	49 (27.7)	8 (16.0)
Caribbean	11 (2.2)	7 (4.0)	1 (2.0)
Latin America	25 (5.1)	12 (6.8)	6 (12.0)
North America	7 (1.4)	0 (0.0)	0 (0.0)
North Africa and Middle East	9 (1.8)	3 (1.7)	0 (0.0)
Australia and Pacific	5 (1.0)	0 (0.0)	0 (0.0)
South (East) Asia	10 (2.0)	7 (4.0)	3 (6.0)
Unknown	1 (0.2)	2 (1.1)	1 (2.0)
Total	**492**	**177**	**50**

Table 6.8b Cumulative number of HIV cases by transmission risk group and region of origin up to 2014

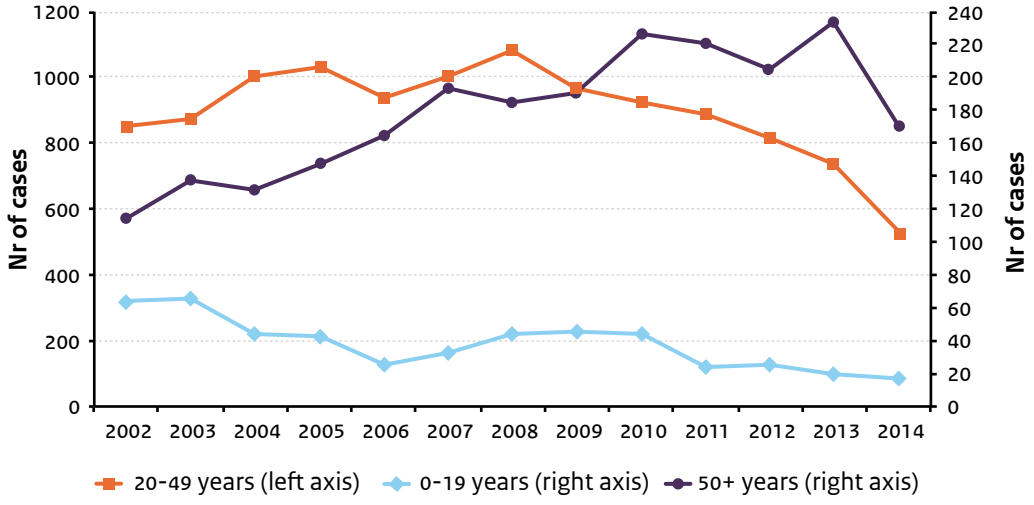
Ethnicity	MSM n (%)	Hetero-sexual contact n (%)	Injecting drug use n (%)	Blood or blood products* n (%)	Mother to child n (%)	Other/ unknown n (%)
The Netherlands	9,429 (71.46)	2,219 (31.7)	447 (59.4)	144 (45.9)	107 (36.9)	523 (42.2)
Sub-Saharan Africa	186 (1.4)	2,873 (41.0)	8 (1.1)	90 (28.7)	145 (50.0)	311 (25.1)
Surinam	339 (2.6)	556 (7.9)	21 (2.8)	9 (2.9)	2 (0.7)	49 (4.0)
Netherlands Antilles/Aruba	123 (0.9)	69 (1.0)	5 (0.7)	0 (0.0)	2 (0.7)	8 (0.6)
Western Europe	1,008 (7.6)	224 (3.2)	140 (18.6)	13 (4.1)	6 (2.1)	108 (8.7)
Other/unknown	2,109 (16.0)	1,068 (15.2)	131 (17.4)	58 (18.5)	28 (9.7)	239 (19.3)
Total	**13,194**	**7,009**	**695**	**314**	**290**	**1,238**

* Including needle stick injury

Table 6.8c Number of HIV cases diagnosed in 2014 by test location and transmission risk group

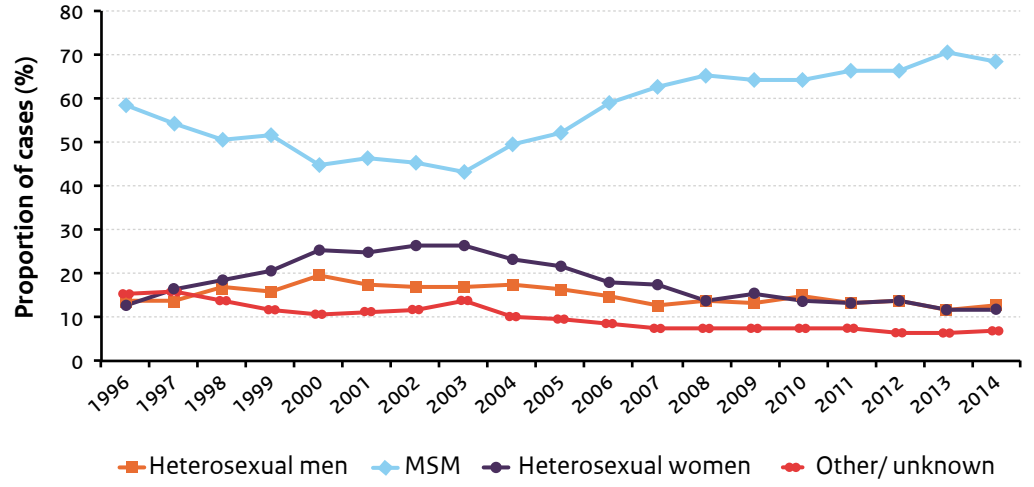
Test location	MSM n (%)	Heterosexual men n (%)	Women n (%)
PHS/STI center	205 (41.7)	5 (5.4)	7 (8.2)
Hospital	92 (18.7)	48 (52.2)	40 (47.1)
General practitioner	151 (30.7)	33 (35.9)	24 (28.2)
Pregnancy screening	-	-	7 (8.2)
Other	44 (8.9)	6 (6.5)	7 (8.2)
Total	**492**	**92**	**85**

Figure 6.6 Number of HIV cases by age group (left axis: 20–49 years, right axis: 0–19 and 50+ years) and year of diagnosis, 2002–2014



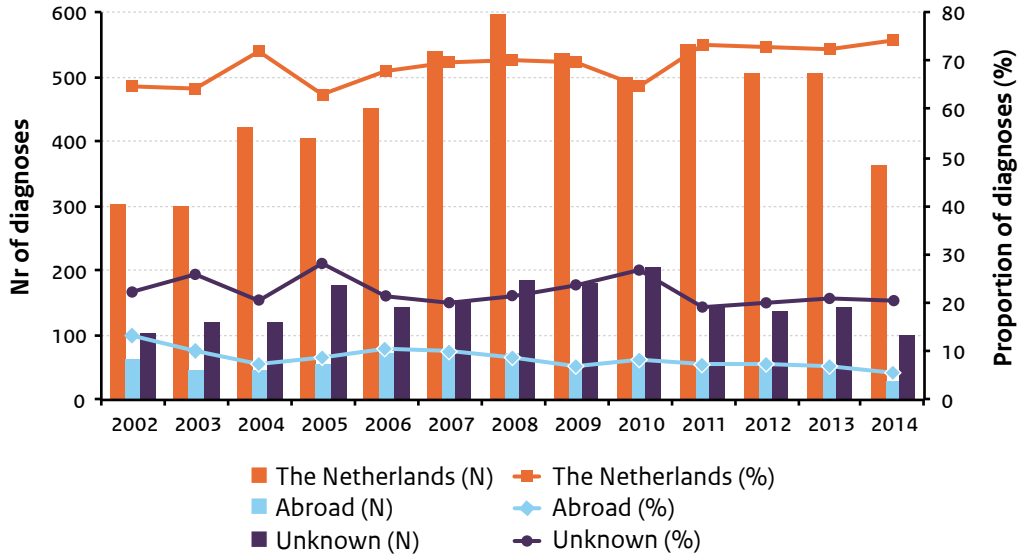
(Source: Stichting HIV Monitoring, 2014 incomplete)

Figure 6.7 Proportion of annual HIV cases in care by transmission risk group and year of diagnosis, 1996–2014



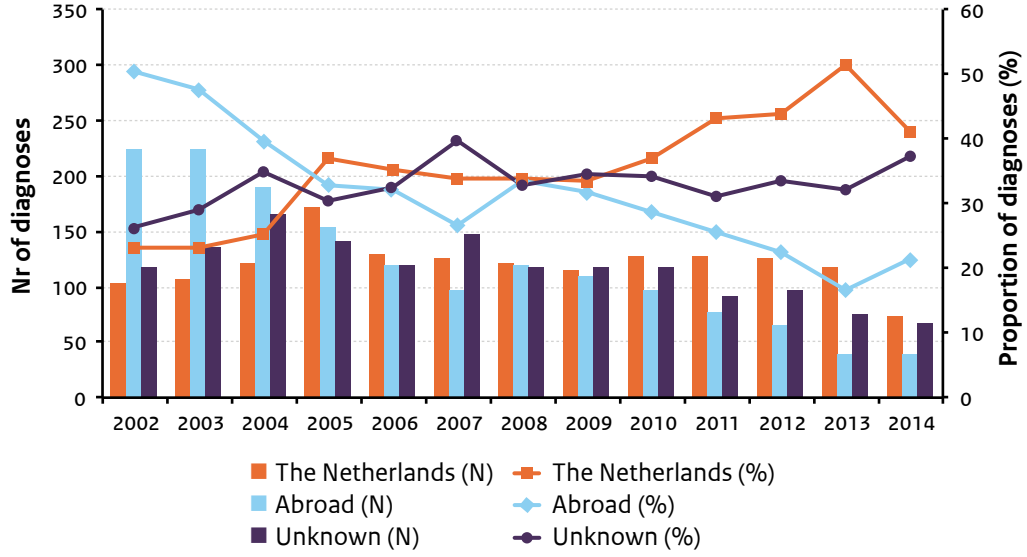
(Source: Stichting HIV Monitoring, 2014 incomplete)

Figure 6.8a Reported country of infection in MSM by year of diagnosis, 2002–2014



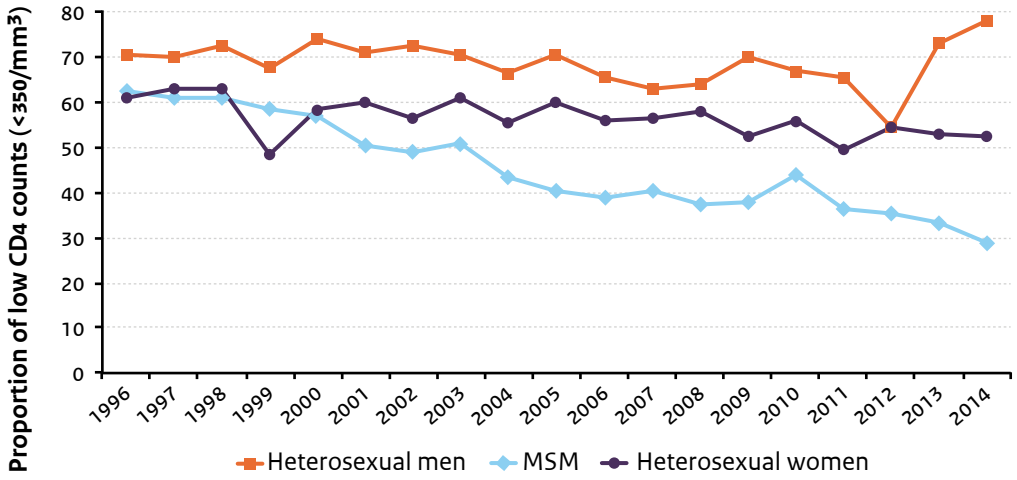
(Source: Stichting HIV Monitoring, 2014 incomplete)

Figure 6.8b Reported country of infection in heterosexuals by year of diagnosis, 2002–2014



(Source: Stichting HIV Monitoring, 2014 incomplete)

Figure 6.9 Proportion of low CD4 count (<350/mm3) at diagnosis by transmission risk group, 1996–2014



(Source: Stichting HIV Monitoring, 2014 incomplete)

6.3.2 AIDS cases and deaths among HIV patients

Table 6.9 Number (per year and cumulative) of AIDS diagnoses and deaths among HIV patients, 1983–2014

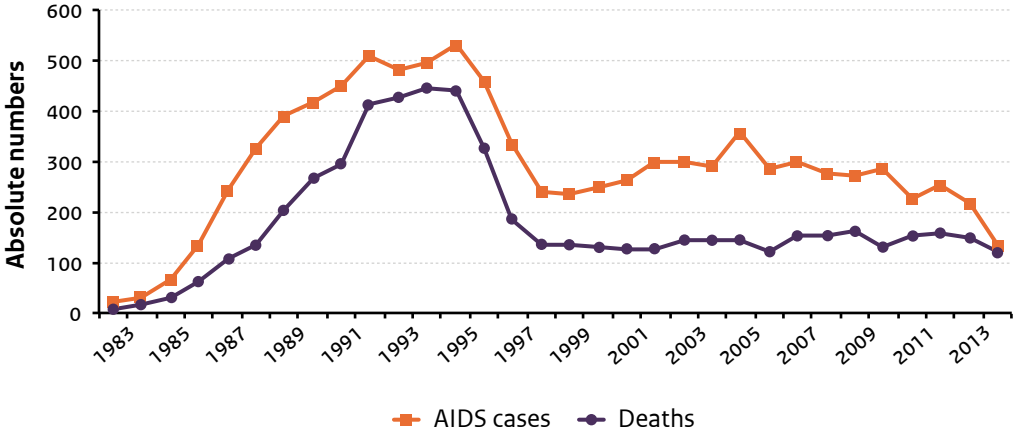
Year	AIDS diagnoses (per year)	AIDS diagnoses (cumulative)	Deaths (per year)	Deaths (cumulative)
1983	22	22	6	6
1984	31	53	16	22
1985	65	118	30	52
1986	137	255	63	115
1987	245	500	106	221
1988	325	825	135	356
1989	391	1,216	202	558
1990	419	1,635	269	827
1991	450	2,085	294	1,121
1992	510	2,595	412	1,533
1993	481	3,076	427	1,960
1994	494	3,570	444	2,404

Table 6.9 (continued) Number (per year and cumulative) of AIDS diagnoses and deaths among HIV patients, 1983–2014

Year	AIDS diagnoses (per year)	AIDS diagnoses (cumulative)	Deaths (per year)	Deaths (cumulative)
1995	533	4,103	439	2,843
1996	459	4,562	327	3,170
1997	337	4,899	184	3,354
1998	238	5,137	136	3,490
1999	236	5,373	137	3,627
2000	248	5,621	132	3,759
2001	264	5,885	128	3,887
2002	298	6,183	124	4,011
2003	299	6,482	145	4,156
2004	289	6,771	145	4,301
2005	358	7,129	142	4,443
2006	285	7,414	123	4,566
2007	300	7,714	152	4,718
2008	276	7,990	152	4,870
2009	270	8,260	161	5,031
2010	286	8,546	131	5,162
2011	227	8,773	151	5,313
2012	254	9,027	157	5,470
2013	216	9,243	147	5,617
2014	134	9,377	121	5,738

(Sources: deaths among HIV patients <2002: Statistics Netherlands, CBS; ≥2002: data from the Stichting HIV Monitoring. Sources AIDS cases <1999: Health Inspectorate; ≥1999: Stichting HIV Monitoring, 2014 incomplete)

Figure 6.10 Number of AIDS cases and deaths among HIV patients, 1983–2014



(Sources: AIDS cases <1999: AIDS registration Health Inspectorate; ≥1999: Stichting HIV Monitoring.
Sources for deaths <2002: CBS; ≥2002: Stichting HIV Monitoring, 2014 incomplete)

Table 6.10 Number of AIDS patients by year of AIDS diagnosis and transmission risk group, ≤1987–2014

Year of diagnosis	MSM	Heterosexual contact	Injecting drug use	Blood and blood contacts	Mother to child	Other/ unknown
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
≤ 1987	424 (84.8)	26 (5.2)	28 (5.6)	18 (3.6)	3 (0.6)	1 (0.2)
1988	250 (76.9)	18 (5.5)	39 (12.0)	13 (4.0)	2 (0.6)	3 (0.9)
1989	305 (78.0)	33 (8.4)	36 (9.2)	11 (2.8)	1 (0.3)	5 (1.3)
1990	318 (75.9)	34 (8.1)	42 (10.0)	17 (4.1)	3 (0.7)	5 (1.2)
1991	335 (74.4)	46 (10.2)	43 (9.6)	19 (4.2)	2 (0.4)	5 (1.1)
1992	376 (73.7)	51 (10.0)	60 (11.8)	12 (2.4)	2 (0.4)	9 (1.8)
1993	317 (65.9)	80 (16.6)	61 (12.7)	8 (1.7)	3 (0.6)	12 (2.5)
1994	314 (63.6)	94 (19.0)	65 (13.2)	14 (2.8)	2 (0.4)	5 (1.0)
1995	314 (58.9)	116 (21.8)	74 (13.9)	7 (1.3)	9 (1.7)	13 (2.4)
1996	299 (65.1)	95 (20.7)	50 (10.9)	5 (1.1)	2 (0.4)	8 (1.7)
1997	174 (51.6)	104 (30.9)	43 (12.8)	3 (0.9)	2 (0.6)	11 (3.3)
1998	116 (48.7)	78 (32.8)	27 (11.3)	1 (0.4)	3 (1.3)	13 (5.5)
1999	117 (49.6)	80 (33.9)	14 (5.9)	6 (2.5)	4 (1.7)	15 (6.4)
2000	106 (42.7)	103 (41.5)	16 (6.5)	5 (2.0)	2 (0.8)	16 (6.5)
2001	106 (40.2)	111 (42.0)	12 (4.5)	6 (2.3)	7 (2.7)	22 (8.3)

Table 6.10 (continued) Number of AIDS patients by year of AIDS diagnosis and transmission risk group, ≤1987–2014

Year of diagnosis	MSM	Heterosexual contact	Injecting drug use	Blood and blood contacts	Mother to child	Other/ unknown
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
2002	113 (37.9)	139 (46.6)	10 (3.4)	4 (1.3)	3 (1.0)	29 (9.7)
2003	116 (38.8)	122 (40.8)	14 (4.7)	8 (2.7)	4 (1.3)	35 (11.7)
2004	118 (40.8)	116 (40.1)	12 (4.2)	3 (1.0)	2 (0.7)	38 (13.1)
2005	154 (43.0)	141 (39.4)	26 (7.3)	5 (1.4)	1 (0.3)	31 (8.7)
2006	123 (43.2)	109 (38.2)	10 (3.5)	5 (1.8)	3 (1.1)	35 (12.3)
2007	136 (45.3)	111 (37.0)	13 (4.3)	4 (1.3)	4 (1.3)	32 (10.7)
2008	131 (47.5)	102 (37.0)	7 (2.5)	6 (2.2)	2 (0.7)	28 (10.1)
2009	134 (49.6)	105 (38.9)	9 (3.3)	1 (0.4)	3 (1.1)	18 (6.7)
2010	127 (44.4)	121 (42.3)	6 (2.1)	3 (1.0)	5 (1.7)	24 (8.4)
2011	110 (48.5)	83 (36.6)	7 (3.1)	1 (0.4)	2 (0.9)	24 (10.6)
2012	122 (48.0)	99 (39.0)	4 (1.6)	2 (0.8)	1 (0.4)	26 (10.2)
2013	113 (52.3)	69 (31.9)	4 (1.9)	3 (1.4)	2 (0.9)	25 (11.6)
2014	63 (47.0)	51 (38.1)	0 (0.0)	4 (3.0)	2 (1.5)	14 (10.4)
Total	**5,431 (63.6)**	**2,437 (28.5)**	**732 (8.6)**	**194 (2.3)**	**81 (0.9)**	**502 (5.9)**

(Sources: <1999: Health Inspectorate; 1999–2010: Stichting HIV Monitoring, 2014 incomplete)

Table 6.11 Number of deaths among HIV/AIDS patients by year of death and transmission risk group, 2002–2014

Year of death	MSM n (%)	Heterosexual contact n (%)	Injecting drug use n (%)	Blood or blood products* n (%)	Other/ unknown n (%)
2002	54 (43.5)	28 (22.6)	18 (14.5)	4 (3.2)	20 (16.1)
2003	55 (37.9)	36 (24.8)	33 (22.8)	4 (2.8)	17 (11.7)
2004	81 (55.9)	36 (24.8)	17 (11.7)	1 (0.7)	10 (6.9)
2005	62 (43.7)	41 (28.9)	18 (12.7)	1 (0.7)	20 (14.1)
2006	58 (47.2)	28 (22.8)	18 (14.6)	2 (1.6)	17 (13.8)
2007	82 (53.9)	34 (22.4)	18 (11.8)	3 (2.0)	15 (9.9)
2008	77 (50.7)	41 (27.0)	22 (14.5)	1 (0.7)	11 (7.2)
2009	82 (50.9)	40 (24.8)	19 (11.8)	4 (2.5)	16 (9.9)
2010	64 (48.9)	32 (24.4)	15 (11.5)	4 (3.1)	16 (12.2)
2011	76 (50.3)	45 (29.8)	13 (8.6)	0 (0.0)	17 (11.3)
2012	87 (55.4)	36 (22.9)	18 (11.5)	1 (0.6)	15 (9.6)
2013	78 (53.1)	42 (28.6)	16 (10.9)	1 (0.7)	10 (6.8)
2014	66 (54.5)	31 (25.6)	7 (5.8)	1 (0.8)	16 (13.2)

(Source: Stichting HIV Monitoring)
* Including needle stick injury

6.4 Other sources

6.4.1 Antenatal screening

Table 6.12 HIV prevalence estimates in pregnant women, based on test results of antenatal screening, 2006–2014

Year	Nr. of women screened	Positive result 12 weeks test	Confirmed positive test results (%)	Prevalence estimate [min–max]
2006	185,602	342	81 (24%)	0.05 [0.04–0.08]
2007	185,791	327	90 (27%)	0.05 [0.05–0.05]
2008	189,765	289	68 (24%)	0.05 [0.04–0.07]
2009	185,219	324	100 (31%)	0.05 [0.05–0.07]
2009/10	187,309	336	109 (34%)	0.06 [0.06-0.07]
2010/11	182,071	301	89 (31%)	0.05 [0.05-0.06]
2011#	88,425		52	0.06
2012/13	173,802		113	0.07
2013/14	176,008		99	0.06

(Sources: C.P.B. van der Ploeg (TNO), Y. Schonbeck (TNO), H. Hirschberg (RIVM). Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE). Procesmonitor 2013. TNO/RIVM 2015)
Footnote 1: Terminated pregnancies (induced or spontaneous) are excluded until 2012.
Footnote 2: Since 2009, time periods of data collection range from June to June the subsequent year.
Footnote 3: Since the second half of 2011, the prevalence calculation is based on the final conclusion made by the laboratory ('lab-conclusion') and passed to the RIVM-DVP (Dienst Vaccinvoorziening & Preventieprogramma's). If the lab-conclusion is missing, then the result of the confirmation test is used. In previous reports, prevalence was shown as a range from minimum to maximum prevalence. Minimum prevalence: number of confirmed positive test results divided by the total number of registered pregnant women; maximum prevalence: under the assumption that all pregnant women with a positive result without a confirmation test would also have a positive confirmation test. After 2011, only the middle of the range was shown (the mid-prevalence).
Data from July-December 2011

6.4.2 Blood donors

Figure 6.11a HIV incidence (per 100,000) among regular blood donors in the Netherlands, 2005–2013

(Source: Sanquin, 2014 not available yet)

Figure 6.11b HIV prevalence (per 100,000) among new blood donors in the Netherlands, 2005–2013

(Source: Sanquin, 2014 not available yet)

6.4.3 HIV incidence in MSM and IDU in the Amsterdam Cohort Studies

Figure 6.12 Yearly HIV incidence among MSM in the Amsterdam Cohort Studies, 1985–2014

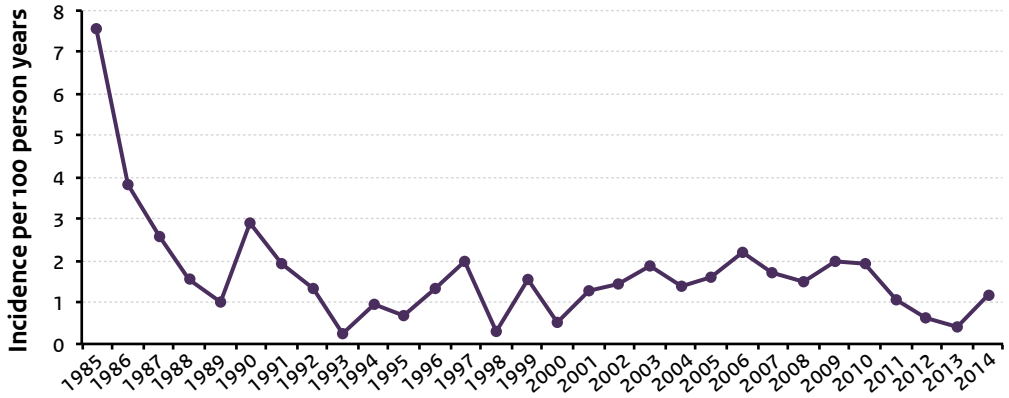
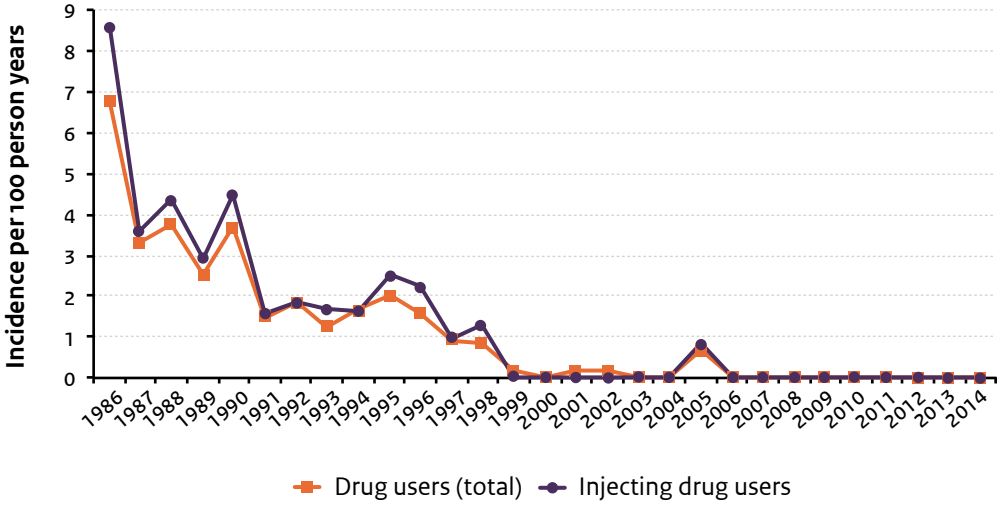


Figure 6.13 Yearly HIV incidence among IDUs (≤ 30 years at entry) in the Amsterdam Cohort Studies, 1986–2014



6.4.4 General practice

Figure 6.14 Prevalent HIV cases in men and women registered at GPs in the NIVEL-PCD in 2009-2013

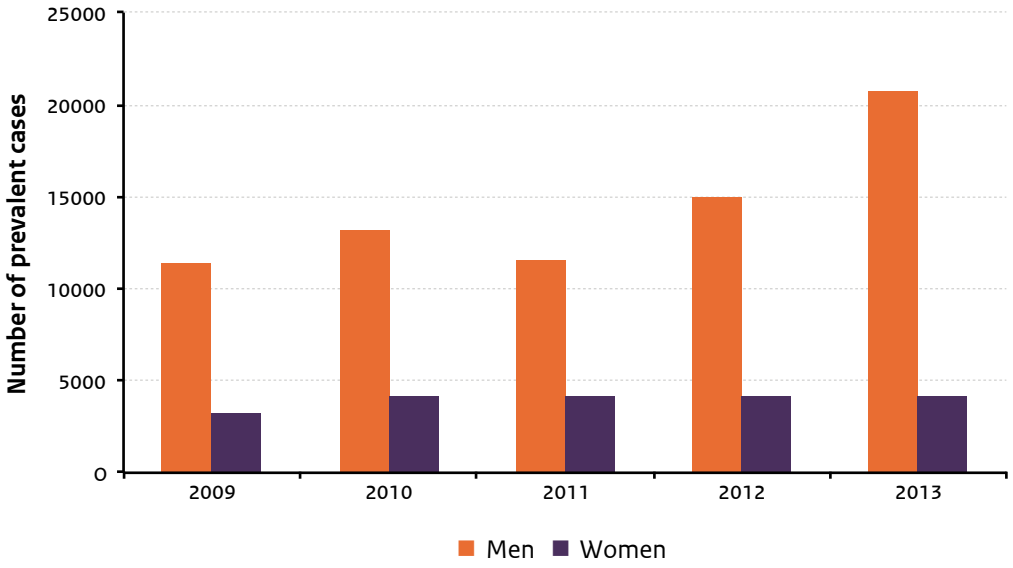


Table 6.13 Prevalence (number of persons with a HIV infection per 1,000 persons) of HIV at GPs in the Netherlands by gender, based on extrapolation from the GP practices in the NIVEL-PCD (2009-2013)

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

7 Genital warts

7.1 Key points

- In 2014, the number of genital warts diagnoses at STI clinics in the Netherlands was 2,029 (41.6 per cent heterosexual men, 35.6 per cent women, 22.8 per cent MSM).
- The overall positivity rate continued to decrease, from 2.9 per cent in 2009 to 1.4 per cent in 2014. In 2014, the positivity rate was higher among heterosexual men (2.1 per cent) than among MSM (1.5 per cent) and women (1.0 per cent).
- Among MSM, the positivity rate was highest among 15-19-year-olds (2.3 per cent) and decreased with age. Among women and heterosexual men, positivity rates fluctuated between age categories.
- Among heterosexual men, MSM and women, the positivity rate of genital warts by ethnicity was highest among those of North-African descent.
- Among heterosexual men, MSM and women diagnosed with genital warts, chlamydia was the most common co-infection (12.1, 12.7 and 14.9 per cent, respectively).
- At general practices, the number of genital warts episodes, estimated from data from the NIVEL-PCD, was 36,552 in 2013, with a reporting rate of 2.2 per 1,000 people. The reporting rate was higher in men than in women (2.5 versus 1.9/1,000).

7.2 STI clinics: characteristics, risk groups and trends

Figure 7.1 Positivity rates of genital warts by region, the Netherlands, 2014

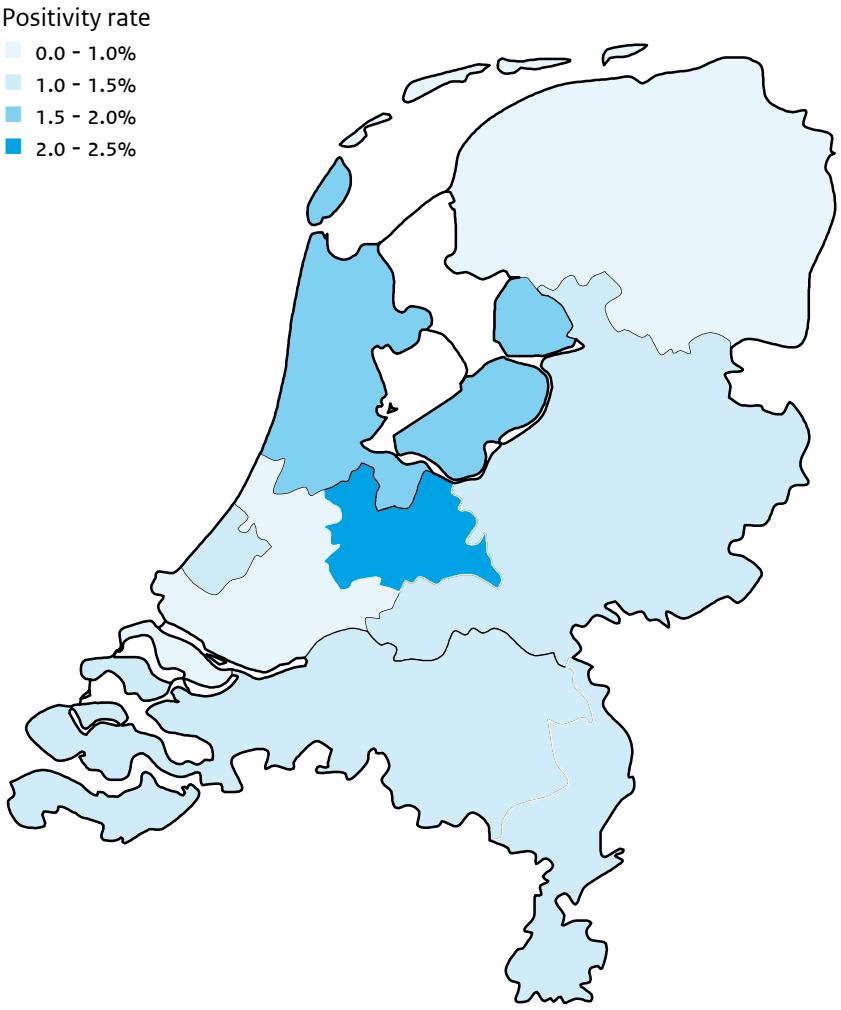
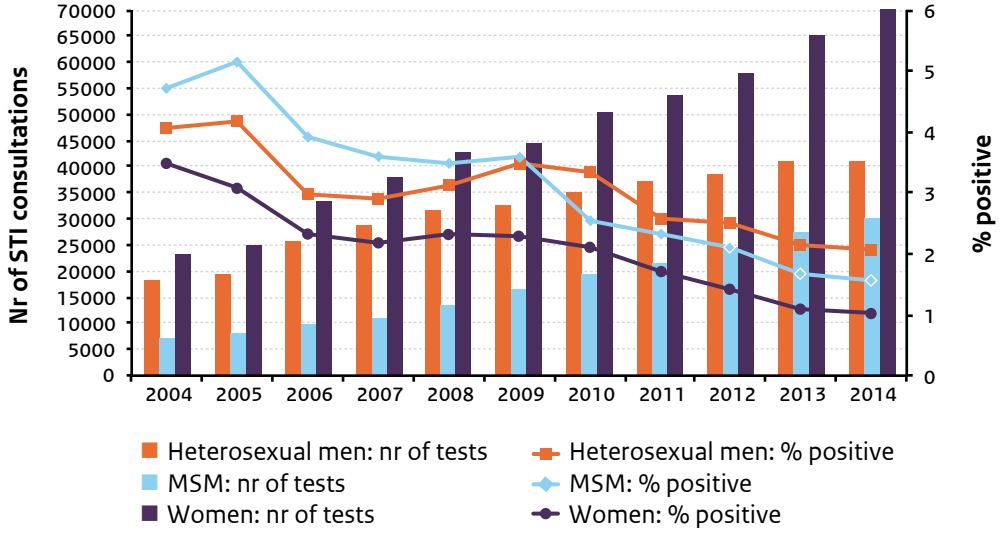


Figure 7.2 Total number of STI consultations and positivity rate of genital warts by gender and sexual preference, 2004–2014



Footnote: 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 sexual preference, 2014

Age (years)	Heterosexual men		MSM		Women	
	n pos.	N consultations	n pos.	N consultations	n pos.	N consultations
≤ 14	0	4	0	3	0	71
15–19	28	2,183	16	682	84	8,026
20–24	361	16,955	97	4,332	385	36,739
25–29	215	9,840	87	4,562	148	12,933
30–34	106	4,320	67	3,844	46	4,505
35–39	40	2,286	63	3,685	23	2,390
40–44	37	1,746	43	3,339	13	1,951
45–49	22	1,403	40	3,493	8	1,774
50–54	16	1,024	28	2,694	10	1,144
≥ 55	18	1,094	22	3,304	6	683
Unknown	0	1	0	1	0	3
Total	**843**	**40,856**	**463**	**29,939**	**723**	**70,219**

Figure 7.3 Positivity rate of genital warts by age, gender and sexual preference, 2014

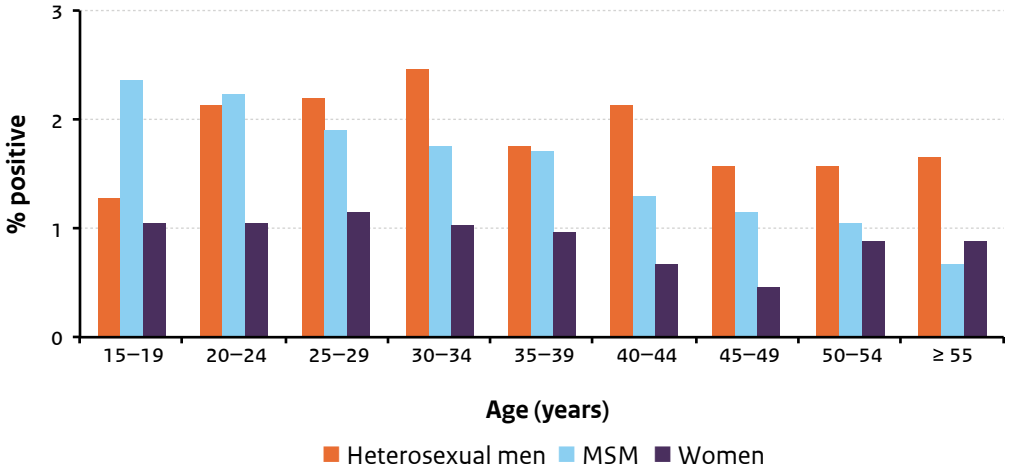


Table 7.2 Number of people diagnosed with genital warts and number of STI consultations by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n pos.	N consult	n pos.	N consult	n pos.	N consult
The Netherlands	520	26,047	292	21,279	545	49,893
Turkey	28	1,045	7	388	5	636
North Africa/Morocco	53	1,604	12	336	16	1,136
Surinam	56	3,029	22	907	26	3,679
Netherlands Antilles/Aruba	27	1,590	12	612	13	1,621
Sub-Saharan Africa	17	1,449	6	265	10	1,410
Eastern Europe	7	557	16	666	15	2,608
Latin America	16	637	17	942	12	1,561
Asia	51	1,960	30	1,653	26	2,827
Europe other	53	2,170	43	2,278	45	3,576
Other	6	353	3	342	3	627
Unknown	9	415	3	271	7	645
Natives	520	26,047	292	21,279	545	49,893
First generation migrants	131	6,603	112	5,832	63	9,145
Second generation migrants	182	7,763	55	2,543	108	10,484
Unknown	10	443	4	285	7	697
Total	**843**	**40,856**	**463**	**29,939**	**723**	**70,219**

Figure 7.4 Positivity rate of genital warts by ethnicity, gender and sexual preference, 2014

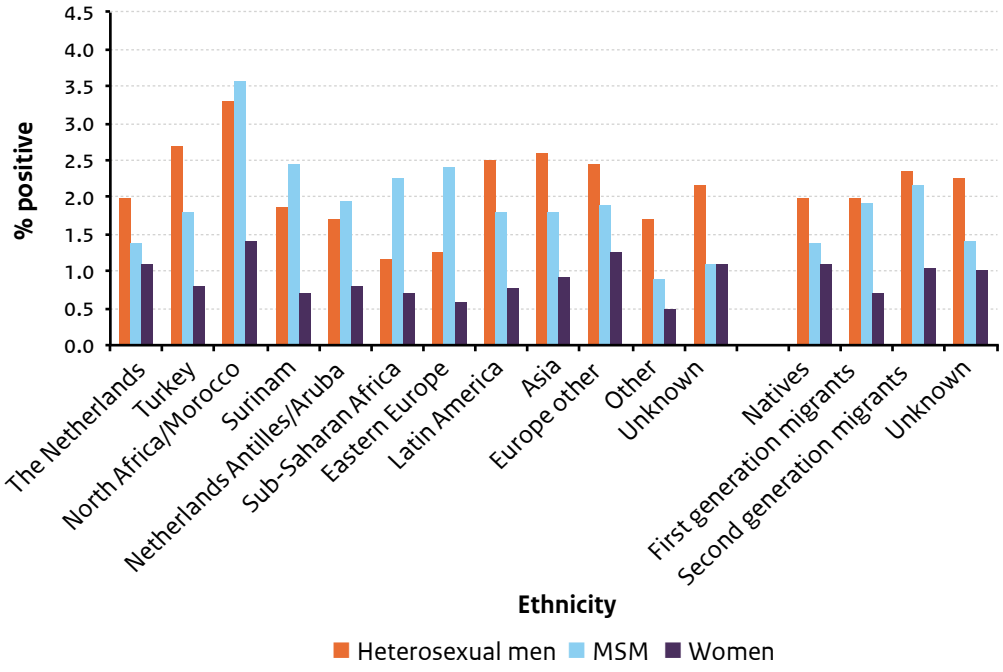


Table 7.3 Number of people diagnosed with genital warts and number of STI consultations by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Number of partners in past 6 months						
0 partners	6/202	3.0	3/143	2.1	9/447	2.0
1 partner	221/7,202	3.1	48/2,807	1.7	216/19,564	1.1
2 partners	134/8,615	1.6	45/3,319	1.4	193/18,674	1.0
3 or more partners	474/24,319	1.9	357/22,665	1.6	285/28,523	1.0
Unknown	8/518	1.5	10/1,005	1.0	20/3,011	0.7
Condom use if last sexual contact was steady*						
No	312/13,428	2.3	118/7,674	1.5	280/25,361	1.1
Yes	60/3,711	1.6	52/2,877	1.8	53/5,556	1.0
Unknown	0/89	0.0	1/145	0.7	3/147	2.0

Table 7.3 (continued) Number of people diagnosed with genital warts and number of STI consultations by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Condom use if last sexual contact was casual*						
No	275/15,337	1.8	136/8,638	1.6	243/25,710	0.9
Yes	160/7,246	2.2	139/8,503	1.6	126/10,943	1.2
Unknown	11/178	6.2	5/275	1.8	4/279	1.4
Previous gonorrhoea/chlamydia/syphilis in anamnesis						
No	721/33,538	2.1	345/21,601	1.6	624/57,031	1.1
Yes	77/3,885	2.0	104/7,195	1.4	72/8,252	0.9
Don't know	23/1,630	1.4	3/388	0.8	12/2,102	0.6
Unknown	22/1,803	1.2	11/755	1.5	15/2,834	0.5
Previous HIV test						
No	373/20,268	1.8	63/3,461	1.8	350/33,133	1.1
Yes, positive	1/44	2.3	72/4,248	1.7	0/86	0.0
Yes, negative	455/19,888	2.3	322/21,995	1.5	361/35,676	1.0
Yes, result unknown	2/63	3.2	1/56	1.8	1/118	0.8
Unknown	12/593	2.0	5/179	2.8	11/1,206	0.9
CSW						
No	836/40,441	2.1	449/29,162	1.5	698/64,312	1.1
Yes, in past 6 months	6/197	3.0	11/519	2.1	23/5,446	0.4
Unknown	1/218	0.5	3/258	1.2	2/461	0.4
Client of CSW, men						
No	767/36,367	2.1	445/28,545	1.6		
Yes, in past 6 months	72/4,218	1.7	12/734	1.6		
Unknown	4/271	1.5	6/660	0.9		
Swinger**						
No	318/15,666	2.0	126/8,268	1.5	247/23,929	1.0
Yes	19/1,459	1.3	13/1,074	1.2	23/2,355	1.0
Unknown	0/26	0.0	0/252	0.0	1/110	0.9

Table 7.3 (continued) Number of people diagnosed with genital warts and number of STI consultations by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men n positive/N	%	MSM n positive/N	%	Women n positive/N	%
Socioeconomic status						
Very high	144/5,386	2.7	55/4,345	1.3	100/9,642	1.0
High	212/10,693	2.0	132/8,234	1.6	193/18,834	1.0
Medium	216/11,496	1.9	122/7,747	1.6	217/19,896	1.1
Low	141/6,757	2.1	85/5,218	1.6	120/10,966	1.1
Very low	88/4,161	2.1	42/2,407	1.7	62/5,862	1.1
Unknown	42/2,363	1.8	27/1,988	1.4	31/5,019	0.6
Educational level#						
High	315/16,651	1.9	145/11,624	1.2	285/28,182	1.0
Low	199/10,475	1.9	85/5,661	1.5	162/16,250	1.0
Other	6/301	2.0	4/289	1.4	3/678	0.4
Unknown	323/13,429	2.4	229/12,365	1.9	273/25,109	1.1

* Type of sexual contact was missing for 3% (n=4,860) of persons with an STI consultation.
** Voluntary question, answered by 38% (n=53,139) of persons with an STI consultation.
# Low level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

Table 7.4 Concurrent STI by gender and sexual preference among people diagnosed with genital warts, 2014

Concurrent infection	Heterosexual men (N=843) n (%)	MSM (N=463) n (%)	Women (N=723) n (%)
Chlamydia	102 (12.1)	59 (12.7)	108 (14.9)
Gonorrhoea	10 (1.2)	54 (11.7)	12 (1.7)
Infectious syphilis	0 (0.0)	14 (3.0)	1 (0.1)
HIV newly diagnosed	0 (0.0)	6 (1.3)	0 (0.0)
Genital herpes	4 (0.5)	2 (0.4)	2 (0.3)
Infectious hepatitis B	2 (0.2)	1 (0.2)	1 (0.1)
Hepatitis C	0 (0.0)	1 (0.2)	0 (0.0)

7.3 General practice

Figure 7.5 Estimated annual number of episodes of genital warts at GPs by gender, based on extrapolation from practices in the NIVEL-PCD (2009-2013)

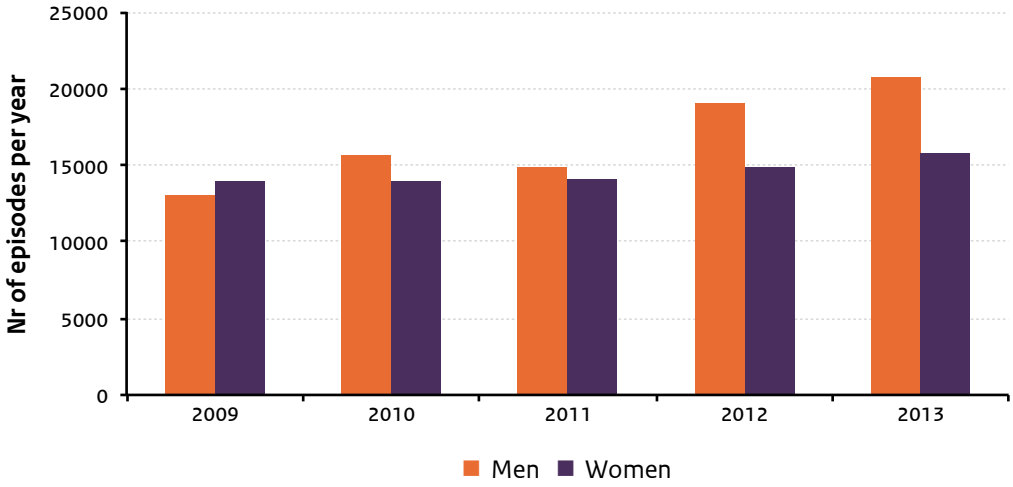


Table 7.5 Annual reporting rate (number of episodes per 1,000 persons) of genital warts at GPs in the Netherlands by gender, based on extrapolation from the GP practices in the NIVEL-PCD (2009-2013)

	Men n/1,000	Women n/1,000	Total n/1,000
2009	1.6	1.7	1.7
2010	1.9	1.7	1.8
2011	1.8	1.7	1.8
2012	2.3	1.8	2.1
2013	2.5	1.9	2.2

8 Genital herpes

8.1 Key points

- In 2014, the number of genital herpes diagnoses at STI clinics in the Netherlands was 479 (50.1 per cent women, 25.5 per cent heterosexual men, 24.4 per cent MSM).
- In 2014, the positivity rate among MSM was similar to the positivity rate in 2013 (0.4 per cent). Among both women and heterosexual men, the positivity rate dropped by 0.2 per cent to 0.3 per cent in 2014.
- Among heterosexual men, MSM and women diagnosed with genital herpes, chlamydia was the most common co-infection (8.2, 16.2 and 10.0 per cent, respectively).
- At general practices, the number of genital herpes episodes, estimated from data from the NIVEL-PCD, was 22,430 in 2013, with a reporting rate of 1.35 per 1,000 people. The reporting rate was higher in women than in men (1.9 versus 0.8/1,000).

8.2 STI clinics: characteristics, risk groups and trends

Figure 8.1 Positivity rates of genital herpes by region, the Netherlands, 2014

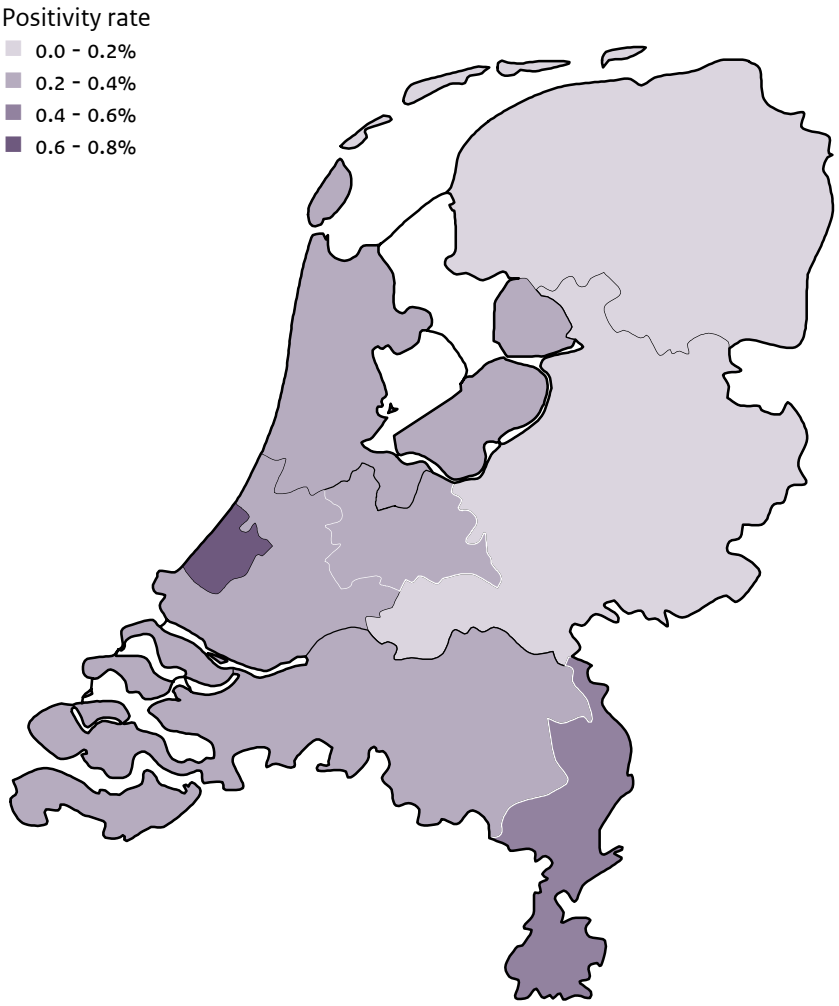
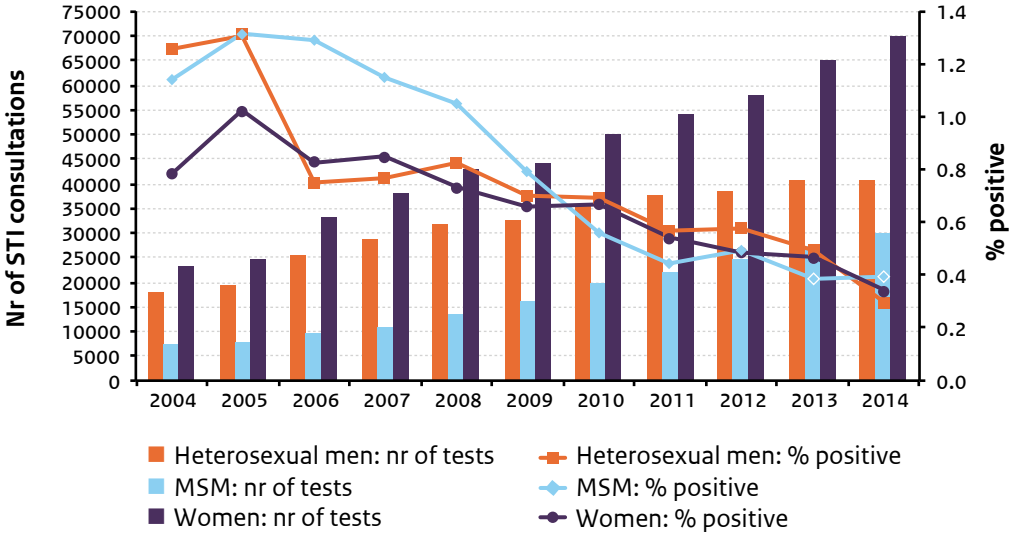


Figure 8.2 Total number of STI consultations and positivity rate of genital herpes by gender and sexual preference, 2004–2014



Footnote: Positivity rate was estimated by dividing the number of genital herpes diagnoses by the total number of STI consultations.

Table 8.1 Number of people diagnosed with genital herpes and number of STI consultations by age, gender and sexual preference, 2014

Age (years)	Heterosexual men		MSM		Women	
	n pos.	N consultations	n pos.	N consultations	n pos.	N consultations
≤ 14	0	4	0	3	0	71
15–19	2	2,183	5	682	36	8,026
20–24	32	16,955	10	4,332	104	36,739
25–29	29	9,840	16	4,562	50	12,933
30–34	20	4,320	17	3,844	22	4,505
35–39	14	2,286	13	3,685	10	2,390
40–44	5	1,746	9	3,339	4	1,951
45–49	8	1,403	17	3,493	5	1,774
50–54	7	1,024	11	2,694	5	1,144
≥ 55	5	1,094	19	3,304	4	683
Unknown	0	1	0	1	0	3
Total	**122**	**40,856**	**117**	**29,939**	**240**	**70,219**

Figure 8.3 Positivity rate of genital herpes by age, gender and sexual preference, 2014

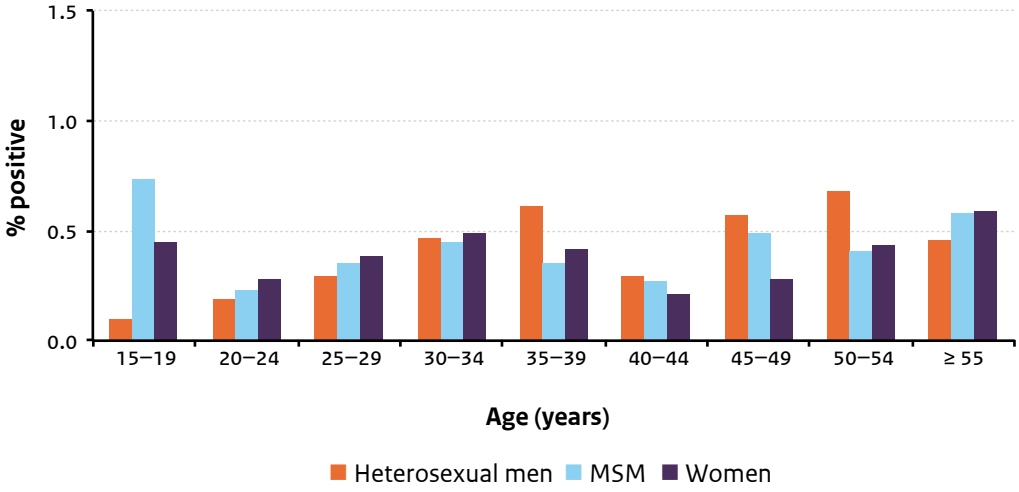


Table 8.2 Number of people diagnosed with genital herpes and number of STI consultations by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n pos.	N consult	n pos.	N consult	n pos.	N consult
The Netherlands	66	26,047	81	21,279	145	49,893
Turkey	1	1,045	1	388	2	636
North Africa/Morocco	2	1,604	0	336	3	1,136
Surinam	19	3,029	7	907	17	3,679
Netherlands Antilles/Aruba	10	1,590	2	612	8	1,621
Sub-Saharan Africa	4	1,449	1	265	4	1,410
Eastern Europe	4	557	2	666	15	2,608
Latin America	1	637	4	942	8	1,561
Asia	5	1,960	6	1,653	11	2,827
Europe other	6	2,170	11	2,278	24	3,576
Other	2	415	2	271	3	645
Unknown	2	353	0	342	0	627

Table 8.2 (continued) Number of people diagnosed with genital herpes and number of STI consultations by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n pos.	N consult	n pos.	N consult	n pos.	N consult
Natives	66	26,047	81	21,279	145	49,893
First generation migrants	21	6,603	27	5,832	55	9,145
Second generation migrants	33	7,763	9	2,543	38	10,484
Unknown	2	443	0	285	2	697
Total	**122**	**40,856**	**117**	**29,939**	**240**	**70,219**

Figure 8.4 Positivity rate of genital herpes by ethnicity, gender and sexual preference, 2014

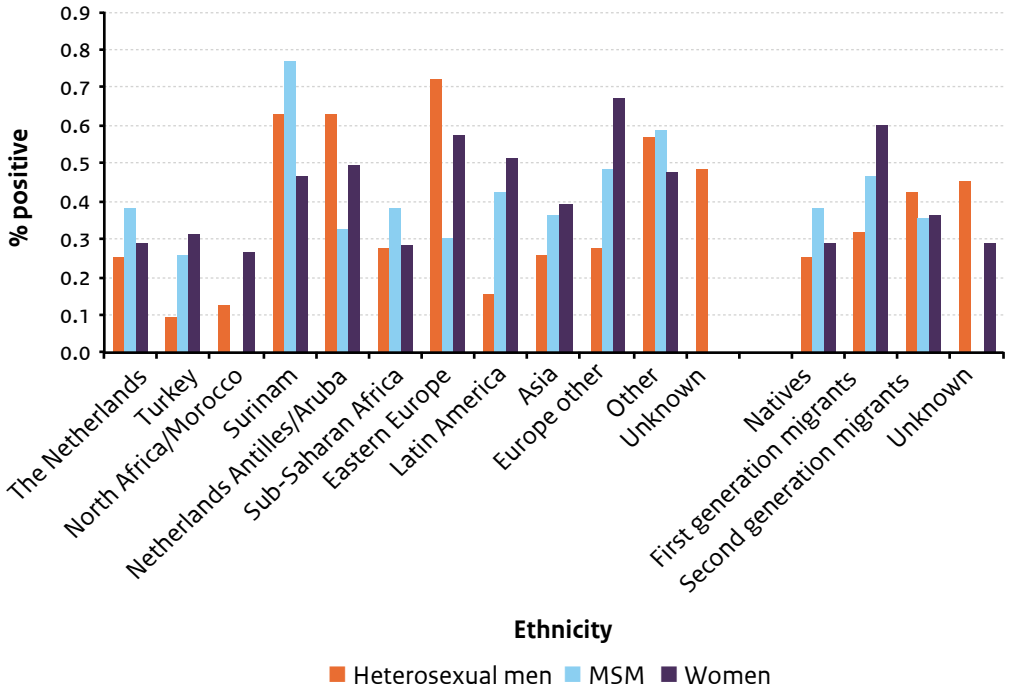


Table 8.3 Number of people diagnosed with genital herpes and number of STI consultations by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Number of partners in past 6 months						
0 partners	0/202	0.0	0/143	0.0	3/447	0.7
1 partner	38/7,202	0.5	13/2,807	0.5	81/19,564	0.4
2 partners	26/8,615	0.3	13/3,319	0.4	76/18,674	0.4
3 or more partners	57/24,319	0.2	90/22,665	0.4	68/28,523	0.2
Unknown	1/518	0.2	1/1,005	0.1	12/3,011	0.4
Condom use if last sexual contact was steady*						
No	52/13,428	0.4	34/7,674	0.4	118/25,361	0.5
Yes	7/3,711	0.2	7/2,877	0.2	22/5,556	0.4
Unknown	0/89	0.0	0/145	0.0	1/147	0.7
Condom use if last sexual contact was casual*						
No	43/15,337	0.3	38/8,638	0.4	66/25,710	0.3
Yes	19/7,246	0.3	35/8,503	0.4	24/10,943	0.2
Unknown	0/178	0.0	0/275	0.0	1/279	0.4
Previous gonorrhoea/chlamydia/syphilis in anamnesis						
No	101/33,538	0.3	81/21,601	0.4	204/57,031	0.4
Yes	12/3,885	0.3	35/7,195	0.5	22/8,252	0.3
Don't know	2/1,630	0.1	1/388	0.3	3/2,102	0.1
Unknown	7/1,803	0.4	0/755	0.0	11/2,834	0.4
Previous HIV test						
No	47/20,268	0.2	11/3,461	0.3	104/33,133	0.3
Yes, positive	0/44	0.0	36/4,248	0.8	0/86	0.0
Yes, negative	75/19,888	0.4	70/21,995	0.3	132/35,676	0.4
Yes, result unknown	0/63	0.0	0/56	0.0	0/118	0.0
Unknown	0/593	0.0	0/179	0.0	4/1,206	0.3
CSW						
No	119/40,441	0.3	177/29,162	0.6	218/64,312	0.3
Yes, in past 6 months	3/197	1.5	0/519	0.0	20/5,446	0.4
Unknown	0/218	0.0	0/258	0.0	2/461	0.4

Table 8.3 (continued) Number of people diagnosed with genital herpes and number of STI consultations by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Client of CSW, men						
No	107/36,367	0.3	116/28,545	0.4		
Yes, in past 6 months	14/4,218	0.3	0/734	0.0		
Unknown	1/271	0.4	1/660	0.2		
Swinger**						
No	51/15,666	0.3	36/8,268	0.4	115/23,929	0.5
Yes	3/1,459	0.2	1/1,074	0.1	4/2,355	0.2
Unknown	0/26	0.0	0/252	0.0	0/110	0.0
Socioeconomic status						
Very high	13/5,386	0.2	27/4,345	0.6	30/9,642	0.3
High	30/10,693	0.3	30/8,234	0.4	61/18,834	0.3
Medium	31/11,496	0.3	25/7,747	0.3	68/19,896	0.3
Low	22/6,757	0.3	16/5,218	0.3	38/10,966	0.3
Very low	19/4,161	0.5	13/2,407	0.5	24/5,862	0.4
Unknown	7/2,363	0.3	6/1,988	0.3	19/5,019	0.4
Educational level#						
High	41/16,651	0.2	38/11,624	0.3	102/28,182	0.4
Low	37/10,475	0.4	20/5,661	0.4	66/16,250	0.4
Other	0/301	0.0	1/289	0.3	4/678	0.6
Unknown	44/13,429	0.3	58/12,365	0.5	68/25,109	0.3

* Type of sexual contact was missing for 3% (n=4,860) of persons with an STI consultation.
** Voluntary question, answered by 38% (n=53,139) of persons with an STI consultation.
# Low level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university.

Table 8.4 Concurrent STI by gender and sexual preference among people diagnosed with genital herpes, 2014

Concurrent infection	Heterosexual men (N=122) n (%)	MSM (N=117) n (%)	Women (N=240) n (%)
Chlamydia	10 (8.2)	19 (16.2)	24 (10.0)
Gonorrhoea	1 (0.8)	12 (10.3)	4 (1.7)
Infectious syphilis	1 (0.8)	8 (6.8)	1 (0.4)
HIV newly diagnosed	2 (1.6)	2 (1.7)	1 (0.4)
Genital warts	4 (3.3)	2 (1.7)	2 (0.8)
Infectious hepatitis B	0 (0.0)	0 (0.0)	0 (0.0)
Hepatitis C	0 (0.0)	0 (0.0)	0 (0.0)

8.3 General practice

Figure 8.5 Estimated annual number of episodes of genital herpes at GPs by gender, based on extrapolation from practices in the NIVEL-PCD (2009-2013)

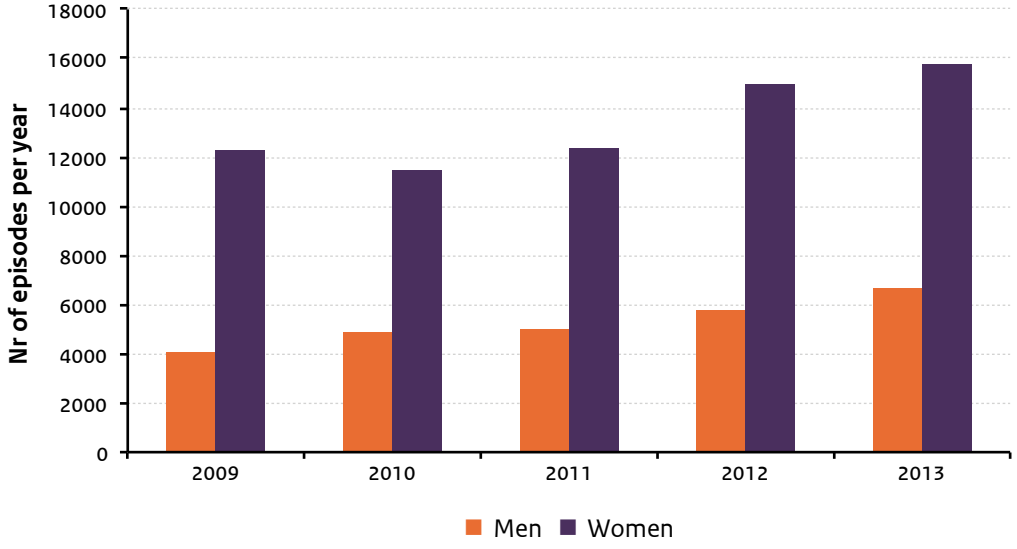


Table 8.5 Annual reporting rate (number of episodes per 1,000 persons) of genital herpes at GPs in the Netherlands by gender, based on extrapolation from the GP practices in the NIVEL-PCD (2009-2013)

	Men n/1,000	Women n/1,000	Total n/1,000
2009	0.5	1.5	1.0
2010	0.6	1.4	1.0
2011	0.6	1.5	1.1
2012	0.7	1.8	1.3
2013	0.8	1.9	1.4

9 Hepatitis B

9.1 Key points

- In 2014, the incidence of notified cases of acute hepatitis B was 0.7 per 100,000 inhabitants and was higher in men (1.2) than in women (0.3). In 2013, 0.8 per 100,000 inhabitants were notified as acute hepatitis B cases.
- The number of acute hepatitis B notifications decreased by 13 per cent compared with 2013 due primarily to a decrease in heterosexual transmission (29.4 per cent) and MSM transmission (21.1 per cent). There was a decrease of 11.9 per cent in infections by an unknown transmission route.
- Unprotected sexual contact remained the most important risk factor of acute hepatitis B (57.6 per cent).
- At the STI clinics, the number of hepatitis B diagnoses was 143 (50.3 per cent heterosexual men, 28.7 per cent MSM, 21.0 per cent women) in 2014.
- At the STI clinics, the positivity rate was higher among first-generation migrants (around 1 per cent) than among second-generation migrants (0.1 per cent) or among natives (0.07 per cent).
- Data from screening of pregnant women showed an estimated prevalence of hepatitis B of 0.3 per cent in 2013/2014.
- At the end of 2014, a cumulative number of 19,389 CSW and 46,280 MSM had entered the vaccination programme for behavioural risk groups since the beginning of the programme in 2002.
- Within the programme, 343 carriers of hepatitis B have been encountered among CSW and MSM, and 4,707 participants have previously been in contact with hepatitis B.

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, 2014

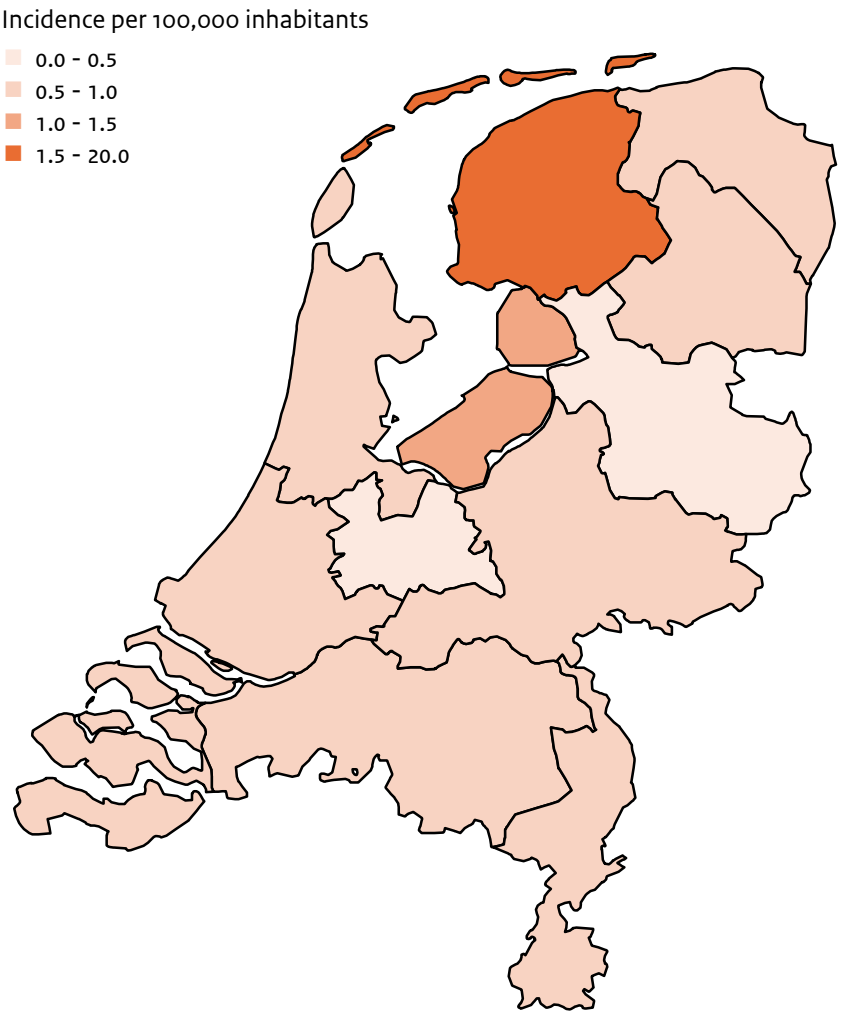
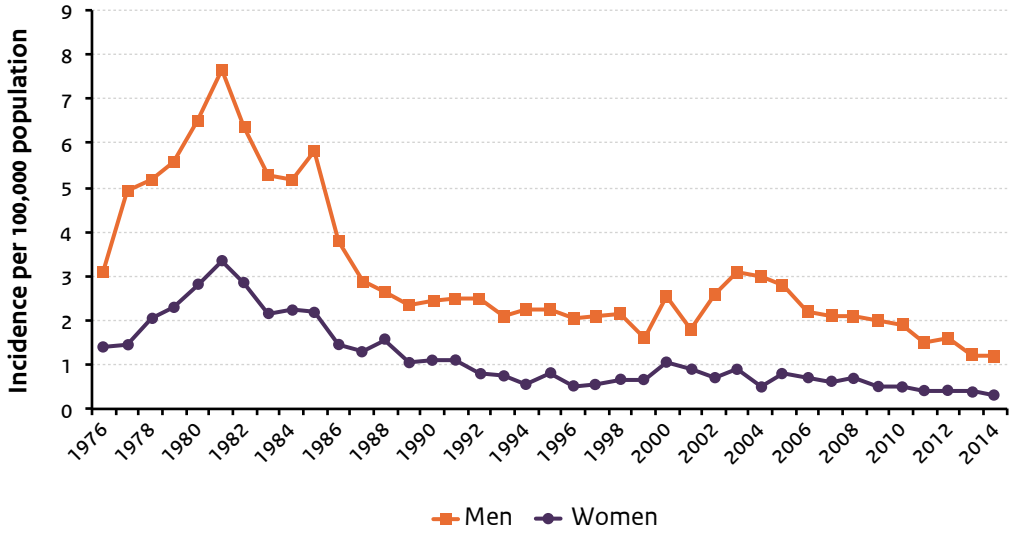
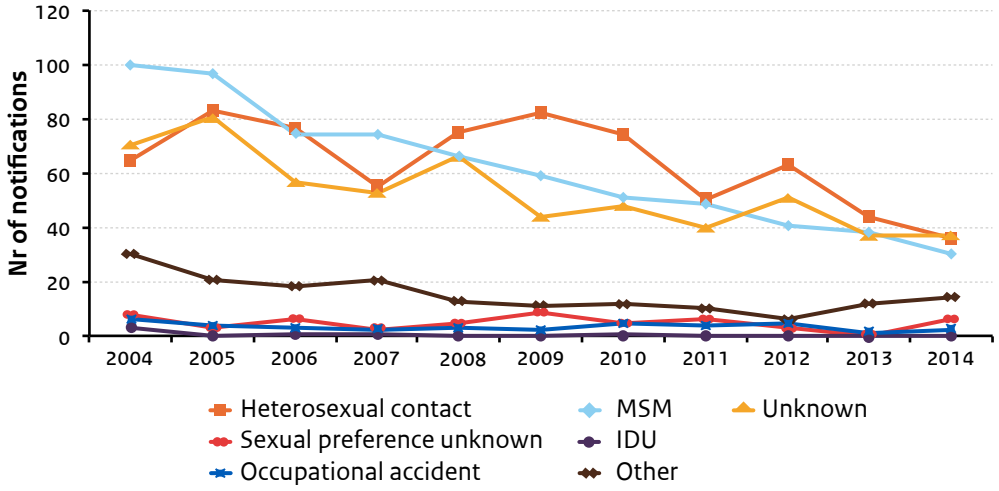


Figure 9.2 Incidence of acute hepatitis B by gender, 1976–2014



Footnote: Data of 2014 might be incomplete because of reporting delay (2014 data were collected on March 1-2015).

Figure 9.3 Number of acute hepatitis B infections by route of transmission, 2004–2014



Footnote: Data of 2014 might be incomplete because of reporting delay (2014 data were collected on March 1-2015).

Table 9.1 Proportion of acute hepatitis B cases by most common route of transmission, 2014

	Heterosexual contact (N=36) n (%)*	MSM (N=30) n (%)*	Other (N=59) n (%)*
Infected abroad	8 (22.2)	4 (13.3)	4 (6.8)
Born abroad	7 (19.4)	4 (13.3)	14 (23.7)
Infected by casual partner	27 (75.0)	27 (90.0)	4 (6.8)
Median age (range)	46 (20-80)	49 (28-71)	47 (18–66)

Footnote: Data of 2014 might be incomplete because of reporting delay (2014 data were collected on March 1-2015).
* 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 sexual preference, 2014

Age (years)	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
≤ 14	0	1	0	0	0	31
15–19	3	893	0	405	0	2,447
20–24	12	5,943	2	1,927	8	9,763
25–29	18	4,551	8	1,890	7	5,261
30–34	16	2,265	8	1,630	6	2,138
35–39	10	1,165	9	1,529	5	981
40–44	7	798	3	1,240	1	633
45–49	3	548	5	1,198	2	500
50–54	0	365	2	817	1	333
≥ 55	3	392	4	873	0	181
Unknown	0	0	0	1	0	1
Total	**72**	**16,921**	**41**	**11,510**	**30**	**22,269**

Figure 9.4 Percentage of positive tests for hepatitis B by age, gender and sexual preference, 2014

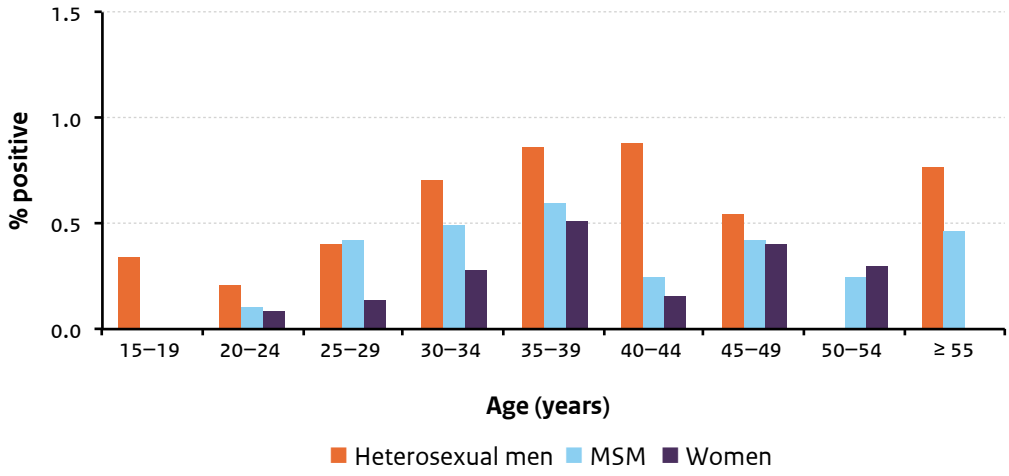


Table 9.3 Number of positive tests and persons tested for hepatitis B by ethnicity, gender and sexual preference, 2014

Ethnicity	Heterosexual men		MSM		Women	
	n positive	N tested	n positive	N tested	n positive	N tested
The Netherlands	3	6,688	11	7,330	3	10,094
Turkey	2	744	1	179	1	413
North Africa/Morocco	1	1,244	0	182	0	821
Surinam	11	2,550	0	384	2	2,965
Netherlands Antilles/Aruba	2	1,199	1	264	0	1,164
Sub-Saharan Africa	23	1,105	3	121	3	1,001
Eastern Europe	11	418	6	361	13	1,495
Latin America	2	521	1	500	3	1,019
Asia	15	1,361	10	802	5	1,782
Europe other	2	847	7	1,128	0	1,166
Other	0	138	1	185	0	205
Unknown	0	106	0	74	0	144
Natives	3	6,688	11	7,330	3	10,094
First generation migrants	61	4,689	25	2,931	25	5,487
Second generation migrants	8	5,421	5	1,169	2	6,507
Unknown	0	290	0	80	0	181
Total	**72**	**16,921**	**41**	**11,510**	**30**	**22,269**

Figure 9.5 Percentage of positive tests for hepatitis B by ethnicity, gender and sexual preference, 2014

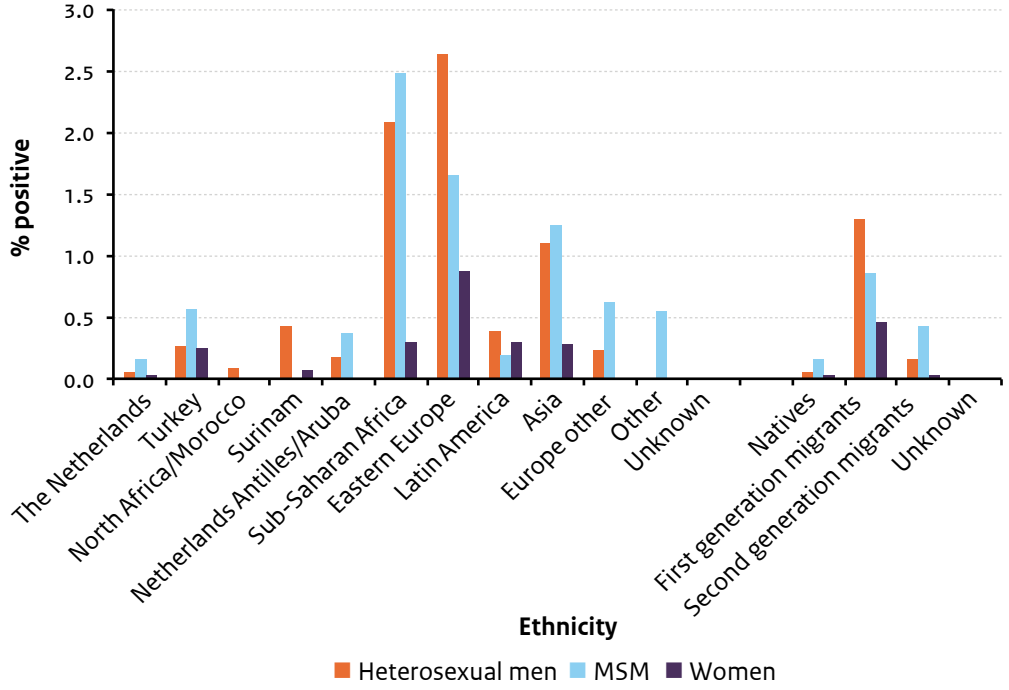


Table 9.4 Number and percentage of positive tests and total persons tested for hepatitis B by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Number of partners in past 6 months						
0 partners	2/85	2.4	0/68	0.0	0/125	0.0
1 partner	34/2,757	1.2	8/1,273	0.6	4/6,022	0.1
2 partners	15/3,346	0.4	5/1,339	0.4	9/5,028	0.2
3 or more partners	18/10,551	0.2	27/8,679	0.3	11/10,389	0.1
Unknown	3/182	1.6	1/151	0.7	6/705	0.9
Condom use if last sexual contact was steady*						
No	24/5,303	0.5	9/3,041	0.3	12/7,966	0.2
Yes	14/1,402	1.0	6/1,281	0.5	1/2,006	0.0
Unknown	0/41	0.0	0/60	0.0	0/76	0.0

Table 9.4 (continued) Number and percentage of positive tests and total persons tested for hepatitis B by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Condom use if last sexual contact was casual*						
No	21/6,725	0.3	8/3,289	0.2	5/8,186	0.1
Yes	9/3,124	0.3	18/3,567	0.5	10/3,552	0.3
Unknown	2/71	2.8	0/74	0.0	1/73	1.4
Previous gonorrhoea/chlamydia/syphilis in anamnesis						
No	61/14,390	0.4	34/8,899	0.4	24/18,816	0.1
Yes	3/1,594	0.2	4/2,213	0.2	1/2,585	0.0
Don't know	4/428	0.9	2/196	1.0	0/364	0.0
Unknown	4/509	0.8	1/202	0.5	5/504	1.0
Previous HIV test						
No	37/7,679	0.5	8/2,295	0.3	11/8,714	0.1
Yes, positive	1/12	8.3	6/1,448	0.4	0/28	0.0
Yes, negative	33/8,991	0.4	25/7,661	0.3	18/13,174	0.1
Yes, result unknown	0/34	0.0	0/32	0.0	0/48	0.0
Unknown	1/205	0.5	2/74	2.7	1/305	0.3
CSW						
No	70/16,770	0.4	40/11,160	0.4	16/19,882	0.1
Yes, in past 6 months	1/97	1.0	1/251	0.4	14/2,340	0.6
Unknown	1/54	1.9	0/99	0.0	0/47	0.0
Client of CSW, men						
No	59/14,479	0.4	41/10,712	0.4		
Yes, in past 6 months	9/2,350	0.4	0/360	0.0		
Unknown	4/92	4.3	0/438	0.0		
Swinger**						
No	30/6,814	0.4	14/2,152	0.7	11/7,348	0.1
Yes	2/302	0.7	1/215	0.5	0/428	0.0
Unknown	0/9	0.0	0/14	0.0	0/22	0.0

Table 9.4 (continued) Number and percentage of positive tests and total persons tested for hepatitis B by (sexual) behavioural characteristics, demographics, gender and sexual preference, 2014

	Heterosexual men		MSM		Women	
	n positive/N	%	n positive/N	%	n positive/N	%
Socioeconomic status						
Very high	7/2,144	0.3	5/1,763	0.3	5/2,894	0.2
High	11/3,879	0.3	9/2,963	0.3	8/5,190	0.2
Medium	15/3,911	0.4	11/2,763	0.4	3/5,001	0.1
Low	20/3,357	0.6	6/2,189	0.3	3/4,231	0.1
Very low	12/2,488	0.5	3/964	0.3	5/2,603	0.2
Unkown	7/1,142	0.6	7/868	0.8	6/2,350	0.3
Educational level#						
High	18/4,943	0.4	12/2,774	0.4	4/6,034	0.1
Low	26/4,714	0.6	5/1,482	0.3	9/5,387	0.2
Other	3/140	2.1	0/120	0.0	0/212	0.0
Unknown	25/7,124	0.4	24/7,134	0.3	17/10,636	0.2

* Type of sexual contact was missing for 1.7% (n=863) of persons tested for hepatitis B.
** Voluntary question, answered by 34% (n=17,304) of persons tested for hepatitis B.
\# Low level of education: no education, elementary school, lbo, mavo, vmbo, mbo; high level of education: havo, vwo, university of applied sciences, university

Table 9.5 Concurrent STI by gender and sexual preference among persons diagnosed with hepatitis B, 2014

Concurrent infection	Heterosexual men (N=72) n (%)	MSM (N=41) n (%)	Women (N=30) n (%)
Chlamydia	14 (19.4)	12 (29.3)	1 (3.3)
Gonorrhoea	1 (1.4)	2 (4.9)	0 (0.0)
Infectious syphilis	0 (0.0)	2 (4.9)	0 (0.0)
HIV newly diagnosed	1 (1.4)	5 (12.2)	0 (0.0)
Genital herpes	0 (0.0)	0 (0.0)	0 (0.0)
Genital warts	2 (2.8)	1 (2.4)	1 (3.3)
Hepatitis C	0 (0.0)	0 (0.0)	0 (0.0)

9.4 Antenatal screening

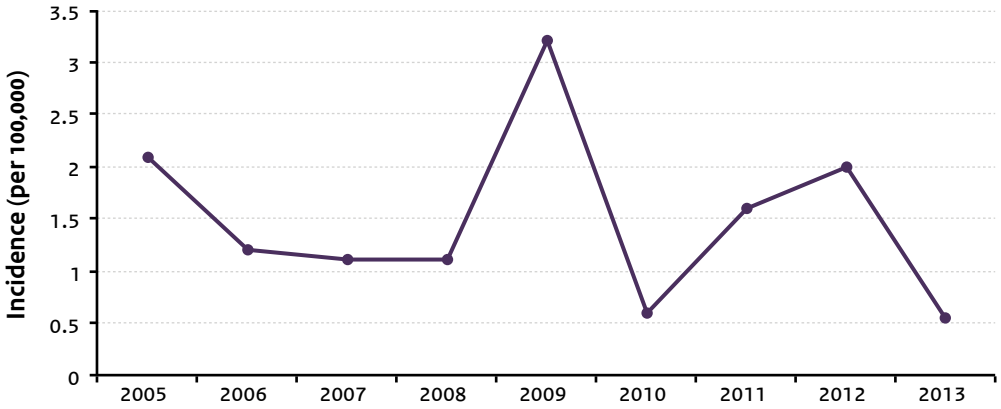
Table 9.6 Hepatitis B prevalence estimates for pregnant women, based on test results of antenatal screening, 2006-2014

Period	Nr. of women screened	Positive result 12 weeks test	Confirmed positive test results (%)	Prevalence estimate [min–max]
2006	185,941	966	714 (74%)	0.4 [0.38–0.40]
2007	186,137	868	620 (71%)	0.34 [0.33–0.34]
2008	190,140	932	605 (65%)	0.33 [0.32–0.33]
2009	185,528	680	636 (94%)	0.36 [0.34–0.36]
2009/10	187,586	648	576 (90%)	0.31 [0.31–0.31]
2010/11	182,297	656	593 (91%)	0.33 [0.33–0.33]
2011#	88,489		284	0.32
2012/2013	173,880		536	0.31
2013/2014	176,086		529	0.30

(Sources: C.P.B. van der Ploeg (TNO), Y. Schonbeck (TNO), H. Hirschberg (RIVM). Prenatale Screening Infectieziekten en Erytrocytenimmunisatie (PSIE). Procesmonitor 2013. TNO/RIVM 2015)
Footnote 1: Terminated pregnancies (induced or spontaneous) are excluded until 2012.
Footnote 2: Since 2009, time periods of data collection range from June to June the subsequent year.
Footnote 3: Since the second half of 2011, the prevalence calculation is based on the final conclusion made by the laboratory ('lab-conclusion') and passed to the RIVM-DVP (Dienst Vaccinvoorziening & Preventieprogramma's). If the lab-conclusion is missing, then the result of the confirmation test is used. In previous reports, prevalence was shown as a range from minimum to maximum prevalence. Minimum prevalence: number of confirmed positive test results divided by the total number of registered pregnant women; maximum prevalence: under the assumption that all pregnant women with a positive result without a confirmation test would also have a positive confirmation test. After 2011, only the middle of the range was shown (the mid-prevalence).
Data from July-December 2011

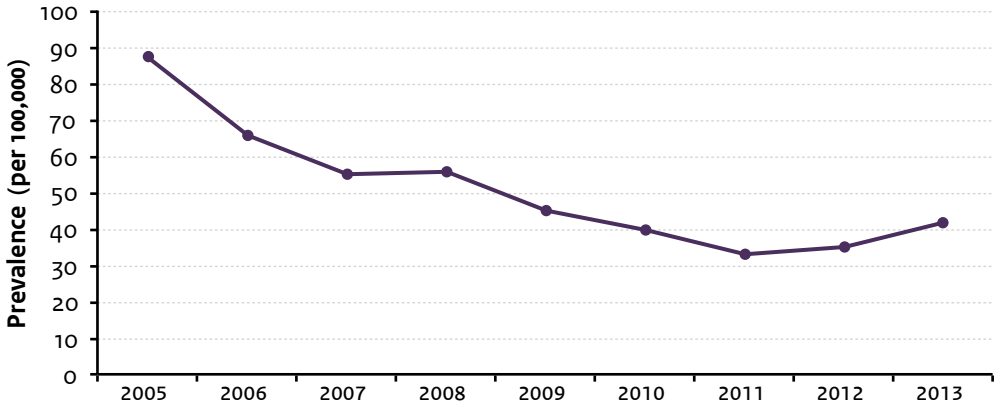
9.5 Blood donors

Figure 9.6a Hepatitis B incidence (per 100,000) among regular blood donors in the Netherlands, 2005–2013



(Source: Sanquin)

Figure 9.6b Hepatitis B prevalence (per 100,000) among new blood donors in the Netherlands, 2005-2013



(Source: Sanquin)

9.6 Hepatitis B vaccination programme for risk groups

Figure 9.7 Number of persons entering the hepatitis B vaccination programme, 2002–2014

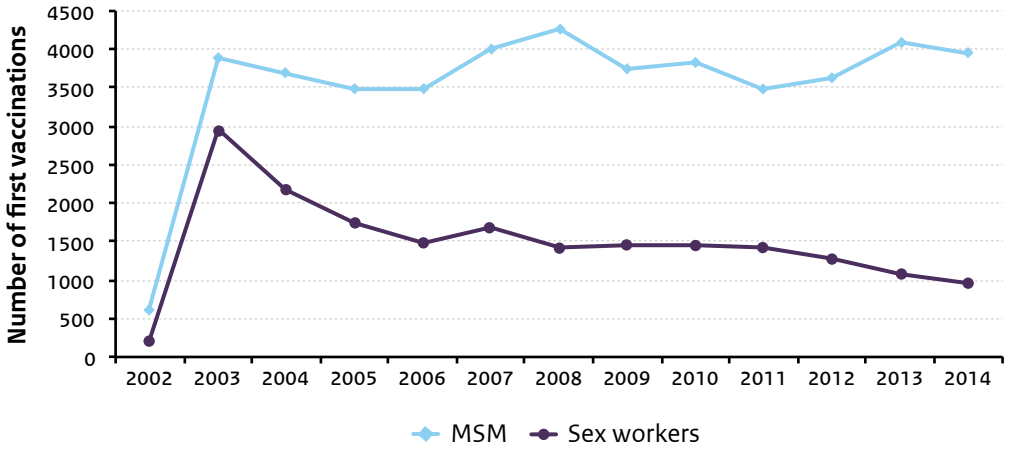


Table 9.7 Number of vaccinated, chronically infected and immune participants of the hepatitis B vaccination programme, 2002–2014

	CSW	MSM
First vaccination	19,389	46,280
Second vaccination	12,297	35,379
Third vaccination	8,442	29,584
Hepatitis B status at first consultation*		
Hepatitis B carrier (%)	139 (0.8)	204 (0.5)
Hepatitis B immune (%)	1,584 (8.5)	3,123 (7.2)

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 9.8 Number and percentage of first hepatitis B vaccinations per risk group and location of first vaccination, 2002-2014

Location of first vaccination	CSW (N=19,389) n (%)	MSM (N=46,280) n (%)
STI centre	2,935 (15.1)	13,303 (28.7)
Public health service*	12,101 (62.4)	28,744 (62.1)
Penitentiary institution	696 (3.6)	153 (0.3)
MSM location	56 (0.0)	2,180 (0.0)
Drug location	34 (0.2)	137 (0.3)
CSW location	3,466 (17.9)	11 (0.0)
Other	101 (0.5)	1,752 (3.8)

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

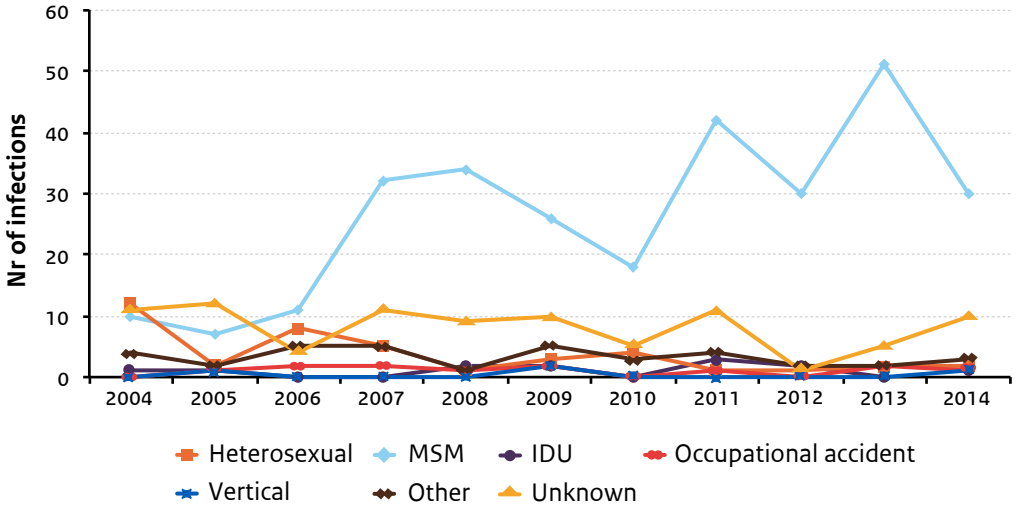
10 Hepatitis C

10.1 Key points

- In 2014, the total number of acute hepatitis C notifications (n=50) decreased by 20 per cent compared with 2013 (n=62).
- Unprotected sexual contact between men remained the most important route of transmission for acute hepatitis C (60 per cent).
- Of all hepatitis C-positive MSM (n=30) notified in 2014, 77 per cent (n=23) were HIV-positive.
- At the STI centres, 19 hepatitis C cases were diagnosed, which were all MSM.
- HCV had not been detected in blood donors since 2008, but in 2013, an incidence of 0.3 per 100,000 regular blood donors was found.

10.2 Notification data: characteristics, risk groups and trends

Figure 10.1 Number of acute hepatitis C infections by route of transmission, 2004–2014



10.3 Blood donors

Figure 10.2a Hepatitis C incidence (per 100,000) among regular blood donors in the Netherlands, 2005–2013

(Source: Sanquin)

Figure 10.2b Hepatitis C prevalence (per 100,000) among new blood donors in the Netherlands, 2005-2013

(Source: Sanquin)

11 Burden of Disease

11.1 Key points

- Between 2007 and 2011, HIV was estimated to carry the greatest Burden of Disease (BoD) at the population level (based on the number of new cases, and the morbidity and mortality per new case) with 6,987 DALYs/year, followed by chlamydia with 5,350 DALYs/year. Between 2012 and 2014, chlamydia acquired the greatest BoD at the population level (6,801 DALYs/year), followed by HIV (5,878 DALYs/year). In both periods, the lowest BoD at the population level was carried by syphilis (26 and 23 DALYs/year, respectively).
- The high BoD of HIV at the population level was driven by a high morbidity (Years Lived with Disability (YLD)) and high mortality (Years of Life Lost (YLL)) per new case; the number of new cases was relatively low. The high BoD of chlamydia at the population level was driven mainly by the high number of new cases; the morbidity (YLD) and especially the mortality (YLL) per new case were relatively low.
- The estimated number of DALYs per year have increased over time for chlamydia, gonorrhoea and hepatitis C, but decreased for hepatitis B, HIV and syphilis. These trends are largely explained by changes in incidence.
- The estimated number of DALYs per 100 cases, reflecting the burden at the individual level, was highest for HIV (363 in 2007-2011 and 357 in 2012-2014) and lowest for syphilis (0.5 in 2007-2011 and 0.4 in 2012-2014).
- Comparing the two reporting periods, there were only slight changes in the estimated number of DALYs per 100 cases over time.

11.2 Burden of Disease: Disability Adjusted Life Years

Table 11.1 Average annual number of new STI cases, multiplication factors (MFs) to adjust for underestimation and asymptomatics, and the estimated annual number of new cases in the periods 2007-2011 and 2012-2014

	Average annual number of new cases[a]	MF underestimation[b]	MF asymptomatics[c]	Estimated annual number of new cases[d]
Chlamydia				
2007-2011	44,462	1.11[e]	Men: 3.23 Women: 5.00	233,613
2012-2014	54,251	1.11[e]	Men: 3.23 Women: 5.00	286,081
Gonorrhoea				
2007-2011	8,034	1.11[e]	Men: 1.03 Women: 2.50	12,637
2012-2014	11,778	1.11[e]	Men: 1.03 Women: 2.50	18,950
Hepatitis B				
2007-2011	202	1.33[f]; 1.20-1.22[g]	0-19 yrs: 10.00 >19 yrs: 3.03	1,124
2012-2014	145	1.33[f]; 1.20-1.22[g]	0-19 yrs: 10.00 >19 yrs: 3.03	796
Hepatitis C				
2007-2011	51	Men 20-69 yrs: Uniform (1, 5.12)* 29/30 + Pert (0, 47, 464.4)* 1/30[h]	4.00	1,233
2012-2014	55	Men 20-69 yrs: Uniform (1, 5.12)* 29/30 + Pert (0, 47, 464.4)* 1/30[h]	4.00	1,324
HIV				
2007-2011	1,130		1.67	1,922
2012-2014	965	2013: 1.03; 2014: 1.11[i]	1.67	1,645
Syphilis				
2007-2011	628	4.21[j]	0-1 yrs: 4.17 >1 yrs: 2.00	5,761
2012-2014	647	4.21[j]	0-1 yrs: 4.17 >1 yrs: 2.00	5,461

Table 11.1 (continued) Average annual number of new STI cases, multiplication factors (MFs) to adjust for underestimation and asymptomatics, and the estimated annual number of new cases in the periods 2007-2011 and 2012-2014

Footnote: For hepatitis B and C, only new acute cases were included; for syphilis, only new infectious syphilis cases were included.

a Based on incidence data, derived from different data sources, depending on the specific STI. Chlamydia and gonorrhoea: STI clinic and GP data; Hepatitis B and C: notification data Osiris; HIV: SHM data; Syphilis: STI clinic data.
b Multiplication Factors applied to correct for under-ascertainment (caused by cases that do not contact health services) and/or underreporting (caused by cases that do contact health services, but are incorrectly reported).
c Multiplication Factors applied to correct for asymptomatic cases (assuming none of the asymptomatic cases contact health facilities for testing).
d Estimated annual number of new cases, averaged over the periods 2007-2011 and 2012-2014 and adjusted for under-estimation and asymptomatic cases.
e To correct for cases who get tested at another location than the STI clinic or GP.
f To correct for under-ascertainment.
g To correct for underreporting.
h This MF was calculated for MSM only; it was assumed there is no under-estimation for non-MSM risk groups. The MF is a weighted sum derived from the estimated incidence of hepatitis C among HIV-positive and HIV-negative MSM, weighted for the proportion of notified cases represented by the two respective groups. The estimated annual incidence is quite uncertain due to the wide MF distribution specified for HIV-negative MSM, itself attributable to the wide uncertainty range in the incidence estimated for this group. This MF was only applied to males aged 20-69 years.
i To correct for reporting delay of new HIV cases in 2013 and 2014.
j To correct for additional incident cases at the GP (which cannot be estimated accurately in available GP data).

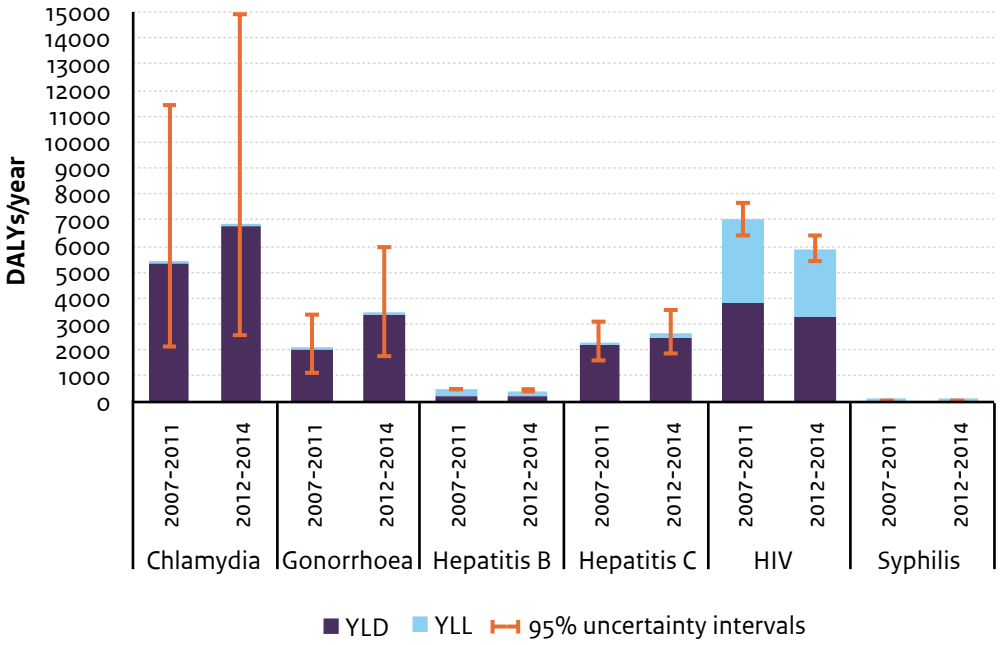
Table 11.2 Estimated burden of disease in the periods 2007-2011 and 2012-2014 for new STI cases

	YLD/year[a]	YLL/year[a]	DALYs/year[a]	DALYs/100 cases[a]
Chlamydia[b]				
2007-2011	5,350 (2,134-11,421)	0.2 (0.1-0.3)	5,350 (2,134-11,421)	2.3 (0.9-4.9)
2012-2014	6,801 (2,573-14,907)	0.3 (0.2-0.4)	6,801 (2,573-14,907)	2.4 (0.9-5.2)
Gonorrhoea[b]				
2007-2011	1,988 (1,086-3,367)	4.5 (3.2-6.4)	1,992 (1,090-3,373)	16 (9-27)
2012-2014	3,316 (1,761-5,995)	5.1 (3.4-7.7)	3,321 (1,764-5,998)	18 (9-32)
Hepatitis B[c]				
2007-2011	268 (267-270)	241 (212-269)	509 (480-538)	45 (43-48)
2012-2014	198 (197-199)	237 (216-258)	435 (413-457)	55 (52-57)
Hepatitis C[c]				
2007-2011	2,209 (1,536-3,026)	65 (45-95)	2,274 (1,600-3,085)	184 (128-251)
2012-2014	2,481 (1,750-3,351)	144 (97-207)	2,624 (1,867-3,498)	198 (141-264)
HIV[d]				
2007-2011	3,811 (3,461-4,175)	3,176 (2,889-3,476)	6,987 (6,374-7,622)	363 (332-396)
2012-2014	3,259 (2,971-3,558)	2,619 (2,386-2,870)	5,878 (5,382-6,397)	357 (327-389)
Syphilis[c]				
2007-2011	13 (9-17)	14 (10-18)	26 (20-35)	0.5 (0.3-0.6)
2012-2014	11 (8-15)	12 (9-16)	23 (17-31)	0.4 (0.3-0.6)

Footnote 1: YLD=Years Lived with Disability; YLL=Years of Life Lost; DALY=Disability Adjusted Life Year
Footnote 2: As opposed to working with prevalence data, the burden of disease was calculated based on incidence data. In this way, all new cases of a particular disease were counted, and the burden associated with all health outcomes (including those that might occur in future years) that are attributable to the initial infection was included, and assigned to the year of the initial infection. Working with incidence data can lead to a better understanding of the possible future health gains from prevention initiatives. However, the incidence approach does not take into account the burden of disease among patients who have contracted an STI in the past, and still suffer from the health consequences (e.g. HIV and hepatitis B).

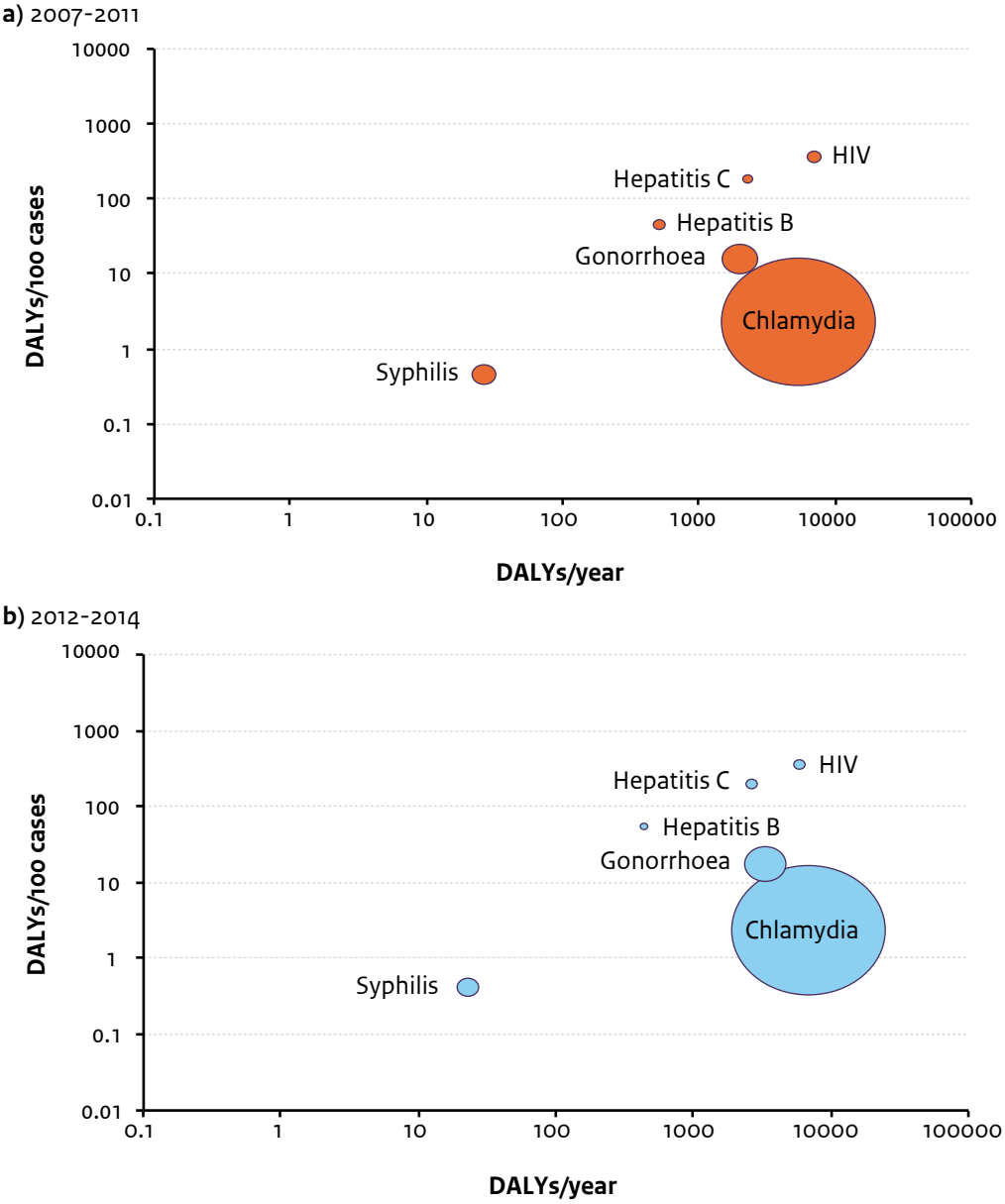
a Mean with 95% uncertainty intervals.
b The increasing burden of chlamydia and gonorrhoea over time is mainly caused by an increasing number of new cases. This is probably (partially) related to an increase in testing rate over time.
c Although for hepatitis B and C only new acute cases were included and for syphilis only new infectious cases were included, the burden is calculated for all sequelae following the acute or infectious phase.
d The burden of HIV infection was based on a natural history model not fully reflecting the effects of HAART. A much reduced burden would be expected if the positive impact of HAART on mortality was taken into account. Modifying the HIV disease model to take into account effects of HAART is clearly desirable, but it will be challenging to model the natural history in light of evolving treatment regimens and drug resistance.

Figure 11.1 Estimated annual burden of disease at population level (DALYs/year) in the periods 2007-2011 and 2012-2014 for new STI cases, with the YLD and YLL components shown separately



Footnote: YLD=Years Lived with Disability; YLL=Years of Life Lost; DALY=Disability Adjusted Life Year

Figure 11.2 Ranking of STIs by estimated burden of disease at population level (DALYs/year) and individual level (DALYs/100 cases) in the periods 2007-2011 and 2012-2014



Footnote 1: The size of each bubble is proportional to the average number of estimated annual cases.
Footnote 2: Both axes are on a logarithmic scale.
Footnote 3: DALY=Disability Adjusted Life Year.

12 General conclusions and recommendations

The surveillance data from 2014 show that access to STI testing further improved, reflected by the continued rise in consultations at STI clinics. The overall positivity rate increased slightly, which indicates a sufficient coverage of high-risk groups. An important goal of control efforts is the early detection of STI and HIV. This will result in individual health gains, by preventing or reducing morbidity thanks to timely, adequate treatment, as well as in public health gains, by preventing transmission among the population and thereby reducing exposure to STI. The early detection and treatment of STI and HIV should remain an important public health priority.

Groups that are at high risk of STI, as reflected in their high positivity rates, are MSM (in particular HIV-infected MSM), certain migrant populations and young people (under 25 years of age). High-risk behaviour has not diminished among STI clinic attendees, reflected by unchanged proportions of those reporting not having used a condom at their last sex contact and having more than three sex partners in the preceding six months. This suggests that further, innovative approaches are needed to ensure that people in high-risk groups effectively reduce the risk of their sexual behaviour and improve their sexual health. At the same time, testing and treatment strategies need to be optimized to maximize the effect of control efforts and reach those most in need. With this aim in mind, STI clinics have since 2012 offered young heterosexuals with no additional risk factors a chlamydia test only, rather than a comprehensive STI testing package of chlamydia, gonorrhoea, syphilis and HIV, which is the minimum for other high-risk attendees. Data show that in 2014 among 1,483 young people without additional risk factors, but who were diagnosed with a chlamydia infection, only 18 gonorrhoea infections were found and no syphilis or HIV infections. This national policy change has led to a substantial reduction in test costs.[12]

For the first time in this annual report, Burden of Disease (BoD) estimates are shown. Estimates are calculated by using a pathogen-based and incidence-based approach, which incorporates all health outcomes that can be causally attributed to all new cases of a specific STI. HIV and chlamydia were estimated to carry the greatest BoD at the population level (based on the number of new cases, and the morbidity and mortality per new case), whereas at the individual level the burden was highest for HIV and hepatitis C. Disease burden methodology provides a new perspective on STI surveillance data, as it reflects the balance between threats and the effectiveness of preventative strategies. Together with other factors, such as the availability and effectiveness of preventative strategies, costs and public perception, they

[12] Suijkerbuijk A.W.M., Over E.A.B, Koedijk F.D.H. et al. Doelmatiger testbeleid van soa-poliklinieken GGD. Ned Tijdschr Geneeskd 2014;158:A6980.

can be useful in determining public health policy[13]. The current results are generated by a tool developed for all infectious diseases reported in the larger (EU-based) BoD project, providing a comparable assessment of very different infectious diseases. As the method is still relatively new, it is anticipated that further refinements will be made in the coming years. Furthermore, the methodology and multiplication factors for STIs have to be reconsidered and updated in order to better fit the Dutch situation.

Chlamydia trachomatis remains the most commonly reported bacterial STI, both among high-risk groups at STI clinics and among the general population, according to data from general practice surveillance. In the STI clinics, an increase in the chlamydia positivity rate was observed in women, heterosexual men and MSM in 2014, which corresponds with an increase in the estimated chlamydia prevalence at general practices in both men and women in the last five years. This implies that transmission is still ongoing in a wide segment of the sexually active population despite all control efforts. To reduce chlamydia prevalence, individuals at risk of STI should be encouraged to reduce high-risk sexual behaviour, to be tested regularly and, if infected, to be treated promptly. Among individuals at risk of STI, a barrier for testing at general practices might be the price of a test, often to be covered by their own insurance risk fee. Case management could be improved by emphasizing the need for partner notification[14] and treatment as a standard topic in all STI consultations at both general practices and STI clinics, eventually using online tools by professionals and patients. Retesting within a few months of infection has proven to be effective and is therefore important.[15] In September 2015, the NECCST (NEtherlands Chlamydia Cohort STudy) will start to investigate the behavioural, immunological and genetic factors involved in the development of long-term sequelae of chlamydia (PID, subfertility, ectopic pregnancies and time to pregnancy).

Infections with gonorrhoea occur mainly in MSM and the positivity rate has been stable since 2012, although reported numbers of gonorrhoea cases increased substantially in the general practice surveillance network. Further research is needed to asses the extent to which changes in the participating practices and case definition have contributed to these higher numbers. Alertness is needed to ensure that gonorrhoea transmission does not become more widespread among e.g. young heterosexuals. 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)

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[13] van Lier A., McDonald S., Bouwknegt M., Bijkerk P., Havelaar A. et al. (2014 (RIVM report 150205001) http://www.rivm.nl/bibliotheek/rapporten/150205001.pdf). Disease burden of infectious disease in the Netherlands. In: Bijkerk P., van Lier A., McDonald S., Kardamanidis K., Fanoy E.B. et al. State of infectious diseases in the Netherlands, 2013. Bilthoven: National Institute for Public Health and the Environment (RIVM).

[14] van Aar F., van Weert Y., Spijker R., Götz H., de Coul E.O.; for the Partner Notification Group. Partner notification among men who have sex with men and heterosexuals with STI/HIV: different outcomes and challenges. Int J STD AIDS. 2014 Aug 19. pii: 0956462414547398. [Epub ahead of print]

[15] Kampman C.J.G., Koedijk F.D.H., Driessen-Hulshof H.C.M., Hautvast J.L.A., van den Broek I.V.F. Retesting young STI-clinic visitors with an urogenital Chlamydia trachomatis infection in the Netherlands; response to a text message reminder and reinfection rates. Submitted.

have recently been reported in European patients. So far, no resistance to ceftriaxone, a third-generation cephalosporin that has been the first-choice medication in the Netherlands since 2004, has been found in the Netherlands. Another point of concern is the declining number of diagnostic cultures and a lack of standardized diagnostic methods in laboratories outside the specialised STI settings, as these may obscure adverse trends.

The majority of new HIV diagnoses occur among MSM. The HIV positivity rate at the STI clinics has been declining over the past years, which is encouraging. However, among HIV-positive MSM the syphilis positivity rate increased, which should be closely monitored in the coming years. The decreasing proportion of low CD4 counts (<350) in newly diagnosed HIV-positive people indicates that HIV infections are being diagnosed at an earlier stage, which is also reflected in the increasing number of STI clinic attendees who report a previous HIV test. However, these trends are seen only in MSM. Heterosexuals are diagnosed at a later phase than MSM, especially men and those diagnosed at general practices or in hospitals. The implementation of RITA (Recent Infections Testing Algorithm) surveillance[16] at the STI clinics in January 2014 will provide additional insights into recent HIV and established HIV infections, trends in recent infections and differences between risk groups. Efforts to reduce the proportion of HIV-infected people not yet aware of their infection (estimated at 24–34 per cent)[17] need to continue if the Netherlands is to meet the new 90-90-90 UNAIDS goals (90 per cent diagnosed, of whom 90 per cent are in care, of whom 90 per cent with undetectable load). This can be achieved only through a multi-sectoral approach using innovative methods such as improvements in HIV testing uptake, pro-active testing by general practices, stigma reduction, faster linkage to care and rapid start of ARVs. In addition, to prevent onward transmission, the implementation of PrEP among high-risk groups needs to be explored and evaluated.

The numbers of both acute hepatitis C notifications and acute hepatitis B notifications have decreased. As with HIV, however, there may be a large number of undiagnosed hepatitis B and C infections. Large regional differences in hepatitis B incidence suggest regional variation in vaccination coverage.[18] HCV is not routinely tested at STI clinics, whereas treatment options improved. Gaining more insight into regional differences in STI/HIV could be beneficial for STI/HIV prevention and control so that effective regional prevention and control activities can be implemented. A new opportunity to diminish the burden of hepatitis C in the Netherlands became available in 2014, when it was decided that the cost of new therapeutics for chronic hepatitis C patients with advanced liver disease should be reimbursed.

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16 Op de Coul E.L., Hogema B.M., Sane J., Heijman T., Fennema J.S., Murphy G., Koot M. Evaluation of a fourth-generation avidity assay for recent HIV infections among men who have sex with men in Amsterdam. J Med Microbiol. 2014 Aug;63(Pt 8):1116–1117.

17 van Sighem A.I., Gras L., Smit C., Stolte I., Reiss P. Monitoring Report 2014. Human Immunodeficiency Virus (HIV) Infection in the Netherlands, Academic Medical Center of Amsterdam, Amsterdam, The Netherlands 2015.

18 Soetens L.C., van Benthem B.H., Urbanus A., Cremer J., Benschop K.S., Rietveld A., van Dijk E.I., Hahné S.J. Ongoing transmission of hepatitis B virus in rural parts of the Netherlands, 2009-2013. PLoS One. 2015 Feb 23;10(2):e0117703.

The STI clinics aim to provide care for those at high risk, in addition to the regular STI care provided by GPs. 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. Since 2014, it has been possible for clients undergoing repeated consultations to be identified anonymously in the national database. This provides greater insight into the testing frequency and behaviour of specific risk groups[19]. However, the surveillance of STIs in the general population could be improved by the use of data sources other than general practices, pharmacies, hospitals and laboratories; but currently no good database – either separate or linking the various providers – is available to further validate findings from the NIVEL-PCD reported here. A population prevalence survey would be the most valuable measure (provided levels of participation are high). Professional collaboration is currently apparent in the coordinated revision of STI guidelines by medical specialists, GPs and public health professionals. The integration of curative and preventative control activities in the STI clinics has been strengthened by the development of a single quality control guideline, which is the basis for interdisciplinary visitations.

STIs can emerge among many groups, not just the currently known high-risk groups, which are already targeted in control efforts. Coordinated online efforts to reach these groups and provide them with tailored information on sexual health, STI prevention and control, and information on reliable online tests needs to be continued. Insight into the use of E-health for STI prevention and testing as well as the quality of these online tests is lacking; future efforts should be directed at developing monitoring and evaluation tools for this purpose. The persistent high-risk behaviour of many sexually active adolescents and adults necessitates high vigilance towards the possible transmission of STIs like gonorrhoea outside the recognized target groups. Treatment failure, due to poor adherence, inadequate testing, inappropriate therapy or antimicrobial resistance, can result in the deterioration of control efforts as well. Rigorous surveillance using standardized protocols remains a cornerstone in the effort to enable actions to be taken as soon as the (re)emergence of STI is feared.

Recommendations:
- Maintain integrated surveillance of STIs and STI risks among high-risk groups.
- Improve the timeliness of the national surveillance system for early warning of possible STI outbreaks.
- Maintain a strong, multi-sectoral basis for STI control to facilitate easy access to care and testing, rapid and reliable results, and effective treatment and prevention including E-health.
- Support efforts to diminish stigma related to STI, especially HIV.
- Develop new HIV test interventions to reduce the number of patients who are unaware of their status/late presenters.
- Support efforts to gain more insight into the long-term sequelae of chlamydia infection.

[19] Vriend H.J., Stolte I.G., Heijne J.C., Heijman T., De Vries H.J., Geskus R.B., Van der Sande M.A., Prins M. Repeated STI and HIV testing among HIV-negative men who have sex with men attending a large STI clinic in Amsterdam: a longitudinal study. Sex Transm Infect. 2014 Dec 10.

- Stimulate the systematic culturing of gonorrhoea diagnosed among high-risk groups to prevent the transmission of pandrug-resistant strains.
- Strengthen efforts to integrate STI screening into HIV care.
- Support efforts to assess the needs/costs of the possible implementation of PrEP.
- Promote the inclusion of STI serology in the next national seroprevalence survey, 2016.

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 and Control
CSW	Commercial Sex Worker
DALY	Disability Adjusted Life Years
DU	Drug Users
ECDC	European Centre for Disease Prevention and Control
GP	General Practitioner
GRAS	Gonococcal Resistance to Antimicrobials Surveillance programme
HAART	Highly active anti-retroviral therapy
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human Immunodeficiency virus
HSV	Herpes simplex virus
IDU	Intravenous Drug Users
IgM	Immunoglobulin M
IGZ	Inspectorate of Health
LGV	Lymphogranuloma venereum
LIS	Laboratory for Infectious Disease and Screening
MF	Multiplication Factor
MIC	Minimum Inhibitory Concentration
MSM	Men who have sex with men
NECCST	Netherlands Chlamydia Cohort Study
NGO	Non-Governmental Organisation
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
SHM	Stichting HIV Monitoring, HIV Monitoring Foundation
SOAP	Online STI registration system
STI	Sexually Transmitted Infection
UNAIDS	Joint United Nations Programme on HIV/AIDS
YLD	Years Lived with Disability
YLL	Years of Life Lost

Appendix B National Surveillance of STI clinics

Coordinating STI clinics

GGD Amsterdam	A. Hogewoning
GGD Haaglanden	R. Spoormaker
	M. Somsen
GGD Groningen	F. de Groot
GGD Hart voor Brabant	I. Melis
GGD Gelderland-Zuid	A. van Daal
	R. Koene
GGD Rotterdam-Rijnmond	V. Wieërs
	B. Nuradini
	H. Götz
GGD Regio Utrecht	K. Hulshof
	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 Midden Nederland (tot 1 juni 2014)
GGD Limburg-Noord
GGD Rivierenland (tot 1 juni 2014)
GGD Twente
GGD West-Brabant
GGD IJsselland
GGD Zaanstreek-Waterland
GGD Zeeland
GGD Zuid-Holland Zuid
Veiligheids- en Gezondheidsregio Gelderland Midden

Laboratories

Academisch Ziekenhuis Maastricht
Albert Schweitzer Ziekenhuis Dordrecht
Amphia Ziekenhuis Breda
Canisius Wilhelmina Ziekenhuis Nijmegen
Centraal Bacteriologisch and Serologisch laboratorium Hilversum
Diagnostiek voor U Eindhoven
Erasmus MC Rotterdam
Gelre Ziekenhuizen Apeldoorn
Groene Hart Ziekenhuis Gouda
Isala klinieken Zwolle
Izore, Centrum Infectieziekten Friesland
Jeroen Bosch Ziekenhuis 's-Hertogenbosch
Laboratoria Pathologische Anatomie en Medische Microbiologie Veldhoven
Laboratorium Microbiologie Twente Achterhoek
Laboratorium pathologie (ADRZ) 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 Haaglanden Den Haag
Medisch Centrum Alkmaar
Medisch Centrum Spijkenisse
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
Universitair Medisch Centrum St. Radboud
Universitair Medisch Centrum Utrecht
Zaans Medisch Centrum Zaandam

Appendix C Stichting HIV monitoring

CLINICAL CENTRES

(*Site coordinating physicians)

Academic Medical Centre of the University of Amsterdam, Amsterdam
HIV treating physicians: J.M. Prins*, T.W. Kuijpers, H.J. Scherpbier, J.T.M. van der Meer, F.W.M.N. Wit, M.H. Godfried, P. Reiss, T. van der Poll, F.J.B. Nellen, S.E. Geerlings, M. van Vugt, D. Pajkrt, J.C. Bos, W.J. Wiersinga, M. van der Valk, A. Goorhuis, J.W. Hovius.
HIV nurse consultants: J. van Eden, A. Henderiks, A.M.H. van Hes, M. Mutschelknauss, H.E. Nobel, F.J.J. Pijnappel, A.M. Westerman.
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.

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: D. Versteeg.

Catharina Ziekenhuis, Eindhoven
HIV treating physicians: M.J.H. Pronk*, H.S.M. Ammerlaan.
HIV nurse consultants: E.M.H.M. Korsten-Vorstermans, E.S. de Munnik.
HIV clinical virologists/chemists: A.R. Jansz, J. Tjhie, M.C.A. Wegdam, B. Deiman, V. Scharnhorst.

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

Erasmus Medisch Centrum, Rotterdam
HIV treating physicians: M.E. van der Ende*, T.E.M.S. de Vries-Sluijs, E.C.M. van Gorp, C.A.M. Schurink, J.L. Nouwen, A. Verbon, B.J.A. Rijnders, H.I. Bax, R.J. Hassing, M. van der Feltz.
HIV nurse consultants: N. Bassant, J.E.A. van Beek, M. Vriesde, L.M. van Zonneveld.
Data collection: A. de Oude-Lubbers, H.J. van den Berg-Cameron, F.B. Bruinsma-Broekman, J. de Groot, M. de Zeeuw-de Man, M.J. Broekhoven-Kruijne.
HIV clinical virologists/chemists: M. Schutten, A.D.M.E. Osterhaus, C.A.B. Boucher.

Erasmus Medisch Centrum–Sophia, Rotterdam
HIV treating physicians: G.J.A. Driessen, A.M.C. van Rossum.
HIV nurse consultants: L.C. van der Knaap, E. Visser.

Flevoziekenhuis, Almere
HIV treating physicians: J. Branger*.
HIV nurse consultant and data collection: C.J.H.M. Duijf-van de Ven.

HagaZiekenhuis, Den Haag
HIV treating physicians: E.F. Schippers*, C. van Nieuwkoop, R.W. Brimicombe.
HIV nurse consultants: J.M. van IJperen.
Data collection: G. van der Hut.
HIV clinical virologist/chemist: P.F.H. Franck.

HIV Focus Centrum (DC Klinieken)
HIV treating physicians: A. van Eeden*.
HIV nurse consultants: W. Brokking, M. Groot.
HIV clinical virologists/chemists: M. Damen, I.S. Kwa.

Isala Klinieken, Zwolle
HIV treating physicians: P.H.P. Groeneveld*, J.W. Bouwhuis.
HIV nurse consultants: J.F. van den Berg, 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.

Kennemer Gasthuis, Haarlem
HIV treating physicians: S.F.L. van Lelyveld*, R. Soetekouw.
HIV nurse consultants: N. Hulshoff, L.M.M. van der Prijt, M. Schoemaker.
Data collection: N. Bermon.
HIV clinical virologists/chemists: W.A. van der Reijden, R. Jansen, B.L. Herpers, D.Veenendaal.

Leids Universitair Medisch Centrum, Leiden
HIV treating physicians: F.P. Kroon*, S.M. Arend, M.G.J. de Boer, M.P. Bauer, H. Jolink, A.M. Vollaard.
HIV nurse consultants: W. Dorama, C. Moons.
HIV clinical virologists/chemists: E.C.J. Claas, A.C.M. Kroes.

Maasstad Ziekenhuis, Rotterdam
HIV treating physicians: J.G. den Hollander*, K. Pogany.
HIV nurse consultants: M. Kastelijns, J.V. Smit, E. Smit.
Data collection: M. Bezemer, T. van Niekerk.
HIV clinical virologists/chemists: O. Pontesilli.

Maastricht UMC+, Maastricht
HIV treating physicians: S.H. Lowe*, A. Oude Lashof, D. Posthouwer.
HIV nurse consultants: R.P. Ackens, J. Schippers, R. Vergoossen.
Data collection: B. Weijenberg Maes.
HIV clinical virologists/chemists: P.H.M. Savelkoul, I.H. Loo.

MC Zuiderzee, Lelystad
HIV treating physicians: S. Weijer*, R. El Moussaoui.
HIV Nurse Consultant: M. Heitmuller.
Data collection: M. Heitmuller.

Medisch Centrum Alkmaar, Alkmaar
HIV treating physicians: W. Kortmann*, G. van Twillert*, J.W.T. Cohen Stuart, B.M.W. Diederen.
HIV nurse consultant and data collection: D. Pronk, F.A. van Truijen-Oud.
HIV clinical virologists/chemists: W. A. van der Reijden, R. Jansen.

Medisch Centrum Haaglanden, Den Haag
HIV treating physicians: E.M.S. Leyten*, L.B.S. Gelinck.
HIV nurse consultants: A. van Hartingsveld, C. Meerkerk, G.S. Wildenbeest.
HIV clinical virologists/chemists: J.A.E.M. Mutsaers, C.L. Jansen.

Medisch Centrum Leeuwarden, Leeuwarden
HIV treating physicians: M.G.A.van Vonderen*, D.P.F. van Houte.
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.

Onze Lieve Vrouwe Gasthuis, Amsterdam
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Appendix E STI publications co-authored by RIVM employees 2014

Op de Coul EL, Warning TD, Koedijk FD; Dutch STI clinics. Sexual behaviour and sexually transmitted infections in sexually transmitted infection clinic attendees in the Netherlands, 2007-2011. Int J STD AIDS. 2014 Jan;25(1):40-51.

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