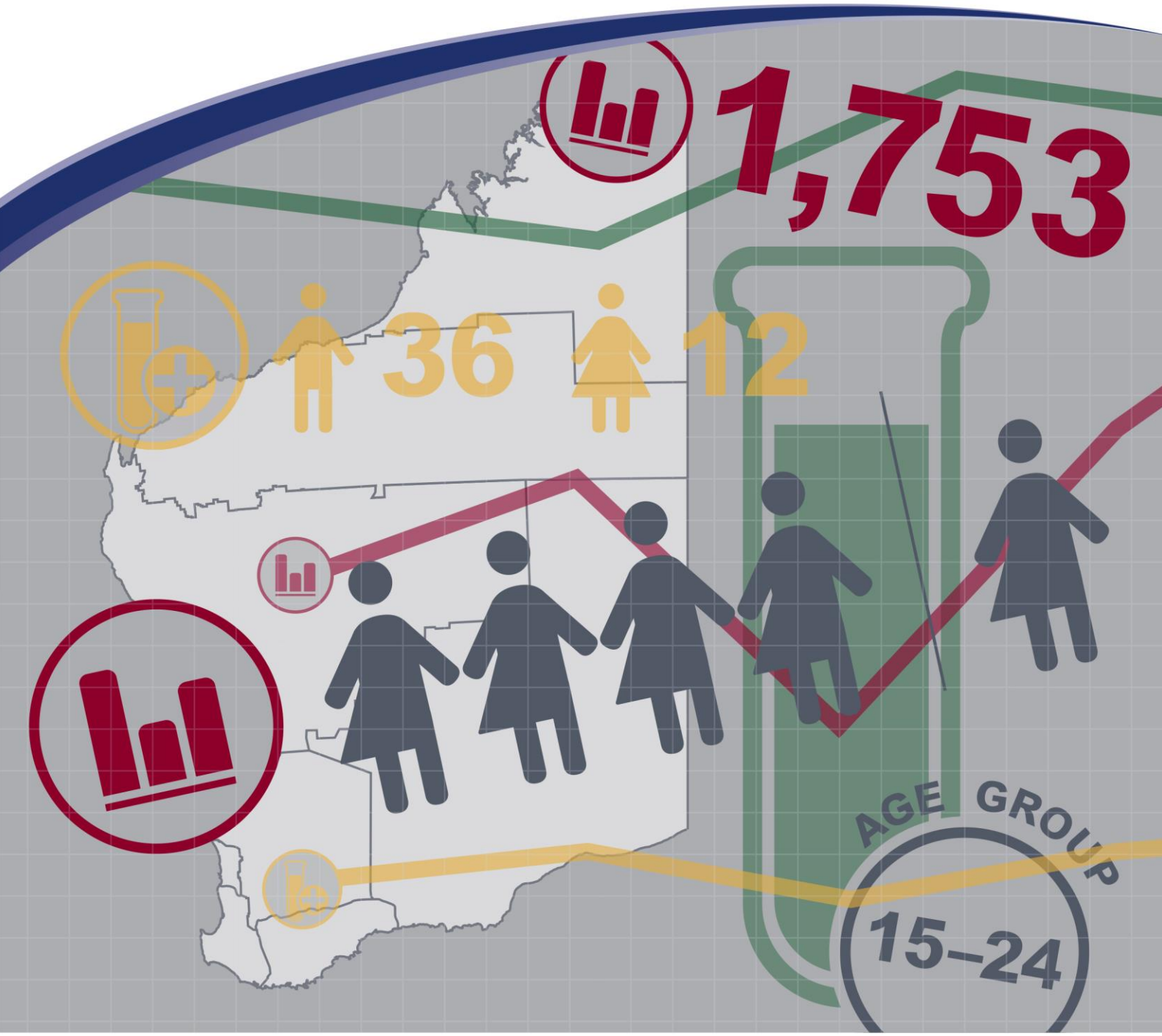
Government of **Western Australia**
Department of **Health**

The Epidemiology of Notifiable Sexually Transmitted Infections and Blood-Borne Viruses in Western Australia 2014



health.wa.gov.au

Acknowledgments

We acknowledge the many doctors, nurses and pathology laboratories that have provided the notifications and testing data upon which this report is based.

We would like to thank the following people for their assistance in the compilation of this report: Lisa Bastian, Kathryn Kerry, Jude Bevan, Sue Laing, Grace Yun and Shannon Carter (Department of Health, Western Australia).

Contributors/Editors

Kellie Mitchell, Carolien Giele and Byron Minas

Communicable Disease Control Directorate
Department of Health, Western Australia
PO Box 8172
Perth Business Centre
Western Australia 6849

Telephone: (08) 9388 4999

Facsimile: (08) 9388 4877

Web: www.health.wa.gov.au

Disclaimer

Every endeavour has been made to ensure that the information provided in this document was accurate at the time of writing. However, infectious disease notification data are continuously updated and subject to change.

PUBLISHED BY

This publication has been produced by the **Department of Health, Western Australia**.

The Epidemiology of Notifiable Sexually Transmitted Infections and Blood-Borne Viruses in Western Australia 2014

Contents

List of Tables

List of Figures

List of Maps

Executive Summary

This report describes the epidemiology of notifiable sexually transmitted infections (STIs) and blood-borne viruses (BBVs) in Western Australia (WA) for 2014, and trends over the ten-year period from 2005 to 2014.

Sexually Transmitted Infections

Chlamydia

While the number of notifications in 2014 (n=11,422) was comparable to the number in 2013 (n=11,816), chlamydia remained the most commonly notified disease in WA. From 2011 to 2014, the chlamydia testing rate remained stable while the notification and test positivity rates decreased. This indicates that the decrease in notifications may have been partly the result of decreased disease transmission.

In 2014, the WA crude notification rate was 21% higher than the crude rate reported for the nation (442 vs. 367/100,000 population) and the second highest in Australia after the Northern Territory (NT) (1,225/100,000 population).

The highest testing, notification and test positivity rates were observed in people aged 15 to 24 years (139/1,000 population, 1,854/100,000 population and 9.0% respectively). The highest overall testing and notification rates were reported in the Kimberley region (158/1,000 population and 1,613/100,000 population respectively).

The notification rate among Aboriginal people was four-times higher than that of non-Aboriginal people (1,382 vs. 361/100,000 population).

Among chlamydia notifications that had place of acquisition recorded, the majority were acquired in WA (93%), although a larger proportion of males (9%) acquired the infection overseas than females (3%).

Gonorrhoea

Gonorrhoea was the second most commonly notified sexually transmitted infection in WA, reaching a ten-year high in 2014 (n=2,214). From 2012 to 2014, the gonorrhoea testing and notification rates remained stable while the test positivity rate decreased. This indicates that the plateau in notifications since 2012 may have been partly the result of decreased disease transmission.

The WA crude notification rate was 28% higher than the crude rate reported for the nation (86 vs. 67/100,000 population) and was the second highest in Australia after the NT (1,741/100,000 population).

The highest testing and notification rates were observed in people aged 15 to 24 years (132/1,000 population and 257/100,000 population) and the highest test positivity rate was in people aged less than 15 years (3.5%). The highest overall testing and notification rates were reported in the Kimberley region (158/1,000 population and 1,242/100,000 population respectively).

The notification rate among Aboriginal people was almost 18-times higher than that of non-Aboriginal people (894 vs. 51/100,000 population). Similar specimen sites for gonorrhoea testing were reported for both Aboriginal and non-Aboriginal people but there were marked differences in terms of clinical setting, treatment and sexual exposure.

The proportion of notifications identified as ‘men who have sex with men’ (MSM) increased from 18% in 2011 (n=183/1,027) to 25% in 2014 (n=465/1,882). The majority were diagnosed at a sexual health clinic on the basis of a rectal swab or urine sample.

Among gonorrhoea notifications that had place of acquisition recorded, the majority were acquired in WA (89%), although a larger proportion of males (12%) acquired the infection overseas than females (2%).

Syphilis

The number of infectious syphilis notifications in 2014 was 13% higher than that observed in 2013 (n=97 vs. 86 notifications). Non-infectious syphilis notifications reached a ten-year low in 2010 (n=61) and, while the number of notifications increased in 2011 and 2012, notifications returned to the previous 10-year low of 61 in 2014. In comparison to the national crude rates, the WA infectious syphilis crude rate was 58% lower (3.6 vs. 8.6/100,000 population) and the non-infectious syphilis crude rate was 69% lower (2.5 vs. 8.1/100,000 population).

In 2014, notification rates for infectious and non-infectious syphilis were highest in the 35 to 39 year (9.8/100,000 population) and 25 to 29 year age groups (5.1/100,000 population) respectively. The highest syphilis testing rate was observed in people aged 15 to 24 years (60/1,000 population) while the highest test positivity rate was observed in people aged 25 years or older (0.2%).

Notification rates among Aboriginal people compared to non-Aboriginal people were almost four-times higher (12.0 vs. 3.3/100,000 population) and 10-times higher (18.2 vs. 1.9/100,000 population) for infectious and non-infectious syphilis respectively.

In comparison to other parts of the state, notification rates in 2014 were higher in the Kimberley region (infectious syphilis: 31.0/100,000 population; non-infectious syphilis: 5.9/100,000 population). The syphilis testing rate was highest in the Kimberley region (91/1,000 population), reflecting policy and programs that encourage testing in remote regions.

Among notifications that had place of acquisition recorded, 74% of infectious syphilis infections and 75% of non-infectious syphilis infections were reported as having been acquired in WA.

There were marked differences between Aboriginal and non-Aboriginal people in terms of reason for presentation, sex and type of partner and mode of transmission of infectious syphilis.

The proportion of infectious syphilis notifications identified as MSM increased from 65% in 2010 (n=47/72) to 72% in 2014 (n=69/96). The majority were diagnosed at a sexual health clinic and, compared to heterosexual cases, were more likely to report acquiring the infection through a combination of anal and oral sex with a partner whom they met via the internet or mobile phone apps.

Donovanosis

There were two donovanosis notifications reported in 2005. One notification was recorded in 2012, although the clinical presentation of this case was not typical of donovanosis; the infection was reported to have been acquired in WA from a source who was probably infected overseas. One notification was recorded in 2014 (an Aboriginal female who resided in a remote area of WA).

Chancroid

Chancroid infection is rare in WA. A total of three notifications were reported from 2005 to 2014, one in 2005 and two in 2009. One notification (Aboriginal female) was acquired in WA and the other two notifications (non-Aboriginal males) were acquired overseas.

Blood-Borne Viruses

HIV/AIDS

There were 138 HIV infections notified in 2014, the highest number on record in WA. In the five-year period from 2010 to 2014, the number of HIV cases reporting heterosexual contact increased by 42% and the number of HIV cases among MSM increased by 67% compared to the previous five-year period. Over the same period there were increases in both the number of Australian-acquired (49% increase) and overseas-acquired (56% increase) HIV cases. Overseas-acquired HIV was particularly higher for infections acquired in sub-Saharan Africa (41%

increase) and South-East Asia (59% increase).

Compared to the 2005 to 2009 period, there was a notable increase in the proportion of MSM HIV cases with newly acquired infection in the 2010 to 2014 period (33% to 52%). Newly acquired HIV infections among cases reporting heterosexual contact were generally lower compared to MSM, remaining stable at 13% of notifications for both reporting periods. In the 2010 to 2014 period, the proportion of notifications with late HIV diagnosis was higher among cases reporting heterosexual contact (46%) compared to MSM (17%).

After remaining stable between 2012 and 2013, there was a 12% decrease in the HIV testing rate. From 2009 to 2014 the HIV test positivity rate fluctuated between 0.08% and 0.1% of HIV tests conducted.

From 2010 to 2014, Aboriginal HIV notifications ranged between zero and five cases per year.

Hepatitis B

Newly acquired hepatitis B notifications reached a ten-year low in 2011 (n=18) and the number of notifications in 2014 (n=24) was 20% lower than the previous five-year average (30 notifications per year). Unspecified hepatitis B notifications peaked in 2008 (n=678) and the number of notifications in 2014 (n=586) was comparable to the previous five-year average (567 notifications per year). The WA newly acquired hepatitis B crude rate was 29% higher than the national crude rate (0.9 vs. 0.7/100,000 population) and the unspecified hepatitis B crude rate was 12% lower than the national crude rate (24.5 vs. 27.7/100,000 population).

In 2014, notification rates were highest in the 40 to 44 year age group (2.7/100,000 population) for newly acquired infections and among the 30 to 34 year age group (70.5/100,000 population) for unspecified infections. The highest hepatitis B testing rate was observed in people aged 15 to 24 years (53/1,000 population) while the highest test positivity rate was observed in people aged older than 25 years (0.4%).

Notification rates among Aboriginal people compared to non-Aboriginal people were comparable (0.8 vs. 0.9/100,000 population) and almost double (36.3 vs. 19.8/100,000 population) for newly acquired and unspecified hepatitis B respectively.

In 2014, the highest hepatitis B rates were reported in the Kimberley (newly acquired infections: 2/100,000 population) and South metropolitan regions (unspecified infections: 29.5/100,000 population). The hepatitis B testing rate was highest in the Kimberley region (79/1,000 population), reflecting policy and programs that encourage testing in remote regions.

Among hepatitis B notifications that had place of acquisition recorded, 75% of newly acquired infections were reported as having been acquired in WA and 89% of unspecified infections were reported as having been acquired overseas.

Hepatitis C

Newly acquired hepatitis C notifications reached a ten-year low in 2010 (n=77) before peaking in 2014 (n=159). Unspecified hepatitis C notifications peaked in 2008 (n=1,256) and the number of notifications in 2014 (n=992) was comparable to the previous five-year average (986 notifications per year). The WA newly acquired hepatitis C crude rate was almost three-times the national crude rate (6.3 vs. 2.3/100,000 population) while the WA unspecified hepatitis C crude rate was 11% lower than the national crude rate (38.6 vs. 43.6/100,000 population).

In 2014, notification rates were highest in the 20 to 24 year age group (26.1/100,000 population) for newly acquired infections and among the 30 to 34 year age group (72.2/100,000 population) for unspecified infections. The highest hepatitis C testing rate was observed in people aged 15 to 24 years (67/1,000 population) while the highest test positivity rate was observed in people aged 25 years or older (0.62%).

Notification rates among Aboriginal people compared to non-Aboriginal people were 22-times higher (77.7 vs. 3.5/100,000 population) and seven-times higher (203.9 vs. 28.7/100,000 population) for newly acquired and unspecified hepatitis C respectively.

In 2014, notification rates were highest in the Great Southern region (newly acquired infections: 33.9/100,000 population; unspecified 58.1/100,000 population). The hepatitis C testing rate was highest in the Kimberley region (77.9/1,000 population), reflecting policy and programs that encourage testing in remote regions.

Among hepatitis C notifications that had place of acquisition recorded, 96% of newly acquired infections and 73% of unspecified infections were reported as having been acquired in WA.

Abbreviations

ABS	Australian Bureau of Statistics
AHCWA	Aboriginal Health Council of WA
AIDS	Acquired immunodeficiency syndrome
ASHM	Australasian Society for HIV Medicine
ASR(s)	Age-standardised notification rate(s) per 100,000 population
BBV(s)	Blood-borne virus(es)
CDCD	Communicable Disease Control Directorate
DCS	Department of Corrective Services Western Australia
DoE	Department of Education Western Australia
DoH	Department of Health Western Australia
HIV	Human immunodeficiency virus
IDC(s)	Immigration Detention Centre(s)
MMRC	Metropolitan Migrant Resource Centre
MSM	Men who have sex with men
NNDSS	National Notifiable Diseases Surveillance System
nPEP	Non-occupational post-exposure prophylaxis
NSP	Needle and Syringe Program
NSEP(s)	Needle and Syringe Exchange Program(s)
NSVM(s)	Needle and Syringe Vending Machine(s)
NT	Northern Territory
PHU	Public Health Unit
QLD	Queensland
SA	South Australia
SiREN	Sexual Health and Blood-borne Viruses Applied Research and Evaluation Network
SRHWA	Sexual and Reproductive Health Western Australia
STI(s)	Sexually transmitted infection(s)
WA	Western Australia
WAAC	WA AIDS Council
WANIDD	Western Australian Notifiable Infectious Diseases Database
WASUA	Western Australian Substance Users' Association
YACWA	Youth Affairs Council of WA

Terminology used in Tables/Figures

Age-specific rate	Notification rate for a specified age group. Both numerator and denominator refer to the same age group. Expressed per 100,000 persons in that age group
Age-standardised rate (ASR)	Notification rate adjusted to take account of differences in age composition when rates for different populations are compared. Expressed per 100,000 population
Crude rate	Calculated by dividing the number of notifications by the population. Not adjusted for age or other factors. Expressed per 100,000 population
Infectious syphilis	Primary syphilis + secondary syphilis + early latent (less than two years duration)
N/A	Not applicable
Non-infectious syphilis	Syphilis infection of more than two years or unknown duration
Notification rate	See crude rate and age-standardised rate
Number	Number of notifications reported to the Department of Health / state and territory health authorities
Rate ratio (Aboriginal:non-Aboriginal)	Aboriginal to non-Aboriginal rate ratio = ASR (Aboriginal) / ASR (non-Aboriginal)
Rate ratio (Male:Female)	Male to female rate ratio = ASR (male) / ASR (female)
Test positivity rate	Number of positive test results (i.e. statutory notifications) from laboratories providing testing data divided by the number of tests conducted by these laboratories. Expressed per 1,000 tests and as a percentage
Testing rate	Crude population rate or age-specific testing rate per 1,000 population
Total hepatitis B notifications	Newly acquired hepatitis B + unspecified hepatitis B
Total hepatitis C notifications	Newly acquired hepatitis C + unspecified hepatitis C
Total syphilis notifications	Infectious syphilis + non-infectious syphilis

1 Introduction and Methods

This report describes the epidemiology of notifiable sexually transmitted infections (STIs) and blood-borne viruses (BBVs) in Western Australia (WA) for 2014, and trends over the ten-year period from 2005 to 2014.

Data presented in this report relate to notification and testing data received by the Department of Health, WA (DoH) and are likely to underestimate the true incidence of disease. These data nevertheless represent the most comprehensive information about these infections for public health surveillance in WA.

1.1 Data sources

1.1.1 Notification data

In WA, doctors, nurse practitioners and pathology laboratories notify specified infectious diseases to the DoH as mandated by the Health Act 1911.

All disease notification data except for HIV/AIDS are stored in the Western Australian Notifiable Infectious Diseases Database (WANIDD). HIV/AIDS notifications are stored in the WA HIV/AIDS Database. Notification data on STIs and BBVs (including HIV/AIDS) were extracted from the relevant databases for the ten-year period from 2005 to 2014. National data from the National Notifiable Diseases Surveillance System (NNDSS) maintained by the Australian Government Department of Health were also used in this report.

Since 2004, WA has used the Australian National Notifiable Diseases Case Definitions[1]. For this report, an HIV case is defined as a person who lives in WA and has been diagnosed for the first time (newly diagnosed) in Australia with an HIV infection, with or without AIDS. For other reported infections, notification figures include notifications from non-WA residents where their infection is diagnosed in WA. For acute infections such as chlamydia, gonorrhoea, infectious syphilis, donovanosis, chancroid, newly acquired hepatitis B and newly acquired hepatitis C, notification data were analysed on the basis of the earliest available date reflecting the date of onset of infection ('optimal date of onset' in WANIDD). Long-term and/or chronic infections such as non-infectious syphilis, HIV, unspecified hepatitis B and unspecified hepatitis C, were analysed by date of receipt of notification.

It is important to note that electronic reporting of notifiable diseases from one laboratory was incomplete from July 2006 to December 2007. The missing data were added to WANIDD in March and April 2008. Increases in the number of notifications for long-term and/or chronic infections in 2008 may therefore be partially an artefact of the addition of these data.

Notifications from Christmas Island, Curtin, Leonora, Perth and Yongah Hill Immigration Detention Centres (IDCs) have been excluded from most analyses in this report because of potential bias introduced through the inclusion of cases detected by screening of asylum seekers at these locations. As it is not possible to identify testing data from these locations, analyses of testing rate and test positivity by age group include notifications from these locations to ensure numerator and denominator data are equivalent.

For gonorrhoea, infectious syphilis, HIV/AIDS and hepatitis C, additional epidemiological and risk behaviour information is collected subsequent to the original notification using enhanced surveillance forms specific for each disease. Public health staff coordinate collection of these enhanced surveillance data and contact doctors, laboratories and/or patients, as appropriate. These additional data add value to, and complement, the notification data reported by the laboratories or by doctors using the standard infectious disease notification form.

Both WA and national surveillance data extracted for this report may have been revised since the time of extraction. Subsequent minor changes to the data would not substantially affect the overall trends and patterns.

Additional analyses of notification data are available in the appendix[2].

1.1.2 Testing data

Since 2009, the DoH has received testing data for STIs and BBVs in WA from five of the seven pathology laboratories servicing the state (Healthscope Pathology, PathWest, Perth Pathology, St John of God Pathology and Western Diagnostic Pathology). No testing data have been received from Healthscope Pathology since 2013 because they ceased providing laboratory services in WA.

On average, 68% of STI and BBV notifications in WA between 2009 and 2014 were from these five laboratories. We have assumed that this reflects the proportion of STI and BBV tests undertaken in these laboratories. Testing data from the Ngaanyatjarra Lands in the Goldfields region were provided by Western Diagnostic Pathology from June 2012 onwards. One of two laboratories that did not contribute testing data is a significant service provider in the metropolitan and South West regions, therefore resulting in an underestimation of the number of tests, and testing rates in WA. There are insufficient data to quantify the magnitude of this underestimation; however, absence of these data is unlikely to affect the trends in test numbers and testing rates over time.

These laboratories provide de-identified aggregated data on a quarterly basis. Data includes age at time of testing, sex, region of residence and disease for which the test was conducted. Information on the patient's Aboriginality or result of the test is not provided. The STI and BBV tests referred to in this report include nucleic acid tests for chlamydia and gonorrhoea, culture tests for gonorrhoea and serological tests for syphilis, hepatitis B, hepatitis C and HIV.

Tests from Christmas Island, Curtin, Leonora, Perth and Yongah Hill IDCs have been included in this report as tests conducted at these locations cannot be identified from the aggregated data provided by the laboratories.

Analyses of rates of testing, notification and positivity for each STI and BBV by sex, age group, year and Public Health Unit (PHU) in WA from 2009 to 2014 will be made available in a separate report.

1.2 Data collection by Aboriginality

Within WA, the term 'Aboriginal' is used in preference to 'Aboriginal and Torres Strait Islander' in recognition of the fact that Aboriginal people are the original inhabitants of WA. No disrespect is intended to our Torres Strait Islander colleagues and community[3].

In WA, there is considerable mobility of Aboriginal people, both within WA and across the Northern Territory (NT) and South Australia (SA) borders, which means that some Aboriginal people will be patients of more than one health service. Due to the small size of the Aboriginal population in WA (3.1% of the total population in 2014) and the large number of cases reported in Aboriginal people, inaccuracies in the population estimates of Aboriginal people can have a disproportionate impact on calculated rates. In the preparation of this report, these factors are acknowledged as limitations.

Information on Aboriginality is also missing for some notifications. A study using linked data to improve notification rate estimates found that age-adjusted notification rates in WA are unlikely to be significantly biased by excluding notifications with unknown Aboriginality status because of recent improvements in the completeness of reporting of Aboriginal status[4].

Generally, the raw data for notifiable STIs and BBVs in WA are presented so that

readers can draw their own conclusions.

1.3 Regional boundaries

WA is divided into nine health administrative regions as shown in Appendix Table 1[2]. Two of the regions are in the Perth metropolitan area (North and South) and seven are in the regional areas (Kimberley, Pilbara, Midwest, Wheatbelt, Goldfields, South West and Great Southern). Within each region, there is a PHU responsible for its public health activities, which include follow-up of notifiable infectious disease cases where indicated. Notification and testing data were analysed by PHU regions.

1.4 Calculation of rates

Crude rates demonstrate the proportion of the population notified or tested. Crude notification rates were calculated by dividing the number of notifications of infections within the relevant population by the total number of people within that population, and were expressed per 100,000 population. Crude testing rates were calculated by dividing the number of tests conducted on people within the relevant population by the total number of people within that population, and were expressed per 1,000 population.

Age-standardisation was utilised to control differences in the size and age structure of various populations. Age-standardised rates (ASRs) were expressed per 100,000 population for notification data ('notification rate').

Age-specific rates for notification and testing data were based on five-year age groups or ages grouped as 'less than 15 years', '15 to 24 years', and '25 years or older'. Age-specific rates were calculated by dividing the number of notifications or tests by the population in the corresponding age group. Age-specific notification rates were expressed per 100,000 population and age-specific testing rates were expressed per 1,000 population.

'Test positivity rate' was calculated by dividing the number of positive test results (i.e. statutory notifications) from laboratories providing testing data by the number of tests conducted by these laboratories. The 'test positivity rate' was expressed as a percentage or per 1,000 tests.

The population denominators for WA used in this report were sourced from the *Rates Calculator (Version 9.5.5.1)*, which is based upon 2006 Australian Bureau of Statistics (ABS) Census data. It should be noted that small numbers of notifications or tests give unstable and imprecise notification and testing rates.

2 Chlamydia

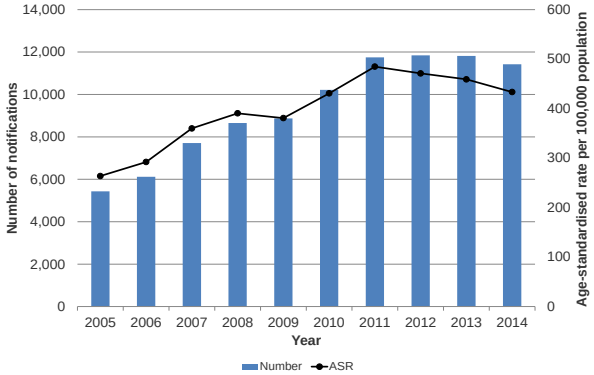
Key points

- Chlamydia was the most commonly notified disease in WA.
- Notification and testing rates were highest in people aged 15 to 24 years.
- Notification and testing rates were higher in the Kimberley region than in other parts of the state.
- Notification rates were four-times higher among Aboriginal people compared to non-Aboriginal people.
- The vast majority of infections were acquired in WA although more males acquired infection overseas than females.
- The WA crude notification rate was 21% higher than the national crude rate.

2.1 Trends over time

Between 2005 and 2012, the number of chlamydia notifications reported to the DoH more than doubled (n= 5,432 to 11,846 notifications). The number of notifications in 2014 (n=11,422) was 4% lower than the number in 2012 and 5% higher than the 2009 to 2013 five-year average of 10,900 notifications per year (Figure 2.1).

Figure 2.1 Number and ASR of chlamydia notifications, WA, 2005 to 2014



Between 2009 and 2011, the chlamydia testing rate increased 6% (54 to 57/1,000 population), the notification rate increased 26% (396 to 500/100,000 population) and the test positivity rate increased 20% (5.1 to 6.1%). From 2011 to 2014, the testing rate remained stable while the notification and test positivity rates decreased 9% and 15% respectively. This indicates that the decrease in notifications since 2011 may have been partly the result of decreased disease transmission.

2.2 Distribution by age and sex

As in previous years, 80% of chlamydia notifications in 2014 occurred in people aged less than 30 years, with the highest incidence in those aged 20 to 24 and 15 to 19 years (34% and 23% of notifications respectively) (Figure 2.2). In 2014, the highest testing and test positivity rates were observed in people aged 15 to 24 years (139/1,000 population and 9.0% respectively), however the testing rate decreased by 12% and test positivity decreased by 16% in this age group from 2011 to 2014 (Figure 2.3).

From 2005 to 2014, more females than males were notified with chlamydia each year (Appendix Figure 1[2]). The predominance of females was evident in people aged less than 29 years, but the opposite was observed in those aged 30 years or older (Figure 2.2 and Appendix Table 2[2]). In 2014, the testing rate among females was more than double the rate among males (80 vs. 34/1,000 population), while the test positivity rate among males was 72% higher than the rate among females (7.4 vs. 4.3%) (Figure 2.4).

Figure 2.2 Number of chlamydia notifications by sex and overall age-specific rate, WA, 2014

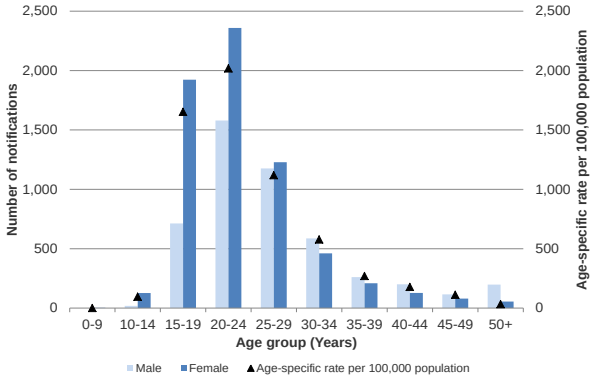


Figure 2.3 Chlamydia testing rate, notification rate and test positivity rate by age group, WA, 2009 to 2014

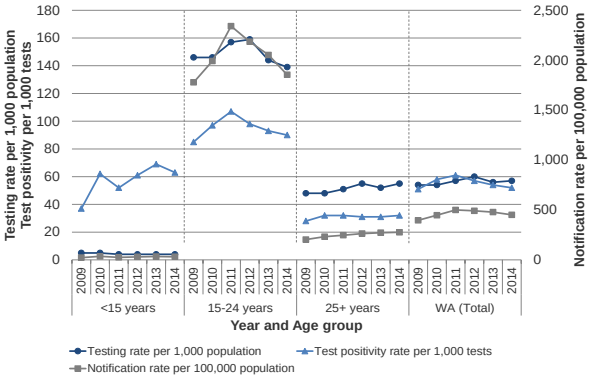
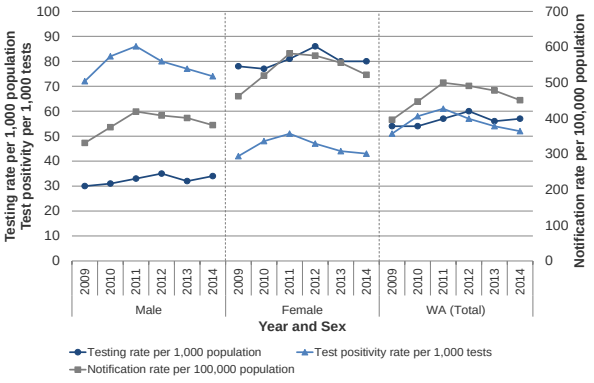


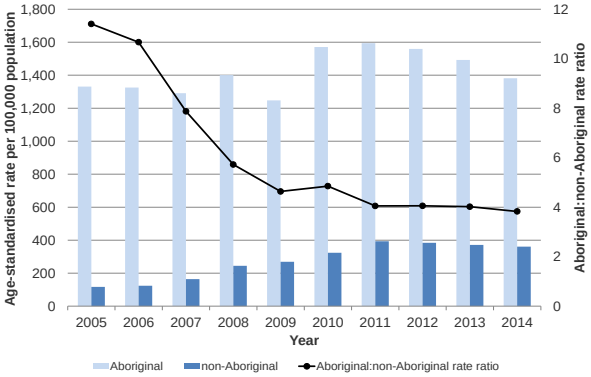
Figure 2.4 Chlamydia testing rate, notification rate and test positivity rate by sex, WA, 2009 to 2014



2.3 Notifications by Aboriginality

In 2014, 13% of chlamydia notifications were reported in Aboriginal people, 81% in non-Aboriginal people and 6% of notifications were of unknown Aboriginal status. Chlamydia rates in both Aboriginal and non-Aboriginal people declined from 2011 to 2014. The Aboriginal to non-Aboriginal rate ratio declined steadily between 2005 (11.4:1) and 2011 (4.1:1) and remained relatively stable from 2012 to 2014 (4.1:1 and 3.8:1 respectively) (Figure 2.5). In 2014, the highest chlamydia rate among Aboriginal people was reported from the Goldfields region and among non-Aboriginal people, the highest rate was reported from the Kimberley region (1,934/100,000 and 528/100,000 population respectively) (Appendix Table 5[2]).

Figure 2.5 ASR of chlamydia notifications by Aboriginality, WA, 2005 to 2014

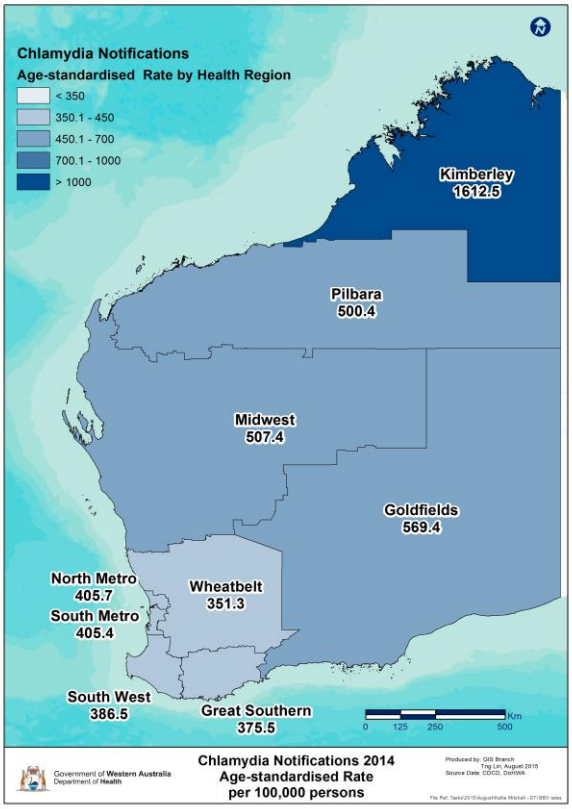


2.4 Regional distribution

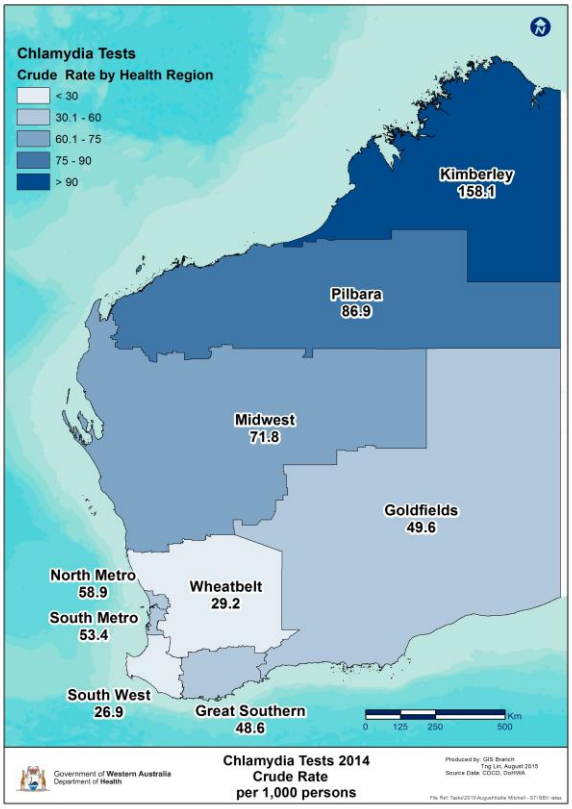
The highest chlamydia notification rate in 2014 was reported from the Kimberley region, where the rate was more than three-times greater than the WA rate (1,613 vs. 434/100,000 population) (Map 2.1 and Appendix Table 4[2]). Although chlamydia notification rates in the Kimberley were the highest in the state, they have not increased as rapidly as those in the rest of WA; the average increase for the Kimberley region from 2005 to 2014 was 1% per year, compared with 6% per year for WA (Appendix Table 4[2]).

In 2014, the highest chlamydia testing rate was also in the Kimberley region (Map 2.2), reflecting both disease incidence, and policy and programs that prioritise and encourage testing in remote regions.

Map 2.1 ASR of chlamydia notifications by health region, WA, 2014



Map 2.2 Crude rate of chlamydia testing by health region, WA, 2014



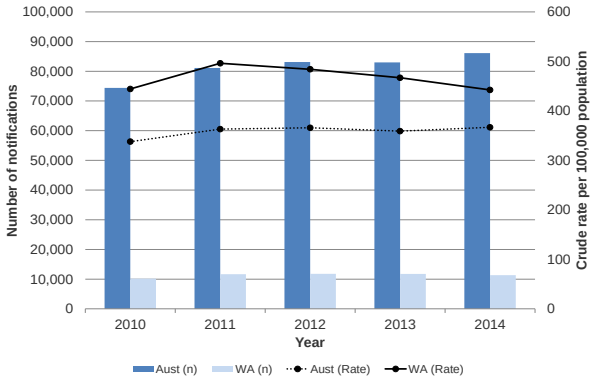
2.5 Place of acquisition

Of the 7,945 (70%) of chlamydia notifications in 2014 that had place of acquisition recorded, 93% were reported as having been acquired in WA. This trend was comparable in males and females, although a larger proportion of males (9%) acquired their infections overseas than females (3%) (Appendix Table 7[2]).

2.6 Interstate comparisons

In 2014, the crude chlamydia notification rate in WA (442/100,000 population) was the second highest in Australia after the NT (1,225/100,000 population) and was 21% higher than that reported nationally (367/100,000 population) (Figure 2.6 and Appendix Table 8[2]).

Figure 2.6 Number and crude rate of chlamydia notifications, WA and Australia, 2010 to 2014



Note: Data sourced from NNDSS, extracted 28 July 2015

2.7 Outbreaks and other investigations

No significant outbreaks or clusters of chlamydia infections were reported in 2014, but given the generally high incidence of the disease, the likelihood of recognising subgroups of the population with temporarily increased incidence is low.

2.8 Disease prevention and control strategies

A comprehensive approach to prevention and control of chlamydia infections in WA continues through: regular state-wide chlamydia campaigns and health education resources targeting young people aged 16 to 24 years, urging them to

get tested (e.g. www.couldihaveit.com.au); workforce development and support, including online education programs (e.g. http://sti.ecu.edu.au/ and cultural competency training); and promulgation of guidelines for management of sexually transmitted infections for health professionals (http://silverbook.health.wa.gov.au)[5].

Opportunistic testing is promoted through information and education provided to general medical practitioners and other health professionals. Education programs targeting priority risk groups in the population are provided through non-government agencies supported and funded by the DoH, including Sexual and Reproductive Health WA (SRHWA), the Metropolitan Migrant Resource Centre (MMRC), the Youth Affairs Council of WA (YACWA), the Wirrpanda Foundation, the Aboriginal Health Council of WA (AHCWA) and the WA AIDS Council (WAAC).

Sexual health education in schools is supported by online curriculum support materials (http://gdhr.wa.gov.au/). A workforce development program provided by Curtin University for in-service teachers and pre-service training has been established to promote the confidence and skills of teachers providing sexuality and relationship education in schools. The school-based program is supported by widely distributed hard-copy resources for school students and parents. This is supported by the *Get the Facts* website (http://getthefacts.health.wa.gov.au/) which targets 14 to 17 year olds.

3 Gonorrhoea

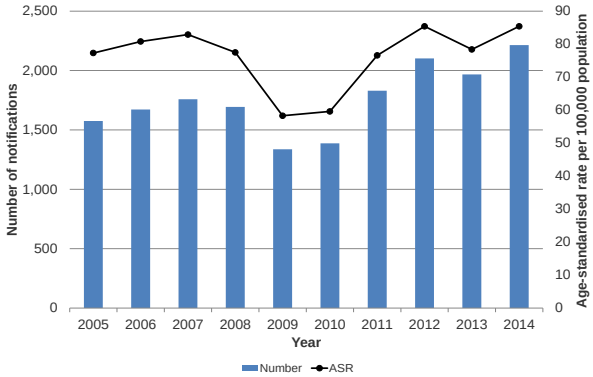
Key points

- Gonorrhoea was the second most commonly notified STI in WA.
- Notification and testing rates were highest in people aged 15 to 24 years.
- Notification and testing rates were higher in the Kimberley region than in other parts of the state.
- Notification rates were 18-times higher among Aboriginal people compared to non-Aboriginal people.
- The vast majority of infections were acquired in WA although more males acquired infection overseas than females.
- The WA crude notification rate was 28% higher than the national crude rate.
- Both Aboriginal and non-Aboriginal people reported similar specimen sites for gonorrhoea testing but there were marked differences in terms of clinical settings, treatment and sexual exposure.

3.1 Trends over time

The number of gonorrhoea infections reported to the DoH increased 41% from 2005 (1,575 notifications) to a ten-year high in 2014 (2,214 notifications). The number of notifications in 2014 was 13% higher than in 2013 (n=1,967) and 28% greater than the 2009 to 2013 five-year average of 1,725 notifications per year (Figure 3.1).

Figure 3.1 Number and ASR of gonorrhoea notifications, WA, 2005 to 2014



Between 2009 and 2012, the gonorrhoea testing, notification and test positivity rates increased by 13%, 47% and 30% respectively. From 2012 to 2014, the testing rate remained stable (54/1,000 population in each year), the notification rate remained stable (88 to 87/100,000 population) and the test positivity rate decreased 8% (1.3 to 1.2%). This indicates that the plateau in notifications since 2012 may have been partly the result of decreased disease transmission.

3.2 Distribution by age and sex

As in previous years, 66% of gonorrhoea notifications in 2014 occurred in people aged less than 30 years, with the highest incidence in those aged 20 to 24 and 25 to 29 years (23% and 22% of notifications respectively) (Figure 3.2). In 2014, the highest testing rate was observed in people aged 15 to 24 years (132/1,000 population) and remained stable from 2013. The highest test positivity rate was in people aged less than 15 years (3.5%), which was more than double the 2009 rate of 1.6%for this age group (Figure 3.3).

From 2005 to 2014, more males than females were notified with gonorrhoea each year (Appendix Figure 3[2]). The predominance of males was evident in people aged 20 years or older, but the opposite was observed in those aged less than 20 years (Figure 3.2 and Appendix Table 2[2]). In 2014, the testing rate among females was more than double the rate among males (75 vs. 33/1,000 population), while the test positivity rate among males

was almost four-times higher than the rate among females (2.5 vs. 0.7%) (Figure 3.4).

Figure 3.2 Number of gonorrhoea notifications by sex and overall age-specific rate, WA, 2014

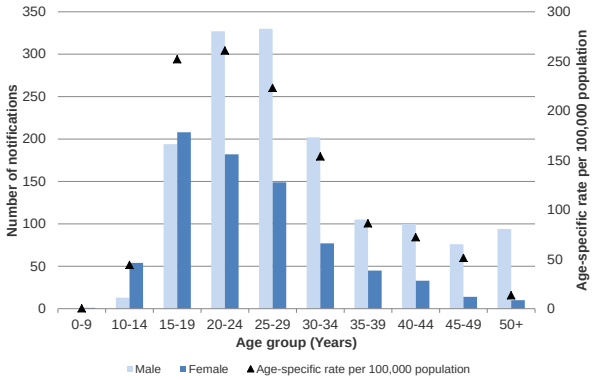


Figure 3.3 Gonorrhoea testing rate, notification rate and test positivity rate by age group, WA, 2009 to 2014

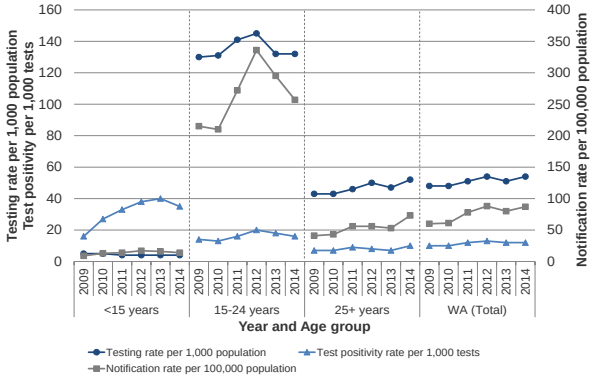
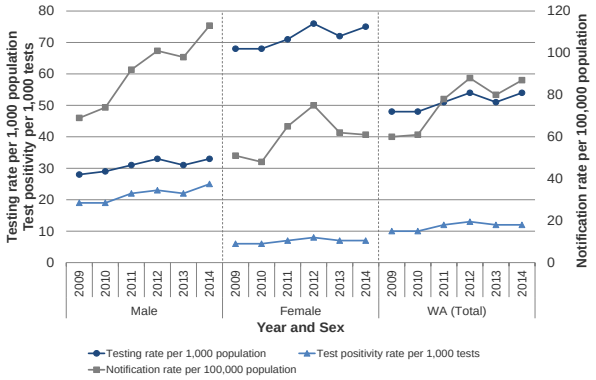


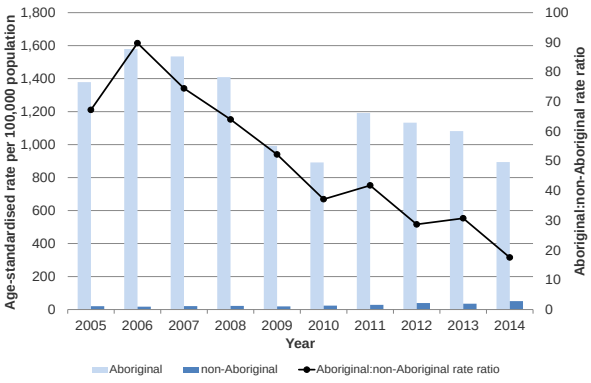
Figure 3.4 Gonorrhoea testing rate, notification rate and test positivity rate by sex, WA, 2009 to 2014



3.3 Notifications by Aboriginality

In 2014, 41% of gonorrhoea notifications were reported in Aboriginal people, 59% in non-Aboriginal people and less than 1% of notifications were of unknown Aboriginal status. Between 2006 and 2014, the Aboriginal to non-Aboriginal rate ratio decreased to the lowest observed in the last ten years. The gonorrhoea rate in Aboriginal people was still far greater than for non-Aboriginal people (Aboriginal to non-Aboriginal rate ratio = 17.5:1 in 2014) (Figure 3.5). In 2014, the highest gonorrhoea rate among Aboriginal people was reported from the Kimberley region, and among non-Aboriginal people the highest rate was reported from the North metropolitan region (2,507/100,000 and 58/100,000 population respectively) (Appendix Table 13[2]).

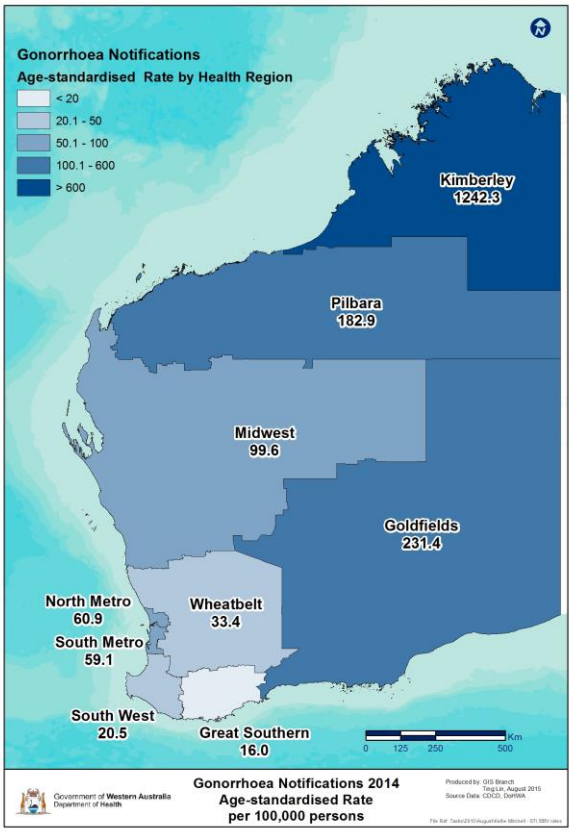
Figure 3.5 ASR of gonorrhoea notifications by Aboriginality, WA, 2005 to 2014



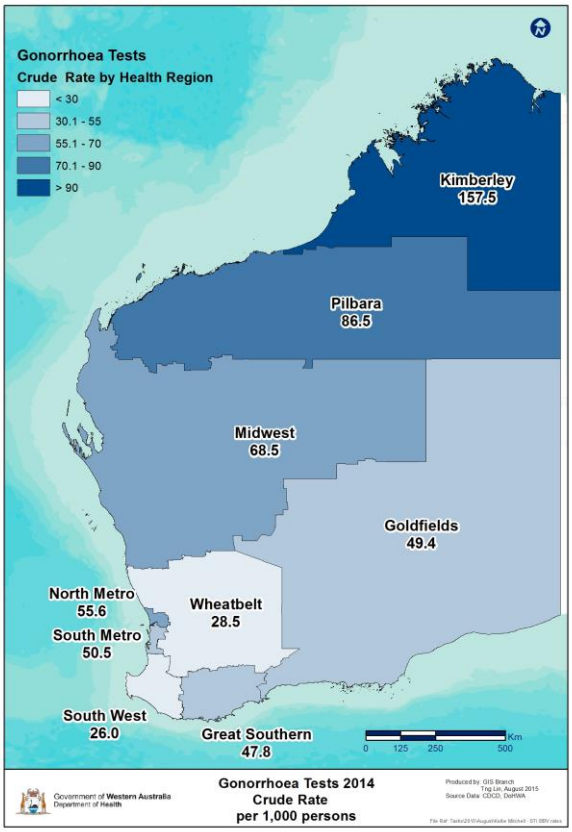
3.4 Regional distribution

The highest gonorrhoea notification rate in 2014 was reported from the Kimberley region, where the rate was almost 15-times greater than the WA rate (1,242 vs. 85/100,000 population) (Map 3.1 and Appendix Table 12[2]). The gonorrhoea rate in the Kimberley region fluctuated from 2008 to 2014 (Appendix Table 12[2]).

Map 3.1 ASR of gonorrhoea notifications by health region, WA, 2014



Map 3.2 Crude rate of gonorrhoea testing by health region, WA, 2014



In 2014, testing rates were also highest in the Kimberley region (Map 3.2). This reflects both disease incidence and demand for tests, and policy and programs that encourage testing in the remote regions.

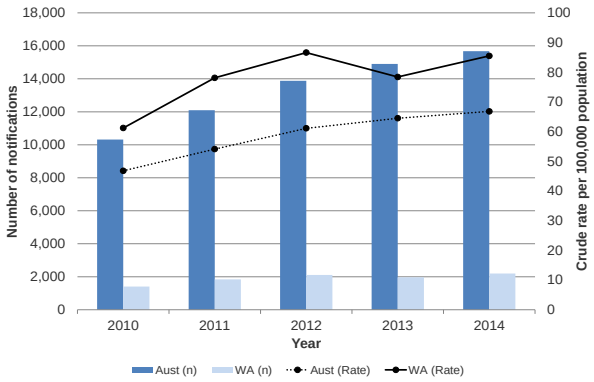
3.5 Place of acquisition

Of the 2,081 gonorrhoea notifications in 2014 that had place of acquisition recorded, 89% were reported as having been acquired in WA. This trend was comparable in males and females, although a larger proportion of males (12%) acquired their infections overseas than females (2%) (Appendix Table 15[2]).

3.6 Interstate comparisons

In 2014, the crude gonorrhoea notification rate in WA (86/100,000 population) was the second highest in Australia after the NT (712/100,000 population) and 28% higher than the national crude rate (67/100,000 population) (Figure 3.6 and Appendix Table 16[2]).

Figure 3.6 Number and crude rate of gonorrhoea notifications, WA and Australia, 2010 to 2014



Note: Data sourced from NNDSS, extracted 28 July 2015

3.7 Enhanced gonorrhoea surveillance

In 2014, complete enhanced surveillance data were available for 85% (n=1,882/2,214) of all gonorrhoea notifications, representing 69% (n=620/905) of notifications among Aboriginal people and 97% (n=1,259/1,303) of notifications among non-Aboriginal people.

Among Aboriginal people, gonorrhoea notifications were equally distributed between the sexes. The majority of Aboriginal people were diagnosed at a public hospital / community health clinic or an Aboriginal medical service on the basis of a urine sample, and were treated with a combination of amoxycillin/probenecid and azithromycin (58%; n=359/620). The vast majority of Aboriginal people reported acquiring gonorrhoea from a person of the opposite sex and none reported being a current sex worker (Table 3.1).

Among non-Aboriginal people, more males than females were notified with gonorrhoea. The majority of non-Aboriginal people were also diagnosed with gonorrhoea through urine samples. While the majority also reported acquiring gonorrhoea from a person of the opposite sex, 33% reported acquiring the infection from a person of the same sex, and almost all of these cases were male. Non-Aboriginal cases were more likely to be diagnosed at a general practice and to be treated with ceftriaxone. Twenty-seven cases were current sex workers (Table 3.1).

Trends for both Aboriginal and non-Aboriginal people remained stable over time.

The proportion of completed gonorrhoea enhanced surveillance forms for which the exposure category was identified as ‘men who have sex with men’ (MSM) increased from 18% in 2011 (n=183/1,027) to 25% in 2014 (n=465/1,882). The majority of MSM notified with gonorrhoea were born in Australia (64%; n=299/465); most MSM cases reported acquiring the infection in WA (87%; n=403/465). Most MSM were non-Aboriginal and diagnosed at a sexual health clinic on the basis of a rectal swab or urine sample (Table 3.2). Most MSM were treated with a combination of ceftriaxone and azithromycin (92%; n=427/465). Eight MSM cases reported being a current sex worker, the highest number reported since 2007.

3.8 Outbreaks and other investigations

No significant outbreaks or clusters of gonorrhoea infections were reported in 2014.

3.9 Disease prevention and control strategies

The DoH continues to implement a comprehensive approach to the prevention and control of gonorrhoea, funding education programs targeting priority groups and testing through government and non-government agencies.

WAAC’s community-based, peer-led M Clinic offers expanded clinic hours and free STI testing (including gonorrhoea) for MSM under a model of peer-led service delivery aimed at gaining greater acceptance and uptake for testing and prevention among high-risk sub-populations.

Dedicated regional sexual health teams have been working in the Pilbara, Kimberley, Goldfields and Midwest regions since 2004. The work of the teams has been supported and directed by *The Second WA Aboriginal Sexual Health and*

Blood-borne Virus Strategy, 2010 to 2014[6]. The strategy recommends a comprehensive approach to sexual health promotion and incorporates a range of initiatives in planning, professional training, community education, condom provision, surveillance, clinical enhancements, and monitoring and research. The strategy's objectives are to promote safer sexual behaviour, promote early healthcare-seeking behaviour, and introduce early detection and treatment activities across all primary healthcare programs.

The DoH funded the *Mary G* social marketing campaign to raise awareness about STIs, safe sex and testing in the Aboriginal population. Targeted prevention, education and clinical services are available to sex workers in WA. An outreach service to regional areas and to commercial sexual services businesses and street-based workers in the metropolitan area is provided by Magenta (SRHWA), a community-based organisation.

Table 3.1 Behavioural characteristics of people notified with gonorrhoea by Aboriginality, WA, 2014

Behavioural and demographic characteristics		Aboriginality					
		Aboriginal (n=620)		non-Aboriginal (n=1,259)		Total (n=1,882)	
		Number	Percent	Number	Percent	Number	Percent
Sex	Male	308	49.7%	963	76.5%	**1,273**	**67.6%**
	Female	312	50.3%	296	23.5%	**609**	**32.4%**
Clinical setting	Public hospital/community health clinic	276	44.5%	78	6.2%	**355**	**18.9%**
	Sexual health clinic/family planning clinic	17	2.7%	363	28.8%	**380**	**20.2%**
	Aboriginal medical service	197	31.8%	3	0.2%	**200**	**10.6%**
	General practice	65	10.5%	794	63.1%	**861**	**45.7%**
	Prison/detention centre	50	8.1%	10	0.8%	**60**	**3.2%**
	Other	10	1.6%	6	0.5%	**16**	**0.9%**
	Unknown	5	0.8%	5	0.4%	**10**	**0.5%**
Specimen site	Urine (PCR/LCR)	491	79.2%	714	56.7%	**1,208**	**64.2%**
	Urethral swab	92	14.8%	312	24.8%	**404**	**21.5%**
	Cervical/vaginal swab	105	16.9%	130	10.3%	**235**	**12.5%**
	Pharyngeal swab	2	0.3%	148	11.8%	**150**	**8.0%**
	Rectal swab	4	0.6%	183	14.5%	**187**	**9.9%**
	Other	13	2.1%	11	0.9%	**24**	**1.3%**
	Unknown	0	0.0%	1	0.1%	**1**	**0.1%**
Treatment	Ceftriaxone	228	36.8%	1,173	93.2%	**1,403**	**74.5%**
	Amoxycillin/Probenecid	401	64.7%	40	3.2%	**441**	**23.4%**
	Ciprofloxacin	0	0.0%	16	1.3%	**16**	**0.9%**
	Other drugs	578	93.2%	1,195	94.9%	**1,775**	**94.3%**
	Unknown	0	0.0%	0	0.0%	**0**	**0.0%**
Sexual exposure	Person(s) of opposite sex only	538	86.8%	684	54.3%	**1,222**	**64.9%**
	Person(s) of same sex only	15	2.4%	418	33.2%	**433**	**23.0%**
	Person(s) of either sex	2	0.3%	40	3.2%	**42**	**2.2%**
	No sexual contact	0	0.0%	0	0.0%	**0**	**0.0%**
	Unknown	65	10.5%	117	9.3%	**185**	**9.8%**
Current sex worker	Yes	0	0.0%	27	2.1%	**27**	**1.4%**
	No	553	89.2%	1,136	90.2%	**1,689**	**89.7%**
	Unknown	67	10.8%	96	7.6%	**166**	**8.8%**

Note: Specimen sites and treatments are not mutually exclusive
Only enhanced surveillance forms with behavioural and demographic characteristics identified were included

Table 3.2 Behavioural characteristics of people notified with gonorrhoea by exposure category, WA, 2014

Behavioural and demographic characteristics		Exposure category							
		MSM		Heterosexual Male		Female		Total	
		(n=465)		(n=808)		(n=609)		(n=1,882)	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Aboriginality	Aboriginal	16	3.4%	292	36.1%	312	51.2%	**620**	**32.9%**
	non-Aboriginal	449	96.6%	514	63.6%	296	48.6%	**1,259**	**66.9%**
Area	Metropolitan	434	93.3%	488	60.4%	300	49.3%	**1,222**	**64.9%**
	non-Metropolitan	23	4.9%	310	38.4%	308	50.6%	**641**	**34.1%**
Infection acquired	Western Australia	403	86.7%	630	78.0%	568	93.3%	**1,601**	**85.1%**
	Interstate	20	4.3%	23	2.8%	12	2.0%	**55**	**2.9%**
	Overseas	29	6.2%	130	16.1%	15	2.5%	**174**	**9.2%**
	Unknown	13	2.8%	25	3.1%	14	2.3%	**52**	**2.8%**
Clinical setting	Public hospital/community health clinic	6	1.3%	174	21.5%	175	28.7%	**355**	**18.9%**
	Sexual health clinic/family planning clinic	293	63.0%	49	6.1%	38	6.2%	**380**	**20.2%**
	Aboriginal medical service	5	1.1%	84	10.4%	111	18.2%	**200**	**10.6%**
	General practice	154	33.1%	445	55.1%	262	43.0%	**861**	**45.7%**
	Prison/detention centre	3	0.6%	46	5.7%	11	1.8%	**60**	**3.2%**
	Other	3	0.6%	5	0.6%	9	1.5%	**17**	**0.9%**
	Unknown	1	0.2%	5	0.6%	3	0.5%	**9**	**0.5%**
Specimen site	Urine (PCR/LCR)	158	34.0%	649	80.3%	401	65.8%	**1,208**	**64.2%**
	Urethral swab	110	23.7%	290	35.9%	4	0.7%	**404**	**21.5%**
	Cervical/vaginal swab	N/A	N/A	N/A	N/A	234	38.4%	**234**	**12.4%**
	Pharyngeal swab	121	26.0%	16	2.0%	13	2.1%	**150**	**8.0%**
	Rectal swab	169	36.3%	8	1.0%	10	1.6%	**187**	**9.9%**
	Other	1	0.2%	11	1.4%	12	2.0%	**247**	**13.1%**
	Unknown	0	0.0%	1	0.1%	0	0.0%	**1**	**0.1%**
Treatment	Ceftriaxone	449	96.6%	558	69.1%	396	65.0%	**1,403**	**74.5%**
	Amoxycillin/Probenecid	10	2.2%	227	28.1%	204	33.5%	**441**	**23.4%**
	Ciprofloxacin	3	0.6%	10	1.2%	3	0.5%	**16**	**0.9%**
	Other drugs	452	97.2%	763	94.4%	560	92.0%	**1,775**	**94.3%**
	Unknown	0	0.0%	0	0.0%	0	0.0%	**0**	**0.0%**
Sexual exposure	Person(s) of opposite sex only	0	0.0%	680	84.2%	541	88.8%	**1,221**	**64.9%**
	Person(s) of same sex only	431	92.7%	0	0.0%	2	0.3%	**433**	**23.0%**
	Person(s) of either sex	34	7.3%	0	0.0%	9	1.5%	**43**	**2.3%**
	No sexual contact	0	0.0%	0	0.0%	0	0.0%	**0**	**0.0%**
	Unknown	0	0.0%	128	15.8%	57	9.4%	**185**	**9.8%**
Current sex worker	Yes	8	1.7%	1	0.1%	18	3.0%	**27**	**1.4%**
	No	445	95.7%	720	89.1%	523	85.9%	**1,688**	**89.7%**
	Unknown	11	2.4%	87	10.8%	68	11.2%	**166**	**8.8%**

Note: Specimen sites and treatments are not mutually exclusive
Only enhanced surveillance forms with behavioural and demographic characteristics identified were included

4 Syphilis

Key points

- The number of infectious syphilis notifications in 2014 was 9% higher than the previous five-year average. Non-infectious syphilis notifications returned to a ten-year low in 2014.
- Notification rates for infectious and non-infectious syphilis were highest in the 35 to 39 year and 25 to 29 year age groups respectively. The testing rate was highest in the 15 to 24 year age group.
- In comparison to other parts of the state, notification rates for both infectious and non-infectious syphilis were higher in the Kimberley region.
- Aboriginal to non-Aboriginal rate ratios for infectious and non-infectious syphilis were 4:1 and 10:1 respectively.
- The majority of infectious and non-infectious syphilis infections were reported to have been acquired in WA.
- In comparison to national crude rates, the WA infectious syphilis crude rate was 58% lower and the non-infectious syphilis crude rate was 69% lower.
- There were marked differences between Aboriginal and non-Aboriginal people in terms of reason for presentation, sex and type of partner and mode of transmission of infectious syphilis.

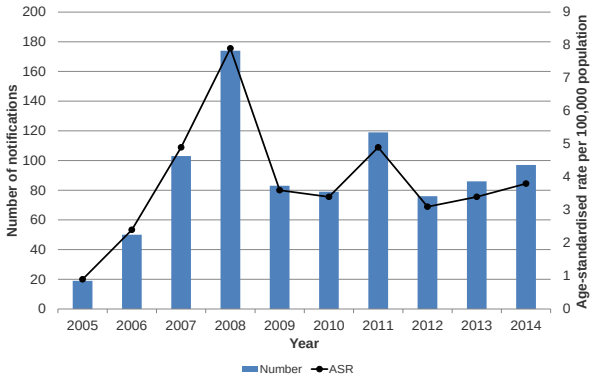
Syphilis notifications have been classified into 'infectious' (primary syphilis + secondary syphilis + early latent syphilis [less than two years duration]), 'non-infectious' (more than two years or unknown duration) and 'congenital' syphilis.

4.1 Infectious syphilis

4.1.1 Trends over time

The number of infectious syphilis notifications in 2014 (n=97) was 13% higher than that observed in 2013 (n=86) and 9% greater than the 2009 to 2013 five-year average of 89 notifications per year (Figure 4.1). The highest peak observed in 2008 (n=174) reflected two concomitant outbreaks – one which started in 2006 among non-Aboriginal MSM residing in the metropolitan region, and the other starting in mid-2008 among Aboriginal heterosexual people in the Pilbara region.

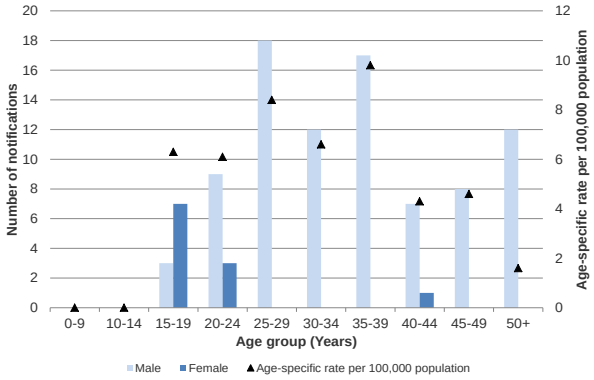
Figure 4.1 Number and ASR of infectious syphilis notifications, WA, 2005 to 2014



4.1.2 Distribution by age and sex

While the highest number of infectious syphilis notifications in 2014 occurred in people aged 25 to 29 years, the highest rate was observed in people aged 35 to 39 years. Among those aged 20 years or older, there were more notifications among males (Figure 4.2).

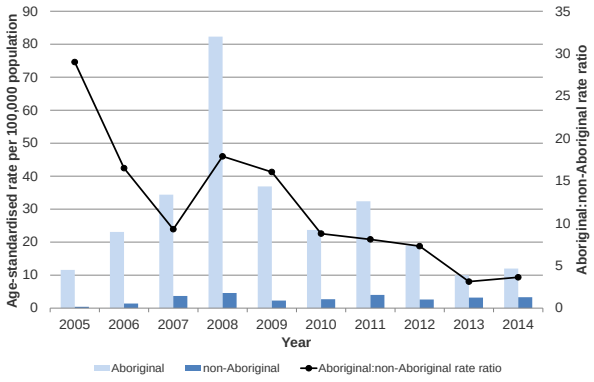
Figure 4.2 Number of infectious syphilis notifications by sex and overall age-specific rate, WA, 2014



4.1.3 Notifications by Aboriginality

In 2014, 87% of infectious syphilis notifications occurred in non-Aboriginal people and 13% in Aboriginal people. The Aboriginal to non-Aboriginal rate ratio declined steadily from a peak of 29.0:1 in 2005 to 9.3:1 in 2007. Since 2010, the Aboriginal to non-Aboriginal rate ratio has been lower than in previous years, reaching a ten-year low of 3.1:1 in 2013 before increasing slightly to 3.6:1 in 2014 (Figure 4.3). In 2014, the highest infectious syphilis rate among Aboriginal people was reported from the Kimberley region and among non-Aboriginal people the highest rate was reported from the North metropolitan region (51/100,000 and 5/100,000 population respectively), although numbers were very small (Appendix Table 26 and Appendix Table 28[2]).

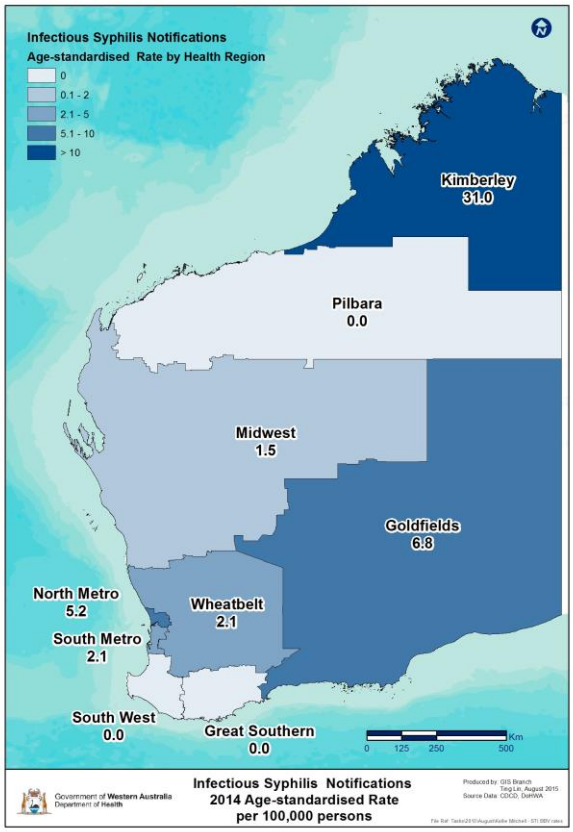
Figure 4.3 ASR of infectious syphilis notifications by Aboriginality, WA, 2005 to 2014



4.1.4 Regional distribution

The highest infectious syphilis notification rate in 2014 was observed in the Kimberley region, where the rate was more than eight times the overall WA rate (31 vs. 4/100,000 population) (Map 4.1 and Appendix Table 19[2]).

Map 4.1 ASR of infectious syphilis notifications by health region, WA, 2014



4.1.5 Place of acquisition

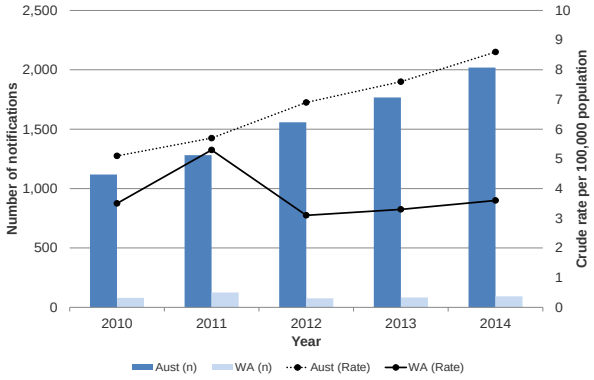
Of the 95 infectious syphilis notifications in 2014 that had place of acquisition recorded, 74% were reported as having been acquired in WA. While this trend was comparable across the sexes, a larger proportion of females (46%) acquired their infections interstate than males (10%); and a larger proportion of males (14%) acquired their infections overseas than females (0%) (Appendix Table 30[2]).

4.1.6 Interstate comparisons

In 2014, crude infectious syphilis rates ranged from 1.7/100,000 population in SA to 29.4/100,000 population in the NT. The crude rate for WA in 2014 was 58% lower than the national crude rate (3.6 vs.

8.6/100,000 population) (Figure 4.4 and Appendix Table 31[2]).

Figure 4.4 Number and crude rate of infectious syphilis notifications, WA and Australia, 2010 to 2014



Note: Data sourced from NNDSS, extracted 28 July 2015

4.1.7 Enhanced infectious syphilis surveillance

In 2014, complete enhanced surveillance data were available for 99% (n=96/97) of all infectious syphilis notifications, representing 100% (n=13/13) of notifications among Aboriginal people and 99% (n=83/84) of notifications among non-Aboriginal people.

The majority of completed infectious syphilis enhanced surveillance forms among Aboriginal people were for females. The majority of these were diagnosed at an Aboriginal medical service as part of a sexual health screen. Most reported acquiring infectious syphilis through vaginal sex with a casual partner (Table 4.1).

In contrast, the majority of non-Aboriginal cases were male and diagnosed at a sexual health clinic / family planning clinic as a result of presenting with relevant symptoms. Most reported having acquired infectious syphilis through oral and/or anal sex with a casual partner (Table 4.1).

The proportion of completed infectious syphilis enhanced surveillance forms for which the exposure risk category was identified as MSM increased from 65% in 2010 (n=47/72) to 72% in 2014 (n=69/96).

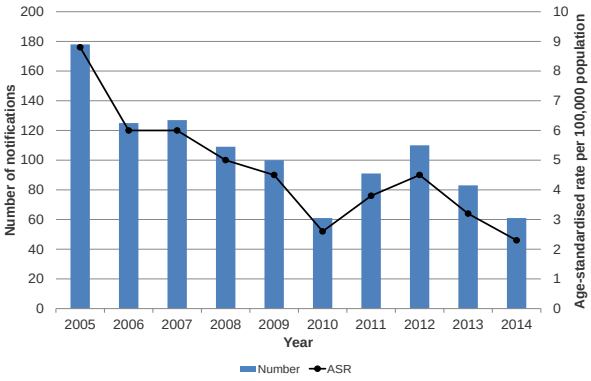
All completed infectious syphilis enhanced surveillance forms among MSM were non-Aboriginal and the majority were diagnosed at a sexual health clinic. Compared to heterosexual males or females, MSM were more likely to report acquiring the infection through a combination of anal and oral sex with a partner whom they met via the internet or other avenues such as mobile phone apps (Table 4.2).

4.2 Non-infectious syphilis

4.2.1 Trends over time

The number of non-infectious syphilis notifications decreased from a peak of 178 in 2005 to a ten-year low of 61 in 2010. While the number of notifications increased in 2011 and 2012, notifications returned to the previous ten-year low of 61 in 2014 (Figure 4.5).

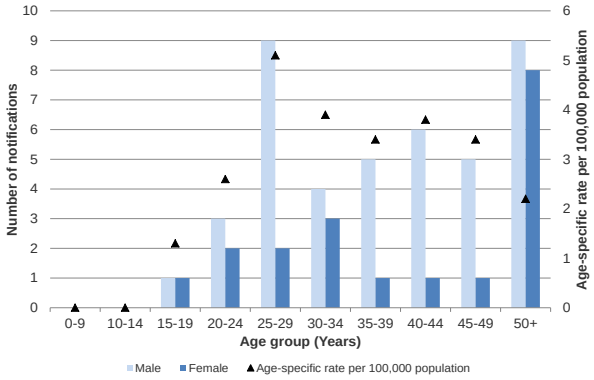
Figure 4.5 Number and ASR of non-infectious syphilis notifications, WA, 2005 to 2014



4.2.2 Distribution by age and sex

In 2014, 28% of non-infectious syphilis notifications occurred among people aged 50 years or over while the highest rate was observed in those aged 25 to 29 years (Figure 4.6). From 2005 to 2014, more males than females were notified with non-infectious syphilis each year (Appendix Figure 7[2]).

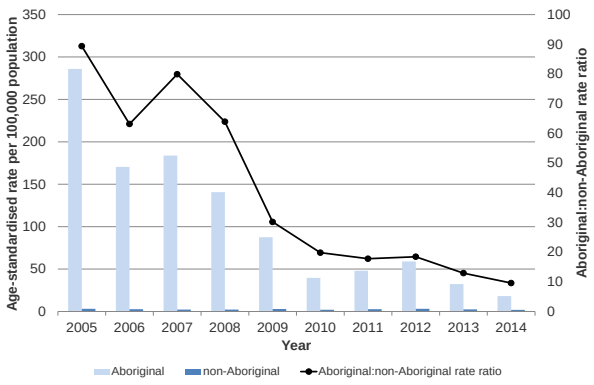
Figure 4.6 Number of non-infectious syphilis notifications by sex and overall age-specific rate, WA, 2014



4.2.3 Notifications by Aboriginality

In 2014, 79% of non-infectious syphilis notifications occurred in non-Aboriginal people and 20% in Aboriginal people. The Aboriginal to non-Aboriginal rate ratio declined from a peak of 89.3:1 in 2005 to a ten-year low of 9.6:1 in 2014 (Figure 4.7). In 2014, the highest non-infectious syphilis rate among Aboriginal people was reported from the Goldfields region and among non-Aboriginal people the highest rate was reported from the Kimberley region (60/100,000 and 3/100,000 population respectively) (Appendix Table 28[2]).

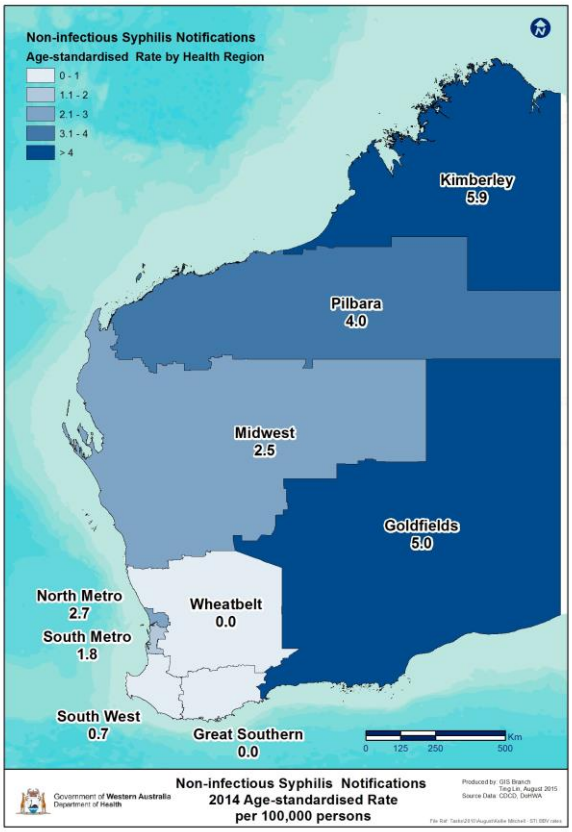
Figure 4.7 ASR of non-infectious syphilis notifications by Aboriginality, WA, 2005 to 2014



4.2.4 Regional distribution

The highest notification rates of non-infectious syphilis in 2014 were reported from the Kimberley region where the rate was almost triple the overall WA rate (6 vs. 2/100,000 population) (Map 4.2 and Appendix Table 21[2]).

Map 4.2 ASR of non-infectious syphilis notifications by health region, WA, 2014



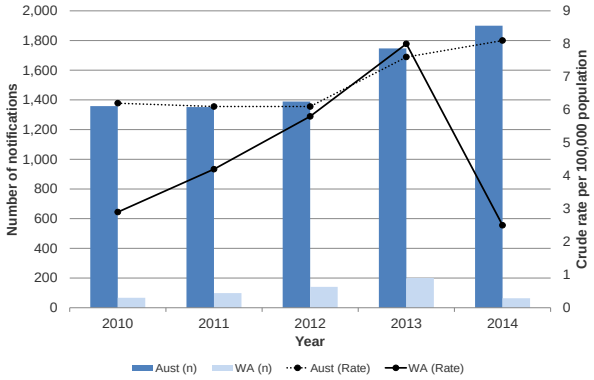
4.2.5 Place of acquisition

Of the 44 non-infectious syphilis notifications in 2014 that had place of acquisition recorded, 75% were reported as having been acquired in WA and 23% overseas. This trend was comparable in males and females (Appendix Table 30[2]).

4.2.6 Interstate comparisons

In 2014, crude non-infectious syphilis rates ranged from 2.5/100,000 population in WA to 30.3/100,000 population in the NT. The crude rate for WA in 2014 was 69% lower than the national crude rate (8.1/100,000 population) (Figure 4.8 and Appendix Table 32[2]).

Figure 4.8 Number and crude rate of non-infectious notifications, WA and Australia, 2010 to 2014



Note: Data sourced from NNDSS, extracted 28 July 2015

4.3 Syphilis testing

The syphilis testing rate remained stable from 2009 to 2011 (35 to 36/1,000 population) and increased 11% from 2011 to 2012 (40/1,000 population). This followed the introduction of routine screening of asylum seekers at the Christmas Island IDC in 2012. The testing rate remained stable from 2012 to 2013 before decreasing 18% in 2014 (33/1,000 population). This followed changes in immigration policies in 2013 which dramatically decreased the number of people transferred to the Christmas Island IDC. The syphilis notification rate fluctuated from 2009 (9/100,000 population) to 2013 (12/100,000 population) before decreasing by 50% in 2014 (6/100,000 population). From 2009 to 2014, the syphilis test positivity rate fluctuated, with an average yearly increase of 4% (0.15% in 2014). This indicates that the decrease in notifications from 2013 was largely due to decreased testing (Figure 4.9).

In 2014, the highest testing rate was observed in people aged 15 to 24 years (60/1,000 population) while the highest test positivity rate was observed in people aged 25 years or older (0.2%) (Figure 4.9). The testing rate among females was 79% higher than the rate among males (43 vs. 24/1,000 population), while the positivity rate among males was almost six-times higher than the rate among females (0.3 vs. 0.05%) (Figure 4.10).

Figure 4.9 Syphilis testing rate, notification rate and test positivity rate by age group, WA, 2009 to 2014

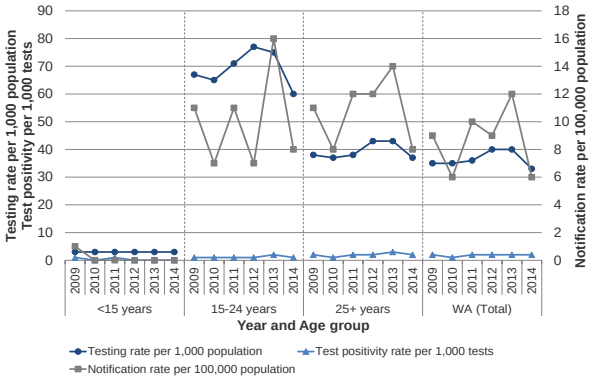
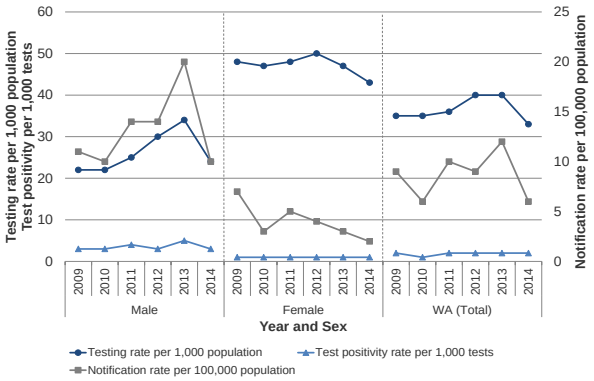
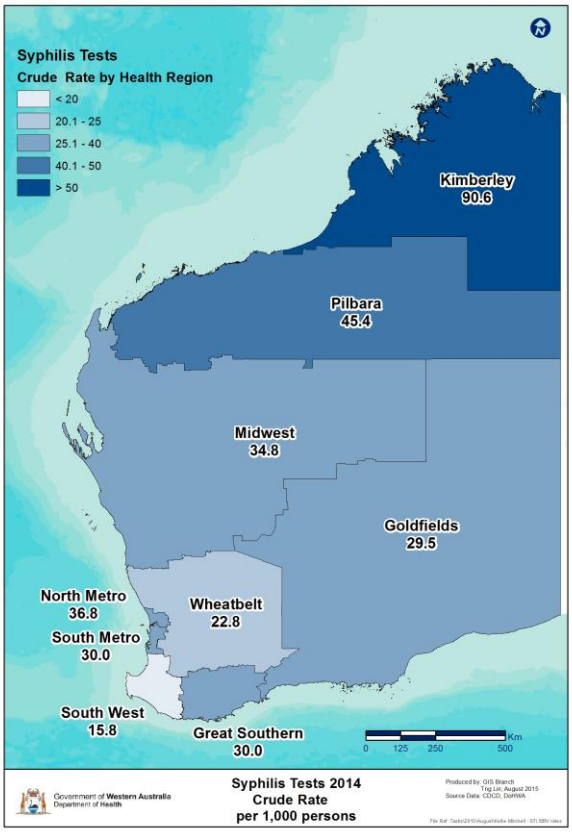


Figure 4.10 Syphilis testing rate, notification rate and test positivity rate by sex, WA, 2009 to 2014



In 2014, the syphilis testing rate in the Kimberley region was almost three-times the state-wide rate (Map 4.3). This reflects disease incidence and policy and programs that encourage testing in remote regions.

Map 4.3 Crude rate of syphilis testing by health region, WA, 2014



4.4 Outbreaks and other investigations

An outbreak of infectious syphilis among Aboriginal people in the Kimberley region commenced in mid-2014 and was initially linked to cases in the Northern Territory. All cases reported heterosexual exposure.

4.5 Disease prevention and control strategies

The DoH continues to implement a comprehensive approach to the prevention and control of syphilis, funding education programs targeting priority groups and testing through government and non-government agencies.

WAAC promotes syphilis reduction through its safer sex and testing campaigns via online, print and display media. Special STI clinical services, including testing for syphilis, that target MSM in the Perth metropolitan area are provided by WAAC's community-based M Clinic and sauna clinic.

Since 2008, the DoH has continued to support a working group that includes key clinical, non-government and government stakeholders in monitoring and evaluating the state response to syphilis control and prevention.

Regional-led initiatives were established to respond to the syphilis outbreak in the Kimberley region, including community-based screening, contact tracing and community engagement.

Table 4.1 Behavioural characteristics of people notified with infectious syphilis by Aboriginality, WA, 2014

Behavioural and demographic characteristics		Aboriginality					
		Aboriginal (n =13)		non-Aboriginal (n =83)		Total (n =96)	
		Number	Percent	Number	Percent	Number	Percent
Sex	Male	3	23.1%	82	98.8%	**85**	**88.5%**
	Female	10	76.9%	1	1.2%	**11**	**11.5%**
Clinical setting	Public hospital/community health clinic	3	23.1%	7	8.4%	**10**	**10.4%**
	Sexual health clinic/family planning clinic	0	0.0%	47	56.6%	**47**	**49.0%**
	Aboriginal medical service	9	69.2%	1	1.2%	**10**	**10.4%**
	General practice	0	0.0%	25	30.1%	**25**	**26.0%**
	Prison/Detention centre	0	0.0%	0	0.0%	**0**	**0.0%**
	Other	1	7.7%	3	3.6%	**4**	**4.2%**
Reason for presentation	Symptomatic	1	7.7%	44	53.0%	**45**	**46.9%**
	Opportunistic testing - Sexual health	10	76.9%	31	37.3%	**41**	**42.7%**
	- Antenatal/pap smear	1	7.7%	0	0.0%	**1**	**1.0%**
	Named as contact (i.e. Asymptomatic)	2	15.4%	11	13.3%	**13**	**13.5%**
	Other	0	0.0%	4	4.8%	**4**	**4.2%**
Sex of partner for this episode	Person(s) of opposite sex	12	92.3%	12	14.5%	**24**	**25.0%**
	Person(s) of same sex	0	0.0%	65	78.3%	**65**	**67.7%**
	Person(s) of either sex	0	0.0%	4	4.8%	**4**	**4.2%**
	No sexual contact	1	7.7%	2	2.4%	**3**	**3.1%**
	Unknown	0	0.0%	0	0.0%	**0**	**0.0%**
Infection acquired from	Casual partner	10	76.9%	61	73.5%	**71**	**74.0%**
	Regular partner	1	7.7%	18	21.7%	**19**	**19.8%**
	Sex worker	0	0.0%	1	1.2%	**1**	**1.0%**
	Client (i.e. patient is a sex worker)	0	0.0%	0	0.0%	**0**	**0.0%**
	Other	0	0.0%	0	0.0%	**0**	**0.0%**
	Unknown	2	15.4%	3	3.6%	**5**	**5.2%**
Partner meeting place	Brothel	0	0.0%	0	0.0%	**0**	**0.0%**
	Beat, e.g. public toilet	0	0.0%	0	0.0%	**0**	**0.0%**
	Internet	0	0.0%	19	22.9%	**19**	**19.8%**
	Sex on premises venue/sauna	0	0.0%	7	8.4%	**7**	**7.3%**
	Other	4	30.8%	24	28.9%	**28**	**29.2%**
	Missing/unknown	9	69.2%	33	39.8%	**42**	**43.8%**
Mode of transmission	Vaginal intercourse	11	84.6%	14	16.9%	**25**	**26.0%**
	Anal intercourse	0	0.0%	44	53.0%	**44**	**45.8%**
	Oral sex	0	0.0%	52	62.7%	**52**	**54.2%**
	Other	0	0.0%	1	1.2%	**1**	**1.0%**
	Unknown	0	0.0%	0	0.0%	**0**	**0.0%**

Notes: Reasons for presentation and modes of transmission are not mutually exclusive
Only enhanced surveillance forms with behavioural and demographic characteristics identified were included

Table 4.2 Behavioural characteristics of people notified with infectious syphilis by exposure category, WA, 2014

Behavioural and demographic characteristics		Exposure category							
		MSM (n=69)		Heterosexual Male (n=16)		Female (n=11)		Total (n=96)	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Aboriginality	Aboriginal	0	0.0%	3	18.8%	10	90.9%	**13**	**13.5%**
	non-Aboriginal	69	100.0%	13	81.3%	1	9.1%	**83**	**86.5%**
Clinical setting	Public hospital/community health clinic	3	4.3%	4	25.0%	3	27.3%	**10**	**10.4%**
	Sexual health clinic/family planning clinic	43	62.3%	3	18.8%	1	9.1%	**47**	**49.0%**
	Aboriginal medical service	1	1.4%	3	18.8%	6	54.5%	**10**	**10.4%**
	General practice	19	27.5%	6	37.5%	0	0.0%	**25**	**26.0%**
	Prison/Detention centre	0	0.0%	0	0.0%	0	0.0%	**0**	**0.0%**
	Other	3	4.3%	0	0.0%	0	0.0%	**3**	**3.1%**
	Unknown	0	0.0%	0	0.0%	1	9.1%	**1**	**1.0%**
Reason for presentation	Symptomatic	37	53.6%	7	43.8%	1	9.1%	**45**	**46.9%**
	Opportunistic testing - Sexual health	29	42.0%	5	31.3%	7	63.6%	**41**	**42.7%**
	- Antenatal/pap smear	0	N/A	0	N/A	1	9.1%	**1**	**1.0%**
	Named as contact	8	11.6%	3	18.8%	2	18.2%	**13**	**13.5%**
	Other	1	1.4%	3	18.8%	0	0.0%	**4**	**4.2%**
Infection acquired from	Casual partner	54	78.3%	8	50.0%	9	81.8%	**71**	**74.0%**
	Regular partner	13	18.8%	5	31.3%	1	9.1%	**19**	**19.8%**
	Sex worker	0	0.0%	1	6.3%	0	0.0%	**1**	**1.0%**
	Client (i.e. patient is a sex worker)	0	0.0%	0	0.0%	0	0.0%	**0**	**0.0%**
	Other	0	0.0%	0	0.0%	0	0.0%	**0**	**0.0%**
	Unknown	2	2.9%	2	12.5%	1	9.1%	**5**	**5.2%**
Partner meeting place	Beat, e.g. public toilet	0	0.0%	0	0.0%	0	0.0%	**0**	**0.0%**
	Internet	17	24.6%	2	12.5%	0	0.0%	**19**	**19.8%**
	Brothel	0	0.0%	0	0.0%	0	0.0%	**0**	**0.0%**
	Sex on premises venue/sauna	7	10.1%	0	0.0%	0	0.0%	**7**	**7.3%**
	Other	23	33.3%	3	18.8%	2	18.2%	**28**	**29.2%**
	Missing/unknown	22	31.9%	11	68.8%	9	81.8%	**42**	**43.8%**
Mode of transmission	Vaginal intercourse	4	5.8%	12	75.0%	9	81.8%	**25**	**26.0%**
	Anal intercourse	43	62.3%	1	6.3%	0	0.0%	**44**	**45.8%**
	Oral sex	46	66.7%	5	31.3%	1	9.1%	**52**	**54.2%**
	Other	1	1.4%	0	0.0%	0	0.0%	**1**	**1.0%**
	Unknown	0	0.0%	0	0.0%	0	0.0%	**0**	**0.0%**

Notes: Reasons for presentation and modes of transmission are not mutually exclusive
Only enhanced surveillance forms with behavioural and demographic characteristics identified were included

5 Donovanosis

Key points

- A total of four donovanosis notifications were reported from 2005 to 2014.
- Three cases were acquired in WA among Aboriginal people from remote areas of WA.

5.1 Trends over time

There were a total of four donovanosis notifications from 2005 to 2014. In 2005, there was one female and one male case acquired in WA among Aboriginal people in the 35 to 54 year age group from remote areas of WA. In 2012, there was one case of a non-Aboriginal male in the 20 to 24 year age group who resided in the Perth metropolitan area. The infection was reported to have been acquired in WA from a source who was probably infected overseas and the clinical presentation of this case was not typical of donovanosis. In 2014, there was one case of an Aboriginal female in the 30 to 35 year age group who resided in a remote area of WA. The infection was reported to have been acquired in WA and no source was able to be identified.

6 Chancroid

Key points

- A total of three chancroid notifications were reported from 2005 to 2014.
- One notification (Aboriginal female) was acquired in WA and two (non-Aboriginal males) from overseas.

6.1 Trends over time

Chancroid infection is rare in WA, with only three notifications from 2005 to 2014. Two cases were acquired overseas among non-Aboriginal males in the 25 to 49 year age group who resided in the Perth metropolitan area. The third case was acquired in WA by an Aboriginal female in the 25 to 29 year age group from a remote area of WA.

7 HIV/AIDS

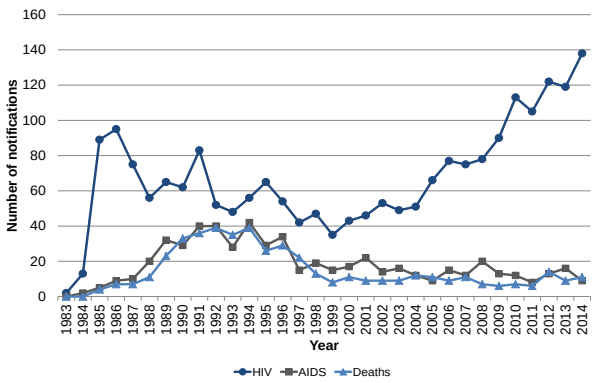
Key points

- 138 HIV infections were notified in 2014, the highest number on record in WA.
- In the 2010 to 2014 period the number of HIV notifications among MSM increased by 67% and heterosexually acquired HIV increased by 42%, compared to the 2005 to 2009 period.
- Newly-acquired HIV in MSM increased to 52% of cases in the 2010 to 2014 period.

7.1 Trends over time

Since the first WA HIV notification in 1983, a total of 2,164 infections have been notified up to the end of 2014, including 577 AIDS cases (27%) and 473 deaths (22%) among people living with HIV infection (Figure 7.1). The annual number of HIV notifications in WA more than doubled over the last decade from 66 cases in 2005 to 138 cases in 2014, the highest annual number reported in WA. AIDS notifications and deaths among HIV-infected persons have remained low and stable since the late 1990s (Figure 7.1).

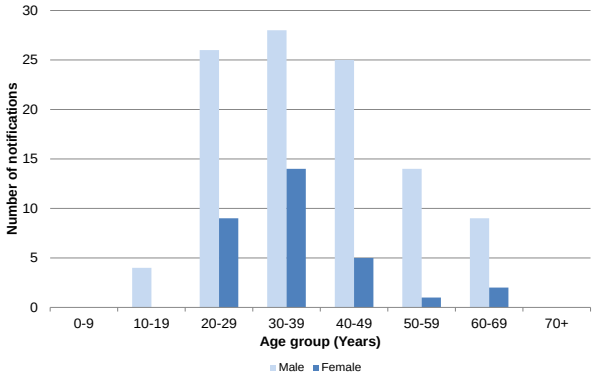
Figure 7.1 Number of notifications for HIV, AIDS and deaths in persons infected with HIV, WA 1983 to 2014



7.2 Distribution by sex and age

Of the 2,164 HIV notifications reported since 1983, 1,764 were male, 393 were female and seven were transgender persons, with a male to female notification ratio of 4.5:1 and a median age of 35 years (range: less than one to 78 years). In 2014, there were 106 males, 31 females and one transgender person with HIV notified in WA (male to female notification ratio of 3.4:1). From 2010 to 2014, the age-standardised HIV notification rate for males increased by 25% (6.5 to 8.3 notifications per 100,000 population), in contrast to a 26% decrease reported in the age-standardised rate for females (3.4 to 2.5 notifications per 100,000 population). The median age of HIV cases notified in 2014 was 35 years, ranging from 12 years (vertical acquisition overseas) to 70 years. The median age for males was four years older than for females (38 vs. 34 years) (Figure 7.2).

Figure 7.2 Number of HIV notifications by age group and sex, WA, 2014



7.3 Notifications by Aboriginality

Between 2010 and 2014, there were a total of 10 HIV notifications among Aboriginal people. The number of cases ranged between zero and five cases per year. In 2014, there were three HIV notifications among Aboriginal people. Between 2010 and 2014, the male to female notification ratio was 0.7:1 for Aboriginal people and 3.0:1 for non-Aboriginal people. Over the same period, the majority of non-Aboriginal cases (87%; n=512) were metropolitan residents whereas Aboriginal cases were evenly distributed between metropolitan (50%; n=5) and non-metropolitan areas (50%; n=5).

7.4 Exposure category

Between 2010 and 2014, almost half of all HIV notifications were heterosexually acquired (49%), closely followed by HIV notifications in MSM (45%) (Table 7.1).

This trend was not observed nationally, where MSM comprised the majority of new HIV diagnoses between 2009 and 2013 (67%), followed by heterosexual contact (25%) [7]. However, in the 2010 to 2014 period the number of HIV notifications among MSM in WA increased by 67% compared to the previous five-year period. Over the same period, HIV notifications in people reporting heterosexual contact increased by 42% (Table 7.1).

7.5 Place of acquisition

Between the 2005 to 2009 and 2010 to 2014 periods, the number of overseas-acquired and Australian-acquired cases both increased (by 56% and 49% respectively) (Table 7.2). Most overseas-acquired cases from the 2010 to 2014 period reported acquisition in either South-East Asia or Sub-Saharan Africa (Table 7.2).

In the 2010 to 2014 period, most cases who acquired HIV in Sub-Saharan Africa were born in that region (90%; n=93) and acquired HIV through heterosexual contact (88%; n=82).

Over the same period, most South-East Asian acquired cases reported heterosexual contact (76%; n=102), most of whom were Australian-born males (34%; n=35), or females born in South-East Asia (33%; n=34).

Australian-acquired HIV notifications from the 2010 to 2014 period were predominately among MSM (74%; n=197), of whom the majority were born in Australia (60%; n=118).

7.6 Newly acquired HIV and late diagnosis

A case is classified as newly acquired HIV infection if a negative HIV test result or symptoms consistent with HIV seroconversion illness is reported in the 12 months prior to diagnosis. A late HIV diagnosis is a case of unknown infection duration and a CD4+ count, closest to the time of diagnosis, of less than 350 cells/µL. Cases previously diagnosed with HIV overseas were excluded from all analyses of newly acquired HIV and late HIV diagnosis.

Between the 2005 to 2009 and 2010 to 2014 periods, there was a notable increase in the number (49 to 123 cases) and proportion (33% to 52%) of MSM HIV cases with newly acquired infection. The proportion of heterosexually acquired cases with newly acquired HIV was lower compared to MSM, remaining stable at 13% of cases over both reporting periods (23 to 27cases).

Late HIV diagnosis among MSM decreased from 28% (n=42) of all MSM HIV cases in 2005 to 2009 to 17% (n=40) of cases in the 2010 to 2014 period. The proportion of heterosexually acquired cases with late diagnosis saw a slight decrease over the two periods (46%; n=80 vs. 43%; n=88) but continued to remain higher in comparison to late diagnoses in MSM HIV notifications.

7.7 HIV testing

The HIV testing rate remained stable from 2009 to 2011, before increasing by 14% from 2011 to 2012 (52 to 59/1,000 population). This followed the introduction of routine screening of asylum seekers at the Christmas Island IDC in 2012. The testing rate then remained stable in 2013 (58/1,000 population) before decreasing by 12% to 51/1,000 population in 2014. This followed changes in immigration policies in 2013 that dramatically decreased the number of people transferred to the Christmas Island IDC. From 2009 to 2014 the HIV test positivity rate fluctuated between 0.08% and 0.1%.

In 2014, the highest testing rate was observed in females aged 15 to 24 years (101/1,000 population), while the highest test positivity rate was observed in males

aged 25 years or older (0.2%). Overall, the testing rate among females was 32% higher than the rate among males (58 vs. 44/1,000 population), while the positivity rate among males was more than four-times higher than the rate among females (0.19 vs. 0.04%).

Figure 7.3 HIV testing rate, notification rate and test positivity rate by age group, WA, 2009 to 2014

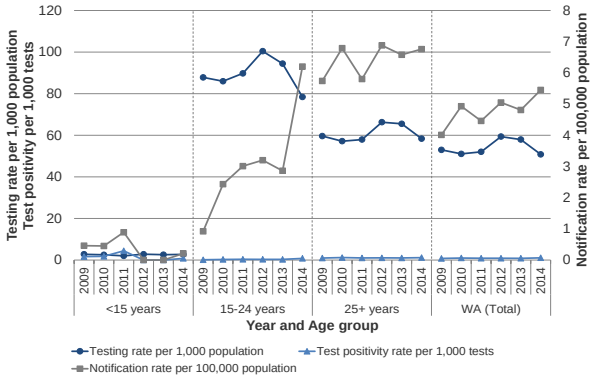
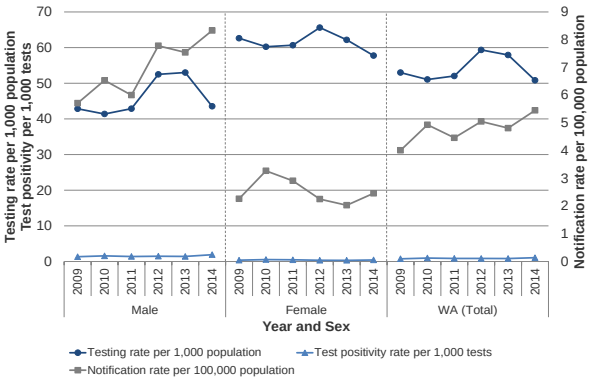


Figure 7.4 HIV testing rate, notification rate and test positivity rate by sex, WA, 2009 to 2014



7.8 Disease prevention and control strategies

The DoH continues to support and fund a comprehensive approach to HIV prevention and control. Education programs and prevention strategies targeting priority groups (including social marketing, peer education, use of social media, needle and syringe programs, and provision of condoms) are provided primarily through non-government organisations, e.g. WAAC, MMRC and the WA Substance Users' Association (WASUA).

WAAC has actively promoted the *End to HIV in WA* campaign which aims to increase HIV testing and uptake of treatment, and promote safer sex. Specific activities in this campaign have included targeted safer sex health promotion for MSM via a geosocial networking application, and a sex and travel project promoted online and at airports.

HIV and STI testing and clinical services targeting MSM are provided by sexual health clinics, some general practitioners, and WAAC's community-based M Clinic. A HIV rapid point-of-care test (rapid test) was trialled at the M Clinic and the Royal Perth Hospital Sexual Health Clinic as part of a national trial to determine the viability and uptake of rapid testing. Access to non-occupational post-exposure prophylaxis (nPEP) to prevent HIV infection is promoted by WAAC, and provided through hospital clinical services.

CDCD continues to focus on HIV and mobile populations, and has hosted a symposium that contributed towards the *HIV and Mobility in Australia: Road Map for Action*[8]. CDCD staff also provide a state-wide intensive case management program for HIV-infected people who knowingly put others at risk of infection.

Workforce development programs supported by CDCD aimed at general practitioners and other healthcare providers are facilitated by the Australasian Society for HIV Medicine (ASHM), WAAC, and hospital clinical services.

CDCD continues to support ongoing national research projects (e.g. Perth Gay Community Periodic Survey, HIV Seroconversion Study, and participation in a national rapid testing trial) and the Sexual Health and Blood-borne Viruses Applied Research and Evaluation Network (SiREN) coordinated by Curtin University.

Table 7.1 Number and proportion of persons notified with HIV infection by exposure category and sex, WA, 2005 to 2014

Exposure category	Year							
	2005-2009			2010-2014			2014	
	Number	Percent	Average	Number	Percent	Average	Number	Percent
Male								
MSM	161	55.3%	32	269	60.9%	54	76	71.7%
Heterosexual	118	40.5%	24	154	34.8%	31	26	24.5%
IDU	5	1.7%	1	6	1.4%	1	1	0.9%
Vertical	2	0.7%	0	4	0.9%	1	1	0.9%
Recipient of blood products	1	0.3%	0	2	0.5%	0	0	0.0%
Needlestick/splash	0	0.0%	0	0	0.0%	0	0	0.0%
Unknown/other	4	1.4%	1	7	1.6%	1	2	1.9%
Male Total	**291**	**100.0%**	**58**	**442**	**100.0%**	**88**	**106**	**100.0%**
Female								
Heterosexual	87	91.6%	17	137	89.0%	27	27	87.1%
IDU	1	1.1%	0	3	1.9%	1	1	3.2%
Vertical	5	5.3%	1	5	3.2%	1	1	3.2%
Recipient of blood products	1	1.1%	0	1	0.6%	0	0	0.0%
Needlestick/splash	0	0.0%	0	1	0.6%	0	0	0.0%
Unknown/other	1	1.1%	0	7	4.5%	1	2	6.5%
Female Total	**95**	**100.0%**	**19**	**154**	**100.0%**	**31**	**31**	**100.0%**
Total notifications*								
MSM	161	41.7%	32	269	45.1%	54	76	55.1%
Heterosexual	205	53.1%	41	291	48.7%	58	53	38.4%
IDU	6	1.6%	1	9	1.5%	2	2	1.4%
Vertical	7	1.8%	1	9	1.5%	2	2	1.4%
Recipient of blood products	2	0.5%	0	3	0.5%	1	0	0.0%
Needlestick/splash	0	0.0%	0	1	0.2%	0	0	0.0%
Unknown/other	5	1.3%	1	15	2.5%	3	5	3.6%
Grand Total	**386**	**100.0%**	**77**	**597**	**100.0%**	**119**	**138**	**100.0%**

Notes: MSM includes homosexual and bisexual men who also injected drugs
Average = the average number of cases notified each year in that period and subgroup
* Includes one transgender HIV notification in 2014

Table 7.2 Number and proportion of persons notified with HIV infection by country/region acquired and sex, WA, 2005 to 2014

Country/region HIV acquired	Year							
	2005-2009			2010-2014			2014	
	Number	Percent	Average	Number	Percent	Average	Number	Percent
Male								
Australia	151	51.9%	30	228	51.6%	46	63	59.4%
Overseas	139	47.8%	28	203	45.9%	41	39	36.8%
South-East Asia	61	21.0%	12	95	21.5%	19	21	19.8%
Europe	19	6.5%	4	22	5.0%	4	4	3.8%
Sub-Saharan Africa	45	15.5%	9	44	10.0%	9	4	3.8%
Other	14	4.8%	3	42	9.5%	8	10	9.4%
Not stated	1	0.3%	0	11	2.5%	2	4	3.8%
Male Total	**291**	**100.0%**	**58**	**442**	**100.0%**	**88**	**106**	**100.0%**
Female								
Australia	28	29.5%	6	37	24.0%	7	6	19.4%
Overseas	65	68.4%	13	115	74.7%	23	24	77.4%
South-East Asia	24	25.3%	5	40	26.0%	8	8	25.8%
Europe	6	6.3%	1	7	4.5%	1	2	6.5%
Sub-Saharan Africa	28	29.5%	6	59	38.3%	12	12	38.7%
Other	7	7.4%	1	9	5.8%	2	2	6.5%
Not stated	2	2.1%	0	2	0	0	1	3.2%
Female Total	**95**	**100.0%**	**19**	**154**	**100.0%**	**31**	**31**	**100.0%**
Total notifications*								
Australia	179	46.4%	36	266	44.6%	53	70	50.7%
Overseas	204	52.8%	41	318	53.3%	64	63	45.7%
South-East Asia	85	22.0%	17	135	22.6%	27	29	21.0%
Europe	25	6.5%	5	29	4.9%	6	6	4.3%
Sub-Saharan Africa	73	18.9%	15	103	17.3%	21	16	11.6%
Other	21	5.4%	4	51	8.5%	10	12	8.7%
Not stated	3	0.8%	1	13	2.2%	3	5	3.6%
Grand Total	**386**	**100.0%**	**77**	**597**	**100.0%**	**119**	**138**	**100.0%**

Notes: Average = the average number of cases notified each year in that period and subgroup
* Includes one transgender HIV notification in 2014

8 Hepatitis B

Key points

- In comparison to the previous five-year average, the number of newly acquired hepatitis B notifications was 20% lower and the number of unspecified hepatitis B notifications was comparable.
- Notification rates for newly acquired and unspecified hepatitis B were highest in the 30 to 34 year age group. The testing rate was highest in the 15 to 24 year age group.
- In comparison to other parts of the state, notification rates were higher in the North metropolitan region (newly acquired) and the South metropolitan region (unspecified). The testing rate was higher in the Kimberley region.
- In 2014, there was only one notification of newly acquired hepatitis B among Aboriginal people. The Aboriginal to non-Aboriginal rate ratio for unspecified infections was 2:1.
- The majority of newly acquired infections were acquired in WA and the majority of unspecified hepatitis B infections were acquired overseas.
- In comparison to the national crude rates, the WA newly acquired hepatitis B crude rate was 25% lower and the unspecified hepatitis B crude rate was 12% lower.

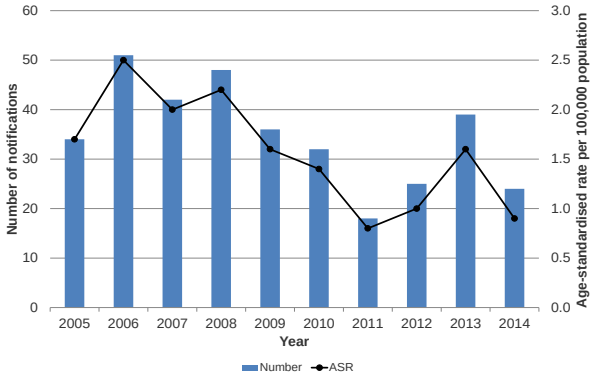
Hepatitis B notifications have been classified into 'newly acquired' (evidence of infection having been acquired in the 24 months prior to diagnosis) and 'unspecified' (infections of unknown duration).

8.1 Newly acquired hepatitis B

8.1.1 Trends over time

The number of newly acquired hepatitis B notifications in the last ten years reached their lowest in 2011 (n=18). The number of notifications in 2014 (n=24) was 38% lower than the number of notifications in 2013 (n=39) and 20% lower than the 2009 to 2013 five-year average of 30 notifications per year (Figure 8.1). Newly acquired hepatitis B notifications represented 4% of total hepatitis B notifications in 2014 (Appendix Figure 10[2]).

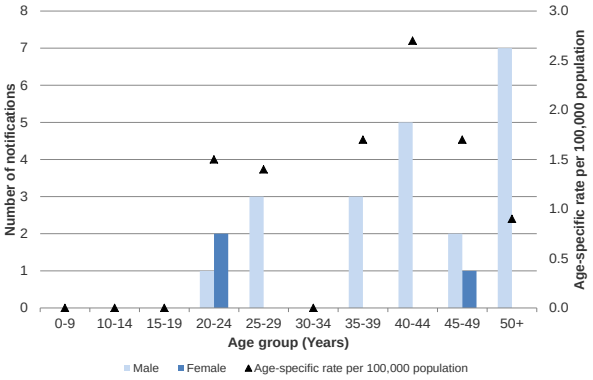
Figure 8.1 Number and ASR of newly acquired hepatitis B notifications, WA, 2005 to 2014



8.1.2 Distribution by age and sex

In 2014, 63% of newly acquired hepatitis B notifications were recorded among people aged 40 years or older, while the highest rate was observed in people aged 30 to 34 years (Figure 8.2). From 2005 to 2014, more males than females were notified with newly acquired hepatitis B each year (Appendix Figure 11[2]).

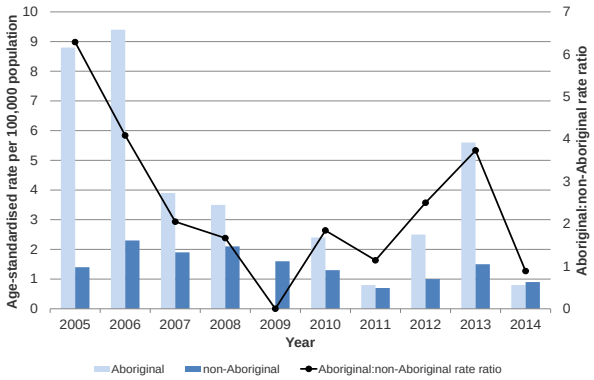
Figure 8.2 Number of newly acquired hepatitis B notifications by sex and overall age-specific rate, WA, 2014



8.1.3 Notifications by Aboriginality

The Aboriginality of all newly acquired hepatitis B notifications has been known in the past ten years, with the exception of 2005 and 2010, when one case each of unknown Aboriginality was reported. Since 2005, rates of newly acquired hepatitis B have been consistently higher among Aboriginal people compared to non-Aboriginal people, except in 2009, when no Aboriginal cases were notified (Figure 8.3). In 2014, there was only one notification of newly acquired hepatitis B reported among Aboriginal people. Among non-Aboriginal people, the highest rate was reported from the North metropolitan region (1.2/100,000 population) (Appendix Table 37[2]).

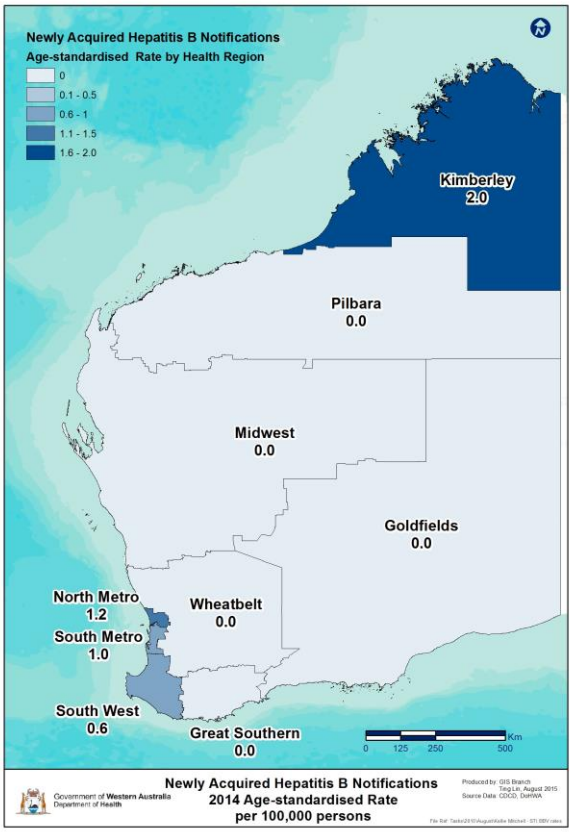
Figure 8.3 ASR of newly acquired hepatitis B notifications by Aboriginality, WA, 2005 to 2014



8.1.4 Regional distribution

The highest newly acquired hepatitis B notification rate in 2014 was reported in the North metropolitan region, where the rate was 33% higher than the WA rate (1.2/100,000 population vs. 0.9/100,000 population state-wide). No notifications were reported from the Goldfields, Great Southern, Midwest, Pilbara or Wheatbelt regions (Map 8.1 and Appendix Table 34[2]).

Map 8.1 ASR of newly acquired hepatitis B notifications by health region, WA, 2014



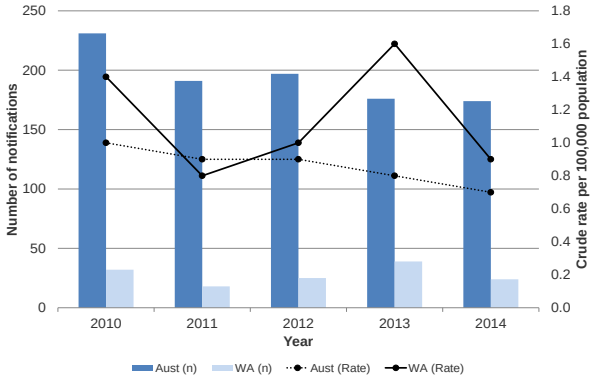
8.1.5 Place of acquisition

Of the 20 newly acquired hepatitis B notifications in 2014 that had place of acquisition recorded, 75% were reported as having been acquired in WA. This trend was equally apparent in males and females, although a larger proportion of males (29%) acquired their infections overseas than females (0%) (Appendix Table 39[2]).

8.1.6 Interstate comparisons

In 2014, the crude rate of newly acquired hepatitis B notifications in WA (0.9/100,000 population) was 25% lower than the highest rate, reported in the NT (1.2/100,000 population), and 29% higher than that reported nationally (0.7/100,000 population) (Figure 8.4 and Appendix Table 40[2]).

Figure 8.4 Number and crude rate of newly acquired hepatitis B notifications, WA and Australia, 2010 to 2014



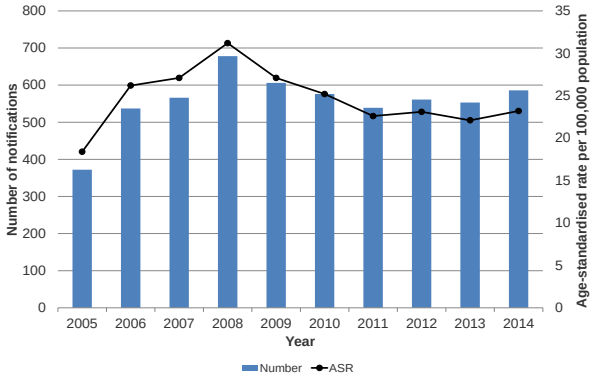
Note: Data sourced from NNDSS, extracted 28 July 2015

8.2 Unspecified hepatitis B

8.2.1 Trends over time

Unspecified hepatitis B notifications in WA reached a peak of 678 in 2008. The number of notifications in 2014 (n=586) was 6% higher than that reported in 2013 (n=553) and comparable to the 2009 to 2013 five-year average of 567 notifications per year (Figure 8.5 and Appendix Figure 10[2]).

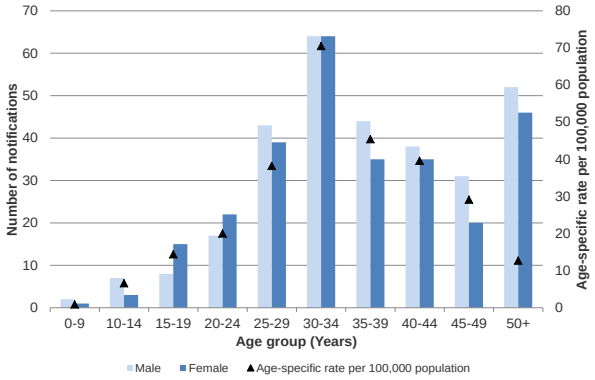
Figure 8.5 Number and ASR of unspecified hepatitis B notifications, WA, 2005 to 2014



8.2.2 Distribution by age and sex

In 2014, the highest number and rate of unspecified hepatitis B notifications occurred in people aged 30 to 34 years. From 2005 to 2015, more males than females were notified with unspecified hepatitis B each year (Figure 8.6 and Appendix Figure 12[2]).

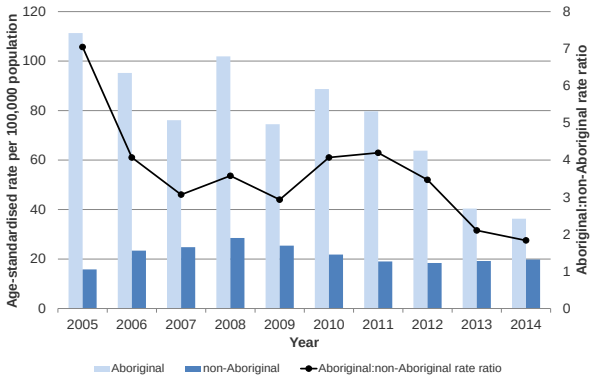
Figure 8.6 Number of unspecified hepatitis B notifications by sex and overall age-specific rate, WA, 2014



8.2.3 Notifications by Aboriginality

In 2014, 4% of unspecified hepatitis B notifications were reported in Aboriginal people, 83% in non-Aboriginal people and 13% of notifications were of unknown Aboriginal status. The Aboriginal to non-Aboriginal rate ratio fluctuated from 2005 to 2011, and in 2014 it was the lowest reported in the previous ten-year period (Aboriginal to non-Aboriginal rate ratio=1.8:1) (Figure 8.7). In 2014, the highest unspecified hepatitis B rate among Aboriginal people was reported from the Goldfields region and among non-Aboriginal people the highest rate was reported from the South metropolitan region (131/100,000 and 22/100,000 population respectively) (Appendix Table 37[2]).

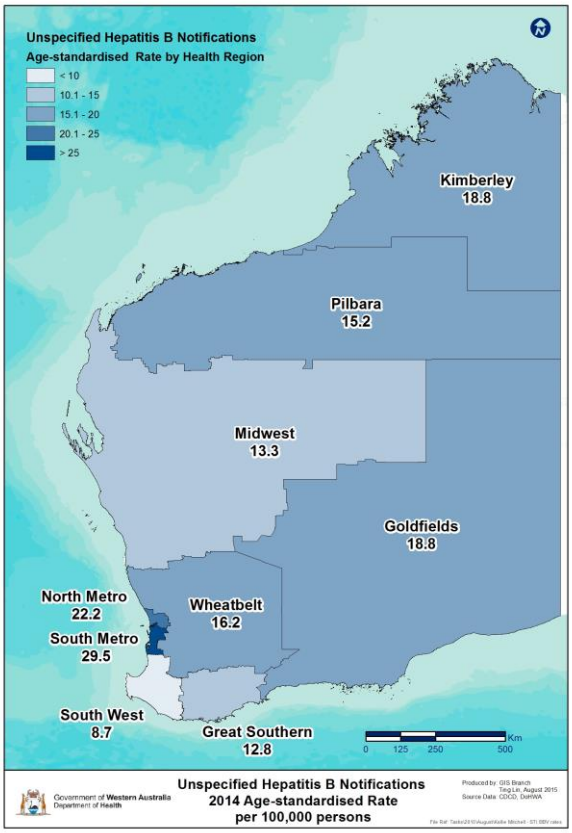
Figure 8.7 ASR of unspecified hepatitis B notifications by Aboriginality, WA, 2005 to 2014



8.2.4 Regional distribution

The highest unspecified hepatitis B notification rate in 2014 was reported from the South metropolitan region (Map 8.2).

Map 8.2 ASR of unspecified hepatitis B notifications by health region, WA, 2014



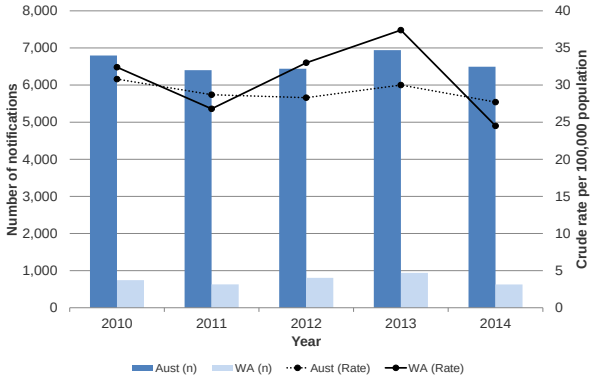
8.2.5 Place of acquisition

Of the 307 unspecified hepatitis B notifications in 2014 that had place of acquisition recorded, 89% were reported as having been acquired overseas and 10% in WA. These trends were equally apparent in males and females (Appendix Table 39[2]).

8.2.6 Interstate comparisons

In 2014, the crude rate of unspecified hepatitis B notifications in WA (24.5/100,000 population) was 60% lower than the highest rate, reported in the NT (61.3/100,000 population), and 12% lower than that reported nationally (27.7/100,000 population) (Figure 8.8 and Appendix Table 41[2]).

Figure 8.8 Number and crude rate of unspecified hepatitis B notifications, WA and Australia, 2010 to 2014



Note: Data sourced from NNDSS, extracted 28 July 2015

8.3 Enhanced hepatitis B surveillance

In 2014, enhanced surveillance forms were sent to the diagnosing doctors of all newly acquired hepatitis B infections in WA. Forms were completed for 88% (n=22/25) of notifications: 100% (n=1/1) of Aboriginal, and 91% (n=21/23) of non-Aboriginal notifications (Table 8.1).

Overall, having signs or symptoms of hepatitis was the most common reason for hepatitis B testing. Half of the cases reported no history of injecting drug use while 32% reported a history of injecting drug use in the previous two years. Unprotected casual sex with a person of the opposite sex was reported among 41% of cases (Table 8.1). More than half (55%) of cases were born in Australia and acquired the infection in Australia and 14% were born overseas and acquired the infection in Australia.

8.4 Hepatitis B testing

The hepatitis B testing rate remained stable from 2009 to 2011 and increased 10% from 2011 to 2012 (44 to 49/1,000 population). This followed the introduction of routine screening of asylum seekers at the Christmas Island IDC in 2012. The testing rate then remained stable to 2013 before decreasing by 17% in 2014. This followed changes in immigration policies in 2013 that dramatically decreased the number of people transferred to the Christmas Island IDC. The hepatitis B

notification rate decreased 10% from 2009 to 2011 (31 to 28/100,000 population), increased 43% to 2013 (40/100,000 population) before decreasing 35% to 2014 (26/100,000 population). The hepatitis B test positivity rate fluctuated from 2009, reaching a peak in 2013 (0.57%) before decreasing by 43% in 2014 (0.33%) (Figure 8.9). This indicates that the decrease in notifications from 2013 was largely due to decreased testing.

In 2014, the highest testing rate was observed in people aged 15 to 24 years (53/1,000 population) while the highest test positivity rate was observed in people aged 25 years or older (0.40%) (Figure 8.9). The testing rate among females was 39% higher than the rate among males (46 vs. 33/1,000 population), while the positivity rate among males was 82% higher than the rate among females (0.44 vs. 0.24%) (Figure 8.10).

Figure 8.9 Hepatitis B testing rate, notification rate and test positivity rate by age group, WA, 2009 to 2014

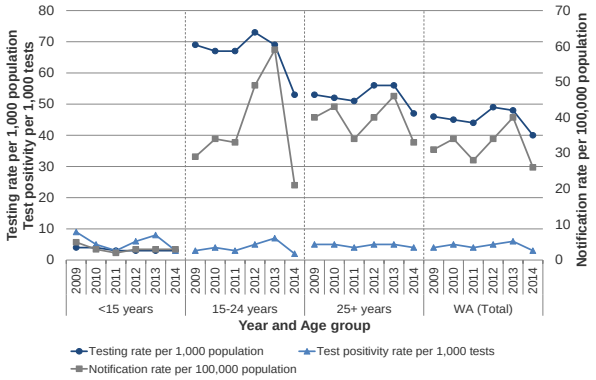
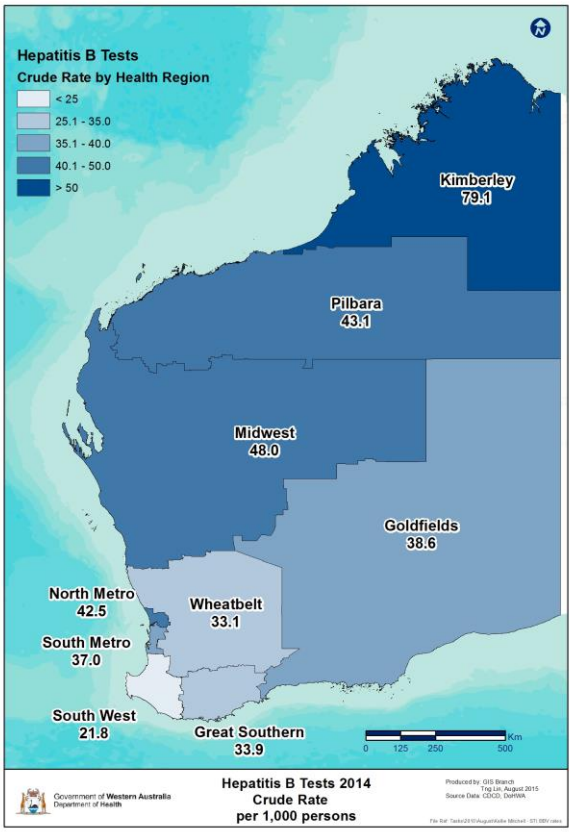


Figure 8.10 Hepatitis B testing rate, notification rate and test positivity rate by sex, WA, 2009 to 2014

In 2014, the hepatitis B testing rate in the Kimberley region was double the state-wide rate (Map 8.3). This reflects disease incidence and policy and programs that encourage testing in remote regions.

Map 8.3 Crude rate of hepatitis B testing by health region, WA, 2014



8.5 Outbreaks and other investigations

No significant outbreaks or clusters of hepatitis B infections were reported in 2014.

8.6 Disease prevention and control strategies

Hepatitis B vaccination has been provided to infants in accordance with the National Immunisation Program Schedule since 2000. The DoH-funded hepatitis B vaccination is also available through general practitioners for people diagnosed with hepatitis C and through targeted services for at-risk adults[9]. Household and sexual contacts of people with chronic hepatitis B can access publically funded hepatitis B vaccine through their general practitioner[10].

In addition to vaccination, HepatitisWA is a non-government organisation supported by the DoH to undertake hepatitis B community development work, particularity with culturally and linguistically diverse communities. There is a hepatitis B education program for health professionals also available online (http://hepatitis.ecu.edu.au/).

A *Chronic Hepatitis B and C Primary Care Pathway* was developed to assist general practitioners in the assessment and management of patients with chronic hepatitis B and/or C. The resource has been distributed to all general practitioners in WA and is available online (http://ww2.health.wa.gov.au/~/media/Files/Corporate/general%20documents/Sexual%20Health/PDF/Chronic_hepatitis_pathway.ashx). This resource has also been adapted to develop a ‘handy card’ to promote patient-driven discussion around hepatitis B and/or C.

Table 8.1 Behavioural characteristics of people notified with hepatitis B, WA, 2014

Behavioural and demographic characteristics		Total (n = 22)	
		Number	Percent
Reason for testing	Signs/symptoms of hepatitis	16	72.7%
	Prison screen	0	0.0%
	Sexual health screen	0	0.0%
	Blood or organ donor	1	4.5%
	Drug/alcohol program screen	2	9.1%
	Healthcare worker screen	0	0.0%
	Antenatal screen	0	0.0%
	Pre-operative screen	0	0.0%
	Abnormal LFT	12	54.5%
	Occupational exposure	0	0.0%
	Patient request	2	9.1%
	Research or study	0	0.0%
	Other reason	2	9.1%
Risk factors	Injecting drug use	8	36.4%
	Unprotected casual sex with person of same sex	1	4.5%
	Unprotected casual sex with person of opposite sex	9	40.9%
	Same sex partner with HCV	1	4.5%
	Opposite sex partner with HCV	2	9.1%
	Household contact with HCV	0	0.0%
	Needlestick/biohazardous injury in healthcare worker	0	0.0%
	Needlestick/biohazardous injury in non-healthcare worker	0	0.0%
	Health care worker with no documented exposure	0	0.0%
	Non-occupational needlestick/biohazardous injury	0	0.0%
	Blood products/tissues in Australia	0	0.0%
	Blood products/tissues overseas	0	0.0%
	Organ transplant	0	0.0%
	Dialysis	0	0.0%
	Major dental work	1	4.5%
	Acupuncture	0	0.0%
	Perinatal transmission	0	0.0%
	Surgical work	1	4.5%
	Tattoo	1	4.5%
	Ear or body piercing	1	4.5%
	Imprisonment	0	0.0%
	Other reason	3	13.6%
	None identified	2	9.1%

Notes: Reasons for testing and risk factors are not mutually exclusive
Only enhanced surveillance forms with behavioural and demographic characteristics identified were included

9 Hepatitis C

Key points

- Newly acquired hepatitis C notifications reached a ten-year high in 2014. The number of unspecified hepatitis C notifications was comparable to the previous five-year average.
- Notification rates for newly acquired and unspecified hepatitis C were highest in the 20 to 24 and 30 to 34 year age groups respectively. The testing rate was highest in the 15 to 24 year age group.
- In comparison to other parts of the state, notification rates for both newly acquired and unspecified infections were higher in the Great Southern region. The testing rate was higher in the Kimberley region.
- Aboriginal to non-Aboriginal rate ratios for newly acquired and unspecified infections were 22:1 and 7:1 respectively.
- The majority of newly acquired and unspecified hepatitis C infections were acquired in WA.
- In comparison to the national crude rates, the WA newly acquired hepatitis C crude rate was almost three-times higher and the unspecified hepatitis C crude rate was 11% lower.
- There were marked differences between Aboriginal and non-Aboriginal people in terms of reasons for testing and risk factors for hepatitis C.

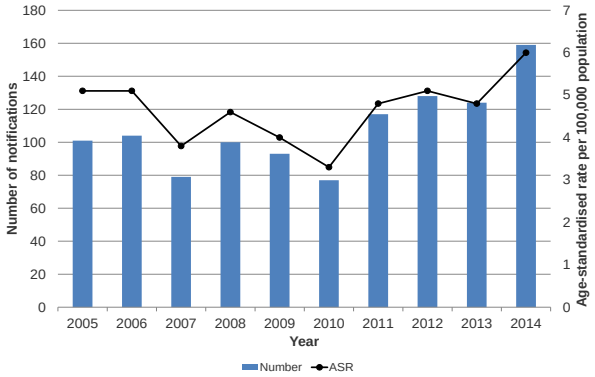
Hepatitis C notifications have been classified into 'newly acquired' (evidence of infection having been acquired in the 24 months prior to diagnosis) and 'unspecified' (infections of unknown duration).

9.1 Newly acquired hepatitis C

9.1.1 Trends over time

The number of newly acquired hepatitis C notifications reached a ten-year low of 77 in 2010 before peaking at 159 notifications in 2014. The number of notifications in 2014 was 28% greater than the number of notifications in 2013 (n=124) and 47% higher than the 2009 to 2013 five-year average of 108 notifications per year (Figure 9.1). Newly acquired hepatitis C notifications represented 14% of total hepatitis C notifications in 2014 (Appendix Figure 15[2]).

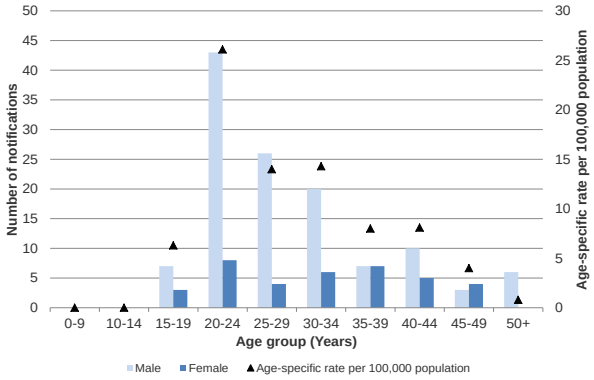
Figure 9.1 Number and ASR of newly acquired hepatitis C notifications, WA, 2005 to 2014



9.1.2 Distribution by age and sex

In 2014, the highest number and rate of newly acquired hepatitis C notifications occurred in people aged 20 to 24 years (Figure 9.2). From 2005 to 2014, more males than females were notified with newly acquired hepatitis C each year (Appendix Figure 16[2]).

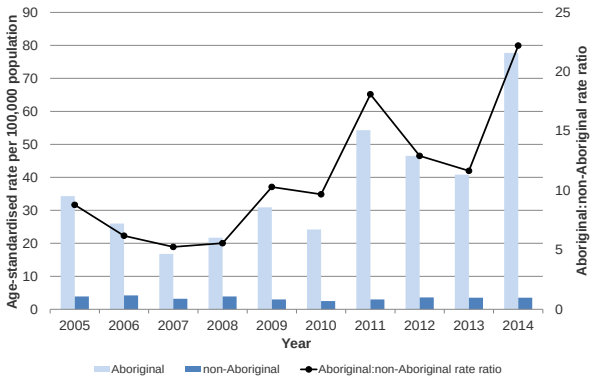
Figure 9.2 Number of newly acquired hepatitis C notifications by sex and overall age-specific rate, WA, 2014



9.1.3 Notifications by Aboriginality

The Aboriginality of all newly acquired hepatitis C notifications has been known since 2005 with only a few exceptions (Appendix Figure 18[2]). The Aboriginal to non-Aboriginal rate ratio fluctuated over the period between 2005 and 2013 before reaching a ten-year high in 2014 (Aboriginal to non-Aboriginal rate ratio=22.2:1) (Figure 9.3). In 2014, the highest newly acquired hepatitis C rates were reported in both Aboriginal and non-Aboriginal people from the Great Southern region (359 and 14/100,000 population respectively) (Appendix Table 46[2]).

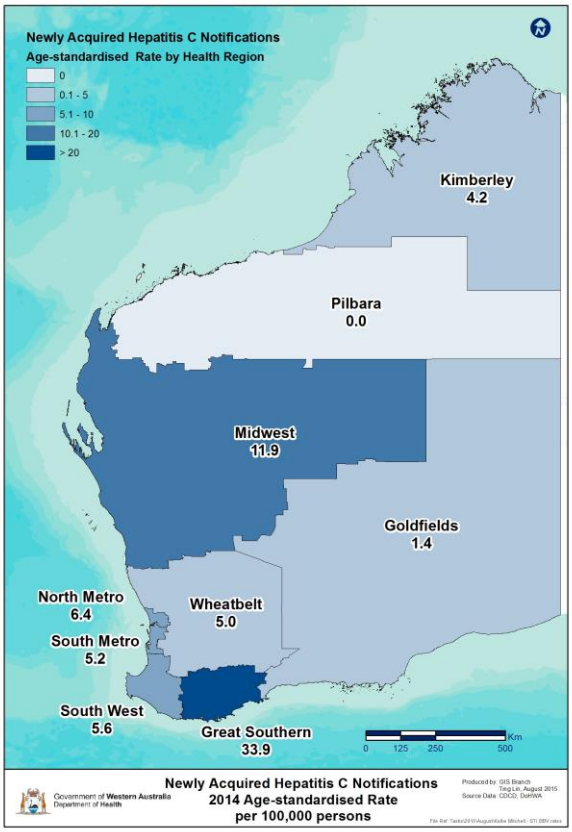
Figure 9.3 ASR of newly acquired hepatitis C notifications by Aboriginality, WA, 2005 to 2014



9.1.4 Regional distribution

The highest newly acquired hepatitis C notification rate in 2014 was reported from the Great Southern region, where the rate was almost six-times greater than the WA rate (34 vs. 6/100,000 population) (Map 9.1 and Appendix Table 43[2]). The majority of notifications from the Great Southern region were notified by the Department of Corrective Services (DCS).

Map 9.1 ASR of newly acquired hepatitis C notifications by health region, WA, 2014



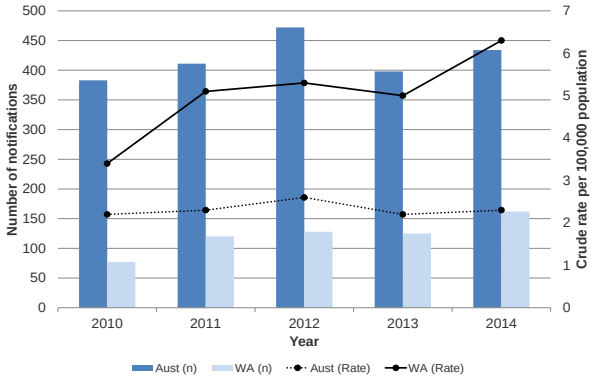
9.1.5 Place of acquisition

Of the 110 newly acquired hepatitis C notifications in 2014 that had place of acquisition recorded, 96% were reported as having been acquired in WA. This trend was equally apparent in males and females (Appendix Table 48[2]).

9.1.6 Interstate comparisons

It is important to note that all cases of hepatitis C in Queensland (QLD) are reported as unspecified, so limited comparisons can be made between jurisdictions and for the nation as a whole. In 2014, the crude newly acquired hepatitis C notification rate in WA was almost three-times the national crude rate (6.3 vs. 2.3/100,000 population (Figure 9.4). Excluding QLD, the crude newly acquired hepatitis C notification rate in WA in 2014 was the highest in Australia (Appendix Table 49[2]).

Figure 9.4 Number and crude rate of newly acquired hepatitis C notifications, WA and Australia, 2010 to 2014



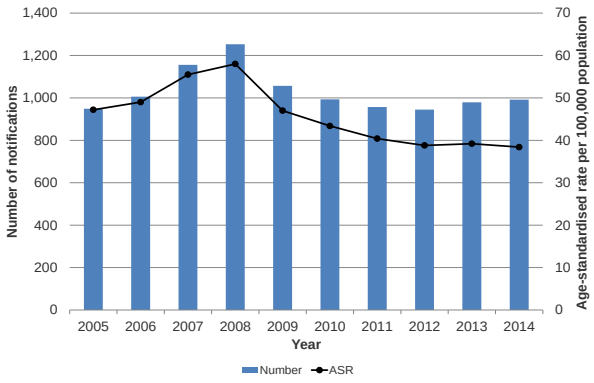
Note: Data sourced from NNDSS, extracted 28 July 2015

9.2 Unspecified hepatitis C

9.2.1 Trends over time

Unspecified hepatitis C notifications in WA reached a peak of 1,256 in 2008. The number of notifications in 2014 (n=992) was comparable to that reported in 2013 (n=979) and the 2009 to 2013 five-year average of 986 notifications per year (Figure 9.5).

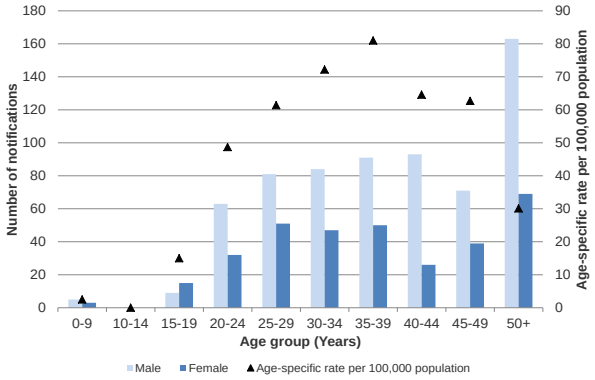
Figure 9.5 Number and ASR of unspecified hepatitis C notifications, WA, 2005 to 2014



9.2.2 Distribution by sex and age

While the highest number of unspecified hepatitis C notifications in 2014 occurred in people aged 50 years or over, the highest rate was observed in people aged 30 to 34 years (Figure 9.6). From 2005 to 2014, more males than females were notified with unspecified hepatitis C each year (Appendix Figure 17[2]).

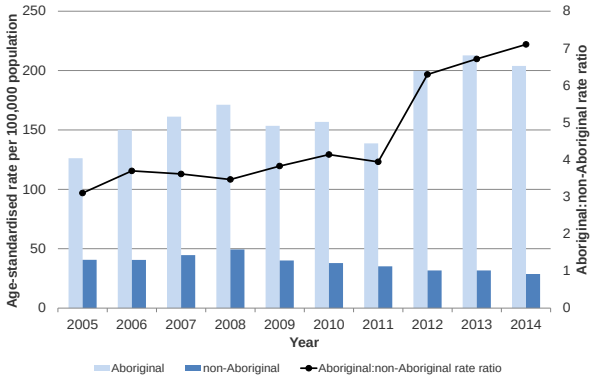
Figure 9.6 Number of unspecified hepatitis C notifications by sex and overall age-specific rate, WA, 2014



9.2.3 Notifications by Aboriginality

In 2014, 90% of unspecified hepatitis C notifications were identified by Aboriginality. The Aboriginal to non-Aboriginal rate ratio fluctuated from 2005 to 2011, and in 2014 it was the highest reported in the previous ten-year period (Aboriginal to non-Aboriginal rate ratio=7.1:1) (Figure 9.7). Among Aboriginal people, the highest unspecified hepatitis C rate in 2014 was observed in the South West region and among non-Aboriginal people the highest rate was in the Kimberley region (502 and 51/100,000 population respectively) (Appendix Table 46[2]).

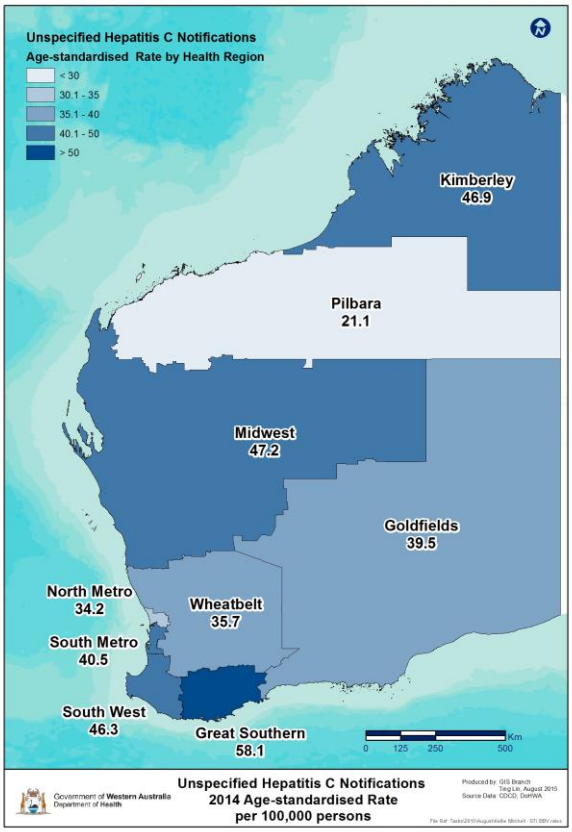
Figure 9.7 ASR of unspecified hepatitis C notifications by Aboriginality, WA, 2005 to 2014



9.2.4 Regional distribution

The highest unspecified hepatitis C notification rate in 2014 was reported from the Great Southern region (Map 9.2 and Appendix Table 44[2]).

Map 9.2 ASR of unspecified hepatitis C notifications by health region, WA, 2014



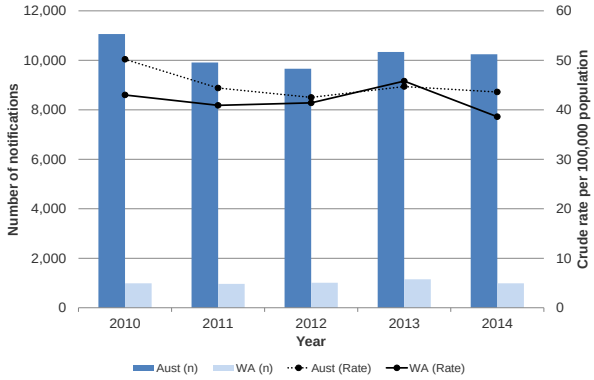
9.2.5 Place of acquisition

Of the 327 unspecified hepatitis C notifications in 2014 that had place of acquisition recorded, 73% were reported as having been acquired in WA, 15% overseas and 12% interstate. These trends were equally apparent in males and females (Appendix Table 48[2]).

9.2.6 Interstate comparisons

It is important to note that all cases of hepatitis C in QLD are reported as unspecified so limited comparisons can be made between jurisdictions and for the nation as a whole. In 2014, the crude unspecified hepatitis C notification rate in WA was 11% lower than the national crude rate (39 vs. 44/100,000 population) (Figure 9.8). Excluding QLD, the crude unspecified hepatitis C notification rate in WA in 2013 was the third lowest in Australia (Appendix Table 50[2]).

Figure 9.8 Number and crude rate of unspecified hepatitis C notifications, WA and Australia, 2010 to 2014



Note: Data sourced from NNDSS, extracted 28 July 2015

9.3 Enhanced hepatitis C surveillance

In 2014, enhanced surveillance forms were sent to the diagnosing doctors of all newly acquired hepatitis C infections and a randomly selected one-third of unspecified hepatitis C infections in WA. Forms were completed for 54% (n=86/159) of newly acquired infections and 20% (n=194/992) of unspecified infections. A completed form was received for 33% (n=77/236) of Aboriginal, and 25% (n=203/810) of non-Aboriginal notifications (Table 9.1).

Overall, having a history of risk factors was the most common reason for hepatitis C testing among both Aboriginal and non-Aboriginal people. A greater proportion of Aboriginal people were diagnosed with hepatitis C as part of voluntary prison entry testing while more non-Aboriginal people were diagnosed as a result of a sexual health screen or patient request. Injecting drug use was the most common hepatitis C risk factor for both Aboriginal and non-Aboriginal people. Overall, when the data were analysed for those people with at least one risk factor identified, 67% reported injecting drug use. However, when the data were limited to only those with 'yes' and 'no' responses to that question, 86% of cases reported a history of injecting drug use. A greater proportion of Aboriginal people had a history of imprisonment as a risk factor for hepatitis C while more non-Aboriginal people had a history of household contact with hepatitis C (Table 9.1).

9.4 Hepatitis C testing

The hepatitis C testing rate remained stable from 2009 to 2011 and increased 10% from 2011 to 2012 (51 to 56/1,000 population). This followed the introduction of routine screening of asylum seekers at the Christmas Island IDC in 2012. The testing rate then remained stable to 2013 before decreasing 13% to 2014 (48/100,000 population). This followed changes in immigration policies in 2013 that dramatically decreased the number of people transferred to the Christmas Island IDC. The hepatitis C notification rate decreased 10% from 2009 to 2011 (51 to 46/100,000 population), increased 13% to 2013 (52/100,000 population), then decreased 12% to 2014 (46/100,000 population). From 2009 to 2013, the hepatitis C test positivity rate fluctuated, with an overall increase of 19% (0.55 to 0.65%), then decreased 7% to 2014 (0.60%) (Figure 9.9). This indicates that the decrease in notifications from 2013 was largely due to decreased testing.

In 2014, the highest testing rate was observed in people aged 15 to 24 years (67/1,000 population) while the highest test positivity rate was observed in people aged 25 years or older (0.62%) (Figure 9.9). The testing rate among females was 44% higher than the rate among males (56 vs. 39/1,000 population), while the positivity rate among males was more than three-times higher than the rate among females (1.0 vs. 0.3%) (Figure 9.10).

Figure 9.9 Hepatitis C testing rate, notification rate and test positivity rate by age group, WA, 2009 to 2014

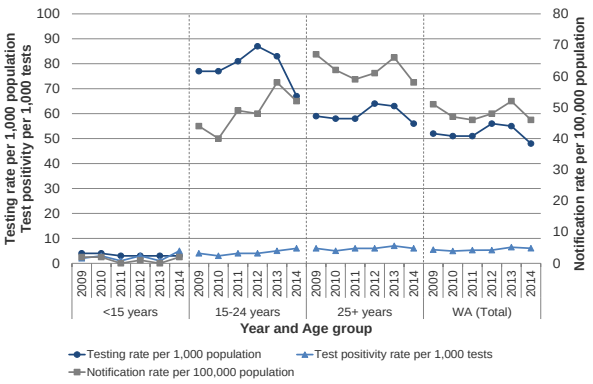
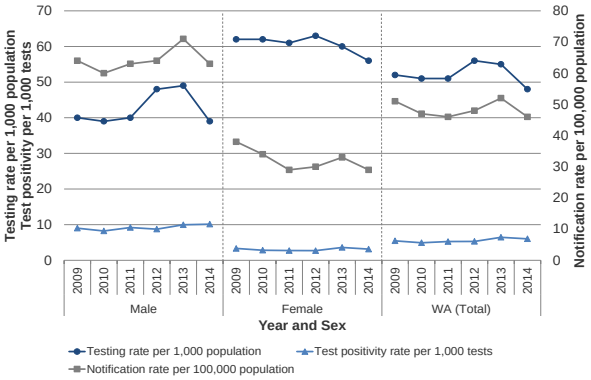
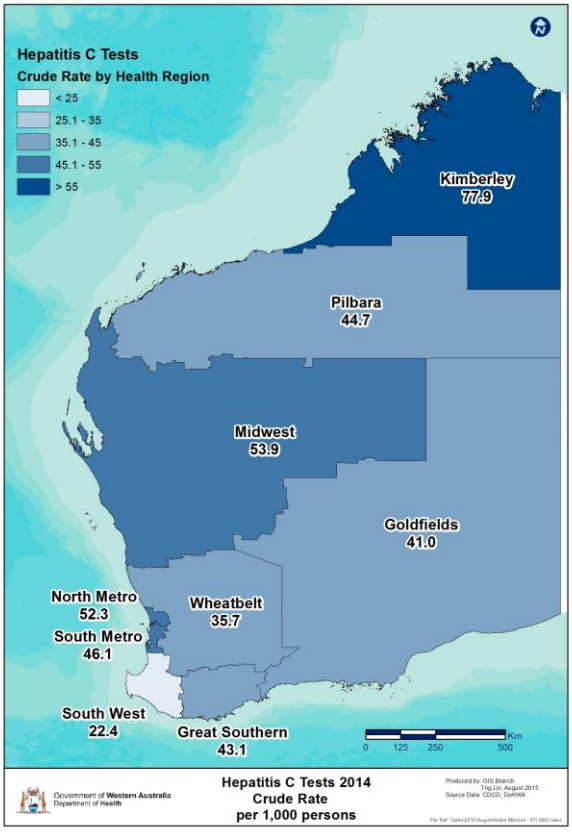


Figure 9.10 Hepatitis C testing rate, notification rate and test positivity rate by sex, WA, 2009 to 2014



In 2014, the hepatitis C testing rate in the Kimberley region was 63% higher than the state-wide rate (Map 9.3). This reflects disease incidence and policy and programs that encourage testing in remote regions.

Map 9.3 Crude rate of hepatitis C testing by health region, WA, 2014



9.5 Outbreaks and other investigations

No significant outbreaks or clusters of hepatitis C infections were reported in 2014.

9.6 Disease prevention and control strategies

Two new fixed-site needle and syringe exchange programs (NSEPs) were established in late 2011 in Geraldton and Fremantle, with a further two programs commencing in 2012 in Mandurah and Bunbury.

Needle and syringe distribution has increased across both metropolitan and regional areas of WA as part of an evidence-based public health strategy to reduce transmission of blood-borne viruses.

An online needle and syringe program (NSP) orientation and training package is available online (http://www.dao.health.wa.gov.au/nsp/content/ind.htm), with a similar package for pharmacies also available (http://www.dao.health.wa.gov.au/nsppharmacy/content/ind.htm). An online hepatitis C education program for health professionals is also available (http://hepatitis.ecu.edu.au/).

A trial of a metropolitan needle and syringe vending machine (NSVM) was completed at Armadale Hospital in an effort to increase access to needles and syringes out-of-hours in outer-metropolitan areas. Unfortunately the NSVM was removed at the end of the trial. The evaluation report can be found online (http://ww2.health.wa.gov.au/Corporate/Articles/S_T/Sexual-health-and-blood-borne-virus-prevention-reports-and-publications).

A range of workforce development and prevention and education programs targeting priority groups are provided through non-government agencies supported and funded by the DoH, e.g. HepatitisWA and WASUA.

Table 9.1 Behavioural characteristics of people notified with hepatitis C by Aboriginality, WA, 2014

Behavioural and demographic characteristics		Aboriginality					
		Aboriginal (n = 77)		non-Aboriginal (n =203)		Total (n = 280)	
		Number	Percent	Number	Percent	Number	Percent
Sex	Male	52	67.5%	136	67.0%	**188**	**67.1%**
	Female	25	32.5%	67	33.0%	**92**	**32.9%**
Reason for testing	History of risk factors	53	68.8%	90	44.3%	**143**	**51.1%**
	Signs/symptoms of hepatitis	6	7.8%	13	6.4%	**19**	**6.8%**
	Abnormal liver test	13	16.9%	54	26.6%	**67**	**23.9%**
	Prison screen	46	59.7%	43	21.2%	**89**	**31.8%**
	Antenatal screen	3	3.9%	10	4.9%	**13**	**4.6%**
	Sexual health screen	2	2.6%	15	7.4%	**17**	**6.1%**
	Employment screen	0	0.0%	0	0.0%	**0**	**0.0%**
	Blood or organ donor	0	0.0%	0	0.0%	**0**	**0.0%**
	Drug/alcohol program screen	3	3.9%	10	4.9%	**13**	**4.6%**
	Migrant/refugee screen	0	0.0%	1	0.5%	**1**	**0.4%**
	Occupational exposure - exposed	0	0.0%	0	0.0%	**0**	**0.0%**
	Occupational exposure - source	0	0.0%	0	0.0%	**0**	**0.0%**
	Patient request	5	6.5%	39	19.2%	**44**	**15.7%**
	Other	6	7.8%	37	18.2%	**43**	**15.4%**
Risk factors	Injecting drug use	63	81.8%	125	61.6%	**188**	**67.1%**
	Blood products/tissues in Australia	1	1.3%	7	3.4%	**8**	**2.9%**
	Blood products/tissues overseas	0	0.0%	2	1.0%	**2**	**0.7%**
	Organ transplant	0	0.0%	0	0.0%	**0**	**0.0%**
	Dialysis	0	0.0%	1	0.5%	**1**	**0.4%**
	Needlestick/biohazardous injury in healthcare worker	0	0.0%	0	0.0%	**0**	**0.0%**
	Needlestick/biohazardous injury in non-healthcare worker	1	1.3%	4	2.0%	**5**	**1.8%**
	Surgical/endoscopy procedure	3	3.9%	8	3.9%	**11**	**3.9%**
	Major dental work	1	1.3%	4	2.0%	**5**	**1.8%**
	Tattoos	11	14.3%	40	19.7%	**51**	**18.2%**
	Acupuncture	1	1.3%	4	2.0%	**5**	**1.8%**
	Ear piercing	8	10.4%	20	9.9%	**28**	**10.0%**
	Body piercing	0	0.0%	12	5.9%	**12**	**4.3%**
	Perinatal transmission	23	29.9%	86	42.4%	**109**	**38.9%**
	Same sex partner with HCV	3	3.9%	6	3.0%	**9**	**3.2%**
	Opposite sex partner with HCV	14	18.2%	34	16.7%	**48**	**17.1%**
	Imprisonment	42	54.5%	45	22.2%	**87**	**31.1%**
	Health care worker with no documented exposure	1	1.3%	3	1.5%	**3**	**1.1%**
	Household contact with HCV	1	1.3%	10	4.9%	**11**	**3.9%**
	Other risk factor	3	3.9%	7	3.4%	**10**	**3.6%**

Notes: Reasons for testing and risk factors are not mutually exclusive
Only enhanced surveillance forms with behavioural and demographic characteristics identified were included

10 References

1. Communicable Diseases Network Australia. Australian national notifiable diseases case definitions [Internet]. Canberra: Department of Health, Commonwealth of Australia; 2015 [cited 2015 September 14]. Available from: https://www.health.gov.au/casedefinitions

2. Department of Health. The epidemiology of notifiable sexually transmitted infections and blood-borne viruses in Western Australia 2014 – appendix. Western Australia: Department of Health; 2015.

3. Department of Health. Use of the term 'Aboriginal' in all forms of WA Health communication, operational directive OD 0435/13 [Internet]. Western Australia: Department of Health; 2013 [cited 2015 September 14]. Available from: http://www.health.wa.gov.au/circularsnew/pdfs/12966.pdf

4. Watkins RE, Mak DB, Giele CM, Clews S. Aboriginal and non-Aboriginal sexually transmitted infections and blood borne virus notification rates in Western Australia: using linked data to improve estimates BMC Public Health [serial on the internet]. 2013 [cited 2015 September 14]; 13:404. Available from: http://www.biomedcentral.com/1471-2458/13/404

5. Department of Health. Guidelines for managing sexually transmitted infections – WA. Western Australia: Department of Health; 2010.

6. Department of Health. The second Western Australian Aboriginal sexual health and blood-borne virus strategy and regional implementation plan template 2010 to 2014 [Internet]. Western Australia: Department of Health; 2011 [cited 2015 September 14]. Available from: http://www.public.health.wa.gov.au/cproot/4074/2/the-2nd-aboriginal-sti-bbv-strategy.pdf

7. The Kirby Institute. HIV, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2014 [Internet]. NSW: The Kirby Institute, the University of New South Wales; 2014 [cited 2015 September 14]. Available from: https://kirby.unsw.edu.au/surveillance/2014-annual-surveillance-report-hiv-viral-hepatitis-stis

8. Crawford G, Lobo R, Brown G, Langdon P. HIV and mobility in Australia: Road map for action [Internet]. Australia: Western Australian Centre for Health Promotion Research and Australian Research Centre in Sex, Health and Society; 2014 [cited 2015 August 17]. Available from: http://siren.org.au/wp-content/uploads/2015/03/HIV_and_Mobility_Report.pdf

9. Department of Health. Guidelines for the provision of hepatitis A and hepatitis B vaccine to adults in Western Australia at risk of acquiring these infections by sexual transmission and injecting drug use, operational directive OD 0392/12 [Internet]. Western Australia: Department of Health; 2012 [cited 2015 September 14]. Available from: http://www.health.wa.gov.au/circularsnew/pdfs/12896.pdf

10. Department of Health. Hepatitis B vaccination program, operational directive OD 0237/09 [Internet]. Western Australia: Department of Health; 2009 [cited 2015 September 14]. Available from: http://www.health.wa.gov.au/circularsnew/pdfs/12576.pdf

This document can be made available in alternative formats on request for a person with a disability.