The Epidemiology of Notifiable Sexually Transmitted Infections and Blood-Borne Viruses in Western Australia 2012
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Executive Summary

This report describes the epidemiology of notifiable sexually transmitted infections (STIs) and blood-borne viruses (BBVs) in Western Australia (WA) for 2012, and trends over the ten-year period from 2003 to 2012.

Sexually Transmitted Infections

Chlamydia

A record number of chlamydia infections was notified in 2012 (n=11,845), just above the number notified in 2011 (n=11,744). It remains the most commonly notified disease in WA. In 2012, the WA crude notification rate was 38% higher than the crude rate reported for the nation (502 vs. 364/100,000 population) and was the second highest in Australia after the Northern Territory (NT) (1,099/100,000 population).

The highest age-standardised notification rate and the highest testing rate were observed in females aged 15 to 24 years (2,945/100,000 population and 244/1,000 population respectively). The highest notification and testing rates were reported in the Kimberley region (1,825/100,000 population and 308/100,000 population respectively).

The notification rate among Aboriginal people was almost four-times higher than that of non-Aboriginal people (1,556 vs. 383/100,000 population).

Among notifications that had place of acquisition recorded, the majority were acquired in WA (93%), although a larger proportion of males (10%) acquired the infection overseas than females (3%).

Gonorrhea

Gonorrhea is the second most commonly notified sexually transmitted infection (STI) in WA (2012 n=2,103). The WA crude notification rate was 49% higher than the crude rate reported for the nation (90 vs. 60/100,000 population) and was the second highest in Australia after the NT (667/100,000 population).

The highest notification and testing rates were observed in females aged 15 to 24 years (352/100,000 population and 219/1,000 population respectively). The highest notification and testing rates were reported in the Kimberley region (1,680/100,000 population and 306/1,000 population respectively).

The notification rate among Aboriginal people was 29-times higher than that of non-Aboriginal people (1,132 vs. 40/100,000 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.

Among notifications that had place of acquisition recorded, the majority were acquired in WA (89%), although a larger proportion of males (13%) acquired the infections overseas than females (3%).

Syphilis

The number of infectious syphilis notifications in 2012 (n=76) was lower than in 2011 (n=119) and comparable to that observed in 2009 (n=83) and 2010 (n=79). The majority of notifications were in males aged 50 years and over. The highest notification rate was for males aged 35 to 39 years, while females aged 15 to 24 years had the highest testing rate. Although the notification rate among Aboriginal people was 7.3-times higher than among non-Aboriginal people, this difference was the lowest observed over the last ten years. The majority of Aboriginal cases reported acquiring infectious syphilis through vaginal intercourse with casual partners, while non-Aboriginal people were more likely to acquire infections through anal intercourse from same sex and casual partners. WA’s crude infectious syphilis notification rate was half the national rate and the third lowest in Australia after Tasmania and South Australia. From 2011 to 2012, the infectious syphilis testing rate increased 11% while the test positivity rate decreased 49%.
The number of non-infectious syphilis notifications in 2012 (n=112) was 22% higher than in 2011 (n=92). Male notifications consistently outnumbered those of females and the majority of notifications in 2012 occurred in people aged 50 years or over. The highest notification rate in 2012 for non-infectious syphilis was observed in males aged 40 to 44 years. Aboriginal people had a higher non-infectious syphilis notification rate than non-Aboriginal people. However, the Aboriginal to non-Aboriginal rate ratio in 2012 (rate ratio=17.9:1) was the second lowest observed in the last ten years. The highest non-infectious syphilis rate in 2012 was observed in the Goldfields region (24/100,000 population), where the rate was nearly four-times the overall WA rate (6.6/100,000 population).

Donovanosis

There were four donovanosis notifications reported from 2003 to 2005. No cases were reported between 2006 and 2011 and only 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.

Chancroid

Chancroid infection is rare in WA. A total of three notifications were reported from 2003 to 2012, 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 121 HIV infections notified in 2012, the highest number on record and a 15% increase compared to 2011. In 2012, no HIV cases were notified among Aboriginal people. In the five-year period, 2008 to 2012, the number of HIV cases reporting heterosexual contact increased by 83% and the number of HIV cases among men who have sex with men (MSM) increased by 32%, compared to the previous five-year period. The number of overseas-acquired HIV cases also increased in the last five-year period (279 vs. 142 cases), particularly infections acquired in sub-Saharan Africa (108 vs. 38 cases) and South-East Asia (105 vs. 74 cases).

Between 2006 and 2012, the number and proportion of cases with newly acquired HIV infection increased among MSM (2006: 8 cases, 27%; 2012: 25 cases, 49%). In the 2008 to 2012 period, late HIV diagnoses were higher among cases reporting heterosexual contact (49%; 102 cases) compared to MSM (20%; 36 cases), particularly among heterosexual cases born overseas and who acquired HIV overseas (58%; 63 cases).

Hepatitis B

Newly acquired hepatitis B notifications increased 28% in 2012 (n=23) after reaching a ten-year low in 2011 (n=18). However, newly acquired hepatitis B notifications in 2012 were 35% lower than the previous five-year average (35.6/year). The number of unspecified hepatitis B notifications in 2012 (n=662) was lower than in 2011 (n=798) and comparable to the previous five-year average (660.6/year). The WA and national newly acquired hepatitis B notification rates were comparable (0.8 vs. 0.7/100,000 population) while the unspecified hepatitis notification rate was higher than the national rate (31.7 vs. 25/100,000 population).

The highest notification rates in 2012 for newly acquired hepatitis B infections were observed in 35 to 39 year olds, and for unspecified hepatitis B infections, in 30 to 34 year olds. The highest testing rate was in the 15 to 24 year old age group (73/1,000 population). Notification rates in 2012 for both newly acquired and unspecified hepatitis B were higher in Aboriginal people than non-Aboriginal people. The Kimberley region
recorded the highest notification and testing rates in 2012 (50/100,000 population and 300/1,000 population respectively).

Among hepatitis B notifications that had place of acquisition recorded, 63% of newly acquired infections were reported as having been acquired in WA and 31% overseas. The majority of unspecified infections (79%) were reported to have acquired the infection overseas and 18% in WA.

**Hepatitis C**

Newly acquired hepatitis C notifications reached a ten-year low in 2010 (n=76) before increasing progressively in 2011 and 2012 (n=124). Unspecified hepatitis C notifications peaked in 2008 (n=1,260) before decreasing each year to 2012 (n=954). The WA newly acquired hepatitis C rate was more than double the national rate (5.3 vs. 2.6/100,000 population) while the unspecified hepatitis C rates were comparable (43.0 vs. 42.7/100,000 population).

The peak age groups were 20 to 29 years for notifications of newly acquired infections, 50 years and over for notifications of unspecified infections, and 15 to 24 years for hepatitis C tests. Notification rates among Aboriginal people compared to non-Aboriginal people were more than 11-times higher (45 vs. 4/100,000 population) and more than 6-times higher (193 vs. 30/100,000 population) for newly acquired and unspecified hepatitis C respectively.

The highest hepatitis C rates were reported in the Great Southern region (newly acquired infections: 24/100,000 population), Midwest region (unspecified infections: 68/100,000 population) and Kimberley region (tests: 301/1,000 population).

Among hepatitis C notifications that had place of acquisition recorded, 99% of newly acquired infections were reported as having been acquired in WA. The majority of unspecified infections (75%) were reported to have acquired the infection in WA, 14% overseas and 11% interstate.
Abbreviations

ABS  Australian Bureau of Statistics
ACT  Australian Capital Territory
AIDS Acquired immunodeficiency syndrome
ASHM Australasian Society for HIV Medicine
ASR(s) Age-standardised notification rate(s) per 100,000 population
AUS Australia
BBV(s) Blood-borne virus(es)
CDNA Communicable Diseases Network Australia
CMRP Chromosomally-mediated resistant *gonorrhoeae* isolates
DoE Department of Education Western Australia
DoH Department of Health Western Australia
ERP Estimated Resident Population
ESF(s) Enhanced surveillance form(s)
FPWA Family Planning Western Australia
HIV Human immunodeficiency virus
MMRC Metropolitan Migrant Resource Centre
MSM Men who have sex with men
NGMSAP National Gay Men’s Syphilis Action Plan
NNDSS National Notifiable Diseases Surveillance System
NSP Needle and Syringe Program
NSEP(s) Needle and Syringe Exchange Program(s)
NSW New South Wales
NT Northern Territory
PHU Public Health Unit
PPNG Penicillinase-producing *gonorrhoeae* isolates
QLD Queensland
SA South Australia
STI(s) Sexually transmitted infection(s)
TAS Tasmania
VIC Victoria
WA Western Australia
WAAC WA AIDS Council
WAGSP Western Australian Gonococcal Surveillance Program
WANIDD  Western Australian Notifiable Infectious Diseases Database
WASUA  Western Australian Substance Users’ Association
### Terminology used in Tables/Figures

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-specific rate</td>
<td>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.</td>
</tr>
<tr>
<td>Age-standardised rate (ASR)</td>
<td>Notification rate adjusted to take account of differences in age composition when rates for different populations are compared. Expressed per 100,000 population.</td>
</tr>
<tr>
<td>Crude rate</td>
<td>Calculated by dividing the number of notifications by the population. Not adjusted for age or other factors. Expressed per 100,000 population.</td>
</tr>
<tr>
<td>Infectious syphilis</td>
<td>Primary syphilis + secondary syphilis + early latent (less than two years duration).</td>
</tr>
<tr>
<td>N/A</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Non-infectious syphilis</td>
<td>Syphilis infection of more than two years or unknown duration.</td>
</tr>
<tr>
<td>Notification rate</td>
<td>See crude rate and age-standardised rate.</td>
</tr>
<tr>
<td>Number</td>
<td>Number of notifications reported to the DoH/state and territory health authorities.</td>
</tr>
<tr>
<td>Rate ratio (Aboriginal:non-Aboriginal)</td>
<td>Aboriginal to non-Aboriginal rate ratio = ASR (Aboriginal)/ASR (non-Aboriginal).</td>
</tr>
<tr>
<td>Rate ratio (Male:Female)</td>
<td>Male to female rate ratio = ASR (male)/ASR (female).</td>
</tr>
<tr>
<td>Test positivity rate</td>
<td>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.</td>
</tr>
<tr>
<td>Testing rate</td>
<td>Crude population rate or age-specific testing rate per 1,000 population.</td>
</tr>
<tr>
<td>Total hepatitis B notifications</td>
<td>Newly acquired hepatitis B + unspecified hepatitis B.</td>
</tr>
<tr>
<td>Total hepatitis C notifications</td>
<td>Newly acquired hepatitis C + unspecified hepatitis C.</td>
</tr>
<tr>
<td>Total syphilis notifications</td>
<td>Infectious syphilis + non-infectious syphilis</td>
</tr>
</tbody>
</table>
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 2012, and trends over the ten-year period from 2003 to 2012.

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 important 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 2003 to 2012. 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 (CDNA, 2013). 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 and the Curtin Immigration Detention Centre, Derby (both under the Kimberley Public Health region) 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. Figures depicting 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 forms and contact doctors, laboratories and/or patients, as appropriate. The aim of collecting these data is to value-add to 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.

1.1.2 Testing data

Since 2009, the DoH has received data on the number of tests undertaken 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).

On average, 69% of STI and BBV notifications in WA between 2009 and 2012 were from these five laboratories. We have assumed that this reflects the proportion of STI and BBV tests undertaken in these laboratories. 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 and the Curtin Immigration Detention Centre, Derby (both under the Kimberley Public Health region) have been included in this report as tests conducted at these locations cannot be identified from the aggregated data provided by the laboratories.

Detailed estimates of rates of testing, notification and positivity for each STI and BBV by sex, age group, year and PHU in WA from 2009 to 2012 is available elsewhere (DoH 2013).

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 (DoH 2013).

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 (3.2% of the total population in 2012) 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 (Watkins, Mak, Giele & Clews, 2013).

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 Table 10.1. 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
population or public health unit (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 areas.

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 under 15 years, 15 to 24 years, and 25 years and 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) 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 is the most commonly notified disease in WA.
- Notification and testing rates were highest in females 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 almost 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 notification rate was 38% higher than the national rate.

2.1 Trends over time

Between 2003 and 2012, the number of chlamydia infections reported to the DoH increased more than three-fold, from 3,761 notifications in 2003 to 11,845 in 2012. The number of notifications in 2012 was comparable to the number in 2011 (n=11,744) and 26% greater than the 2007 to 2011 five-year average of 9,437 notifications (Figure 2.1)

Between 2009 and 2011, the chlamydia testing rate increased 6% (54 to 57/1,000 population) while the test positivity rate increased 20% (5.1 to 6.1%). From 2011 to 2012, the testing rate increased 5% (to 60/1,000 population) while the test positivity rate decreased 7% (to 5.7%).

The total number and rate of chlamydia notifications plateaued between 2011 and 2012, despite testing rates increasing. This indicates that the decrease in notifications is not due to reduced testing and decreased disease transmission may be a contributing factor.

2.2 Distribution by sex and age

As in previous years, 83% of chlamydia notifications in 2012 occurred in people aged under 30 years, with the highest incidence in those aged 20 to 24 and 15 to 19 years (37% and 26% of notifications respectively). From 2003 to 2012, more females than males were notified with chlamydia each year (Figure 10.1). The predominance of females was evident in people aged under 25 years, but the opposite was observed in those aged 25 years and over (Figure 2.2 and Table 10.2).
In 2012, the highest testing and test positivity rates were observed in people aged 15 to 24 years (159/1,000 population and 9.8% respectively) (Figure 2.3).

The highest chlamydia notification rate in 2012 was reported from the Kimberley region, where the rate was almost four-times greater than the WA rate (1,752 vs. 472/100,000 population) (Map 2.1 and Table 10.4). Although chlamydia 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 2003 to 2012 was 4% per year, compared with 11% per year for WA (Table 10.4).

2.3 Notifications by Aboriginality

In 2012, 14% of chlamydia notifications were reported in Aboriginal people, 79% in non-Aboriginal people and 8% of notifications were of unknown Aboriginal status. The Aboriginal to non-Aboriginal rate ratio declined steadily between 2003 (21.0:1) and 2011 (4.9:1) and was lower still in 2012 (3.9:1) (Figure 2.4). The highest chlamydia rates in 2012 were reported in both Aboriginal and non-Aboriginal people from the Kimberley region (2,679 and 602/100,000 population respectively) (Table 10.5).
The testing rate among 15 to 24 year olds in the Goldfields, Kimberley, Midwest and Pilbara regions combined was double the state-wide rate and remained stable between 2009 and 2012 (311 to 321/1,000 population). In 2012, testing and notification rates were highest in the Kimberley region (Map 2.1, Map 2.2 and Table 10.4). This reflects both disease incidence and need, and policy and programs that encourage testing in remote regions.

2.5 Place of acquisition

Among chlamydia notifications in 2012 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 (10%) acquired their infections overseas than females (3%) (Table 10.7).

2.6 Interstate comparisons

In 2012, the crude chlamydia notification rate in WA (502/100,000 population) was the second highest in Australia after the NT (1,099/100,000 population) and was 38% higher than that reported nationally (364/100,000 population) (Figure 2.5 and Table 10.8).
2.7 Outbreaks and other investigations

No significant outbreaks or clusters of chlamydia infections were reported in 2012, 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 targeting young people aged 16 to 24 years, urging them to get tested; workforce development and support, including online education programs (e.g. http://sti.ecu.edu.au/); and promulgation of guidelines for management of sexually transmitted infections for health professionals (http://silverbook.health.wa.gov.au/), which are also available as a hard copy resource (DoH 2010).

Opportunistic testing is promoted through information and education provided to general medical practitioners. Education programs targeting priority risk groups in the population are provided through non-government agencies supported and funded by the DoH, including Family Planning WA (FPWA) Sexual Health Services, the Metropolitan Migrant Resource Centre (MMRC) and the WA AIDS Council (WAAC).
3 Gonorrhoea

Key points

- Gonorrhoea is the second most commonly notified STI in WA.
- Notification and testing rates were highest in females 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 29-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 notification rate was 49% higher than the national 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 45% from 2003 (1,450 notifications) to 2012 (2,103 notifications). The number of notifications in 2012 was 15% higher than in 2011 (n=1,830) and 31% greater than the 2007 to 2011 five-year average of 1,601 notifications (Figure 3.1).

From 2009 to 2010, the gonorrhoea testing and test positivity rates remained stable (48/1,000 population and 1.0% respectively). From 2010 to 2012, the testing rate increased 13% (48 to 55/1,000 population) while the test positivity rate increased 30% (0.9 to 1.3%).

The increasing gonorrhoea test positivity rates from 2010 to 2012 indicate that increased notification rates cannot be attributed solely to increased testing. Other contributing factors may include increased disease transmission, and/or better targeting of testing in groups with higher disease prevalence.

3.2 Distribution by sex and age

As in previous years, 73% of gonorrhoea notifications in 2012 occurred in people aged under 30 years, with the highest incidence in those aged 20 to 24 and 15 to 19 years (28% and 26% of notifications respectively). From 2003 to 2012, more males than females were notified with gonorrhoea each year (Figure 10.3). The predominance of males was evident in people aged 20 years and over, but the opposite was observed in those aged under 20 years (Figure 3.2 and Table 10.2).
In 2012, the highest testing rate was observed in people aged 15 to 24 years (145/1,000 population) while the highest test positivity rate was in people aged under 15 years (3.8%). From 2009 to 2012, test positivity more than doubled in people aged under 15 years and increased 38% in people aged 15 to 24 years (Figure 3.3).

In 2012, 54% of gonorrhoea notifications were reported in Aboriginal people, 45% in non-Aboriginal people and less than 1% of notifications were of unknown Aboriginal status. Between 2006 and 2012, the Aboriginal to non-Aboriginal rate ratio decreased to the lowest observed in the last ten years. However, the gonorrhoea rate in Aboriginal people was still far greater than for non-Aboriginal people (Aboriginal to non-Aboriginal rate ratio = 28.6:1 in 2012) (Figure 3.4). In 2012, the highest gonorrhoea rates were reported in both Aboriginal and non-Aboriginal people from the Kimberley region (3,104 and 135/100,000 population respectively) (Table 10.13).
The testing rate among 15 to 24 year olds in the Goldfields, Kimberley, Midwest and Pilbara regions combined, was more than double the state-wide rate and increased 5% between 2009 and 2012 (302 to 317/1,000 population). In 2012, testing and notification rates were highest in the Kimberley region (Map 3.1, Map 3.2 and Table 10.12). This reflects both disease incidence and need, and policy and programs that encourage testing in the remote regions.

3.5 Place of acquisition

Among gonorrhoea notifications in 2012 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 (13%) acquired their infections overseas than females (3%) (Table 10.15).

3.6 Interstate comparisons

In 2012, the crude gonorrhoea notification rate in WA (90/100,000 population) was the second highest in Australia after the NT (667/100,000 population) and 49% higher than the national rate (60/100,000 population) (Figure 3.5 and Table 10.16).
3.7 Enhanced gonorrhoea surveillance

In 2012, complete enhanced surveillance data were available for 82% (n=1,714/2,103) of all gonorrhoea notifications, representing 71% (n=813/1,146) of notifications among Aboriginal people and 94% (n=900/954) 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/probencid and azithromycin (59%; n=476/813). The vast majority of Aboriginal people reported acquiring gonorrhoea from a person of the opposite sex (89%) and only one reported being a current sex worker (Table 3.1).

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 (70%), 24% 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. Five cases (0.6%) were current sex workers (Table 3.1).

3.8 Antibiotic susceptibility testing of gonorrhoea isolates

Antibiotic susceptibility testing of *Neisseria gonorrhoeae* isolates referred from microbiology laboratories throughout WA is performed by the Western Australian Gonococcal Surveillance Program (WAGSP). In 2012, 505 isolates were submitted to the WAGSP. Of these, 301 (60%) were from Perth metropolitan residents and 204 (40%) were from non-metropolitan residents. Overall, 106 (21%) isolates were penicillin-resistant, comprising 83 (16%) penicillinase-producing (PPNG) isolates and 23 (5%) chromosomally-mediated resistant (CMRP) isolates. Nineteen gonococcal isolates (4%) demonstrated reduced susceptibility to ceftriaxone.

As for previous years, in 2012, a higher proportion of isolates from metropolitan cases demonstrated penicillin-resistance compared to isolates from non-metropolitan cases (31% vs. 6% respectively). Since 2008, the proportion of penicillin-resistant isolates among metropolitan cases decreased sharply from a peak of 58% while the proportion of penicillin-resistant isolates among non-metropolitan cases has consistently remained below 10%. In 2012, 193 isolates were submitted from the remote regions of WA (Goldfields, Kimberley, Midwest and Pilbara), of which only seven (4%) were penicillin-resistant.

3.9 Outbreaks and other investigations

No significant outbreaks or clusters of gonorrhoea infections were reported in 2012.

3.10 Disease prevention and control strategies

Special STI clinical services, including testing for gonorrhoea, that target men who have sex with men (MSM) in the Perth metropolitan area are provided by WAAC’s community-based ‘M Clinic’ and sauna clinic. Research conducted by the Kirby Institute indicates that these clinics are particularly attractive to younger MSM who may not have sought
sexual health testing before, but who report high numbers of sexual partners (Conway 2013).

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 (DoH 2011). 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.
## Table 3.1 Behavioural characteristics of people notified with gonorrhoea by Aboriginality, WA, 2012

<table>
<thead>
<tr>
<th>Behavioural and demographic characteristics</th>
<th>Aboriginality</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aboriginal (n=813)</td>
<td>non-Aboriginal (n=900)</td>
<td>Total (n=1,714)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>388</td>
<td>47.7%</td>
<td>627</td>
<td>69.7%</td>
</tr>
<tr>
<td>Female</td>
<td>425</td>
<td>52.3%</td>
<td>273</td>
<td>30.3%</td>
</tr>
<tr>
<td><strong>Clinical setting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public hospital/community health clinic</td>
<td>423</td>
<td>52.0%</td>
<td>105</td>
<td>11.7%</td>
</tr>
<tr>
<td>Sexual health clinic/family planning clinic</td>
<td>18</td>
<td>2.2%</td>
<td>193</td>
<td>21.4%</td>
</tr>
<tr>
<td>Aboriginal medical service</td>
<td>245</td>
<td>30.1%</td>
<td>4</td>
<td>0.4%</td>
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<tr>
<td>General practice</td>
<td>70</td>
<td>8.6%</td>
<td>547</td>
<td>60.8%</td>
</tr>
<tr>
<td>Prison/detention centre</td>
<td>49</td>
<td>6.0%</td>
<td>16</td>
<td>1.8%</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>1.0%</td>
<td>35</td>
<td>3.9%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Specimen site</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urine (PCR/LCR)</td>
<td>581</td>
<td>71.5%</td>
<td>523</td>
<td>58.1%</td>
</tr>
<tr>
<td>Urethral swab</td>
<td>140</td>
<td>17.2%</td>
<td>244</td>
<td>27.1%</td>
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<tr>
<td>Cervical/vaginal swab</td>
<td>187</td>
<td>23.0%</td>
<td>138</td>
<td>15.3%</td>
</tr>
<tr>
<td>Pharyngeal swab</td>
<td>1</td>
<td>0.1%</td>
<td>97</td>
<td>10.8%</td>
</tr>
<tr>
<td>Rectal swab</td>
<td>0</td>
<td>0.0%</td>
<td>85</td>
<td>9.4%</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>0.9%</td>
<td>8</td>
<td>0.9%</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>0.1%</td>
<td>1</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>284</td>
<td>34.9%</td>
<td>794</td>
<td>88.2%</td>
</tr>
<tr>
<td>Amoxycillin/Probenecid</td>
<td>543</td>
<td>66.8%</td>
<td>62</td>
<td>6.9%</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>7</td>
<td>0.9%</td>
<td>34</td>
<td>3.8%</td>
</tr>
<tr>
<td>Other drugs</td>
<td>723</td>
<td>88.9%</td>
<td>570</td>
<td>63.3%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Sexual exposure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person(s) of opposite sex only</td>
<td>725</td>
<td>89.2%</td>
<td>633</td>
<td>70.3%</td>
</tr>
<tr>
<td>Person(s) of same sex only</td>
<td>7</td>
<td>0.9%</td>
<td>212</td>
<td>23.6%</td>
</tr>
<tr>
<td>Person(s) of either sex</td>
<td>1</td>
<td>0.1%</td>
<td>15</td>
<td>1.7%</td>
</tr>
<tr>
<td>No sexual contact</td>
<td>0</td>
<td>0.0%</td>
<td>2</td>
<td>0.2%</td>
</tr>
<tr>
<td>Unknown</td>
<td>80</td>
<td>9.8%</td>
<td>38</td>
<td>4.2%</td>
</tr>
<tr>
<td><strong>Current sex worker</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>0.1%</td>
<td>5</td>
<td>0.6%</td>
</tr>
<tr>
<td>No</td>
<td>751</td>
<td>92.4%</td>
<td>848</td>
<td>94.2%</td>
</tr>
<tr>
<td>Unknown</td>
<td>61</td>
<td>7.5%</td>
<td>47</td>
<td>5.2%</td>
</tr>
</tbody>
</table>
4 Syphilis

Key points

- Infectious syphilis notifications in the last ten years peaked in 2008. Non-infectious syphilis notifications decreased from a peak in 2005 to a nadir in 2010 and increased annually to 2012.

- In males, the highest notifications of infectious and non-infectious syphilis occurred in those aged 50 years and older. In females, the highest infectious syphilis notifications occurred in 25 to 34 year olds, and non-infectious syphilis notifications in females aged 50 years and older.

- Infectious and non-infectious syphilis notification rates were seven- and 18- times higher respectively, among Aboriginal people compared to non-Aboriginal people.

- The highest rates of infectious and non-infectious syphilis notifications were observed in the Goldfields region and the highest testing rate was in the Kimberley region.

- The majority of infectious and non-infectious syphilis infections were reported to have been acquired in WA.

- In 2012, the crude rate of infectious syphilis in WA was double the national rate while that of non-infectious was comparable to the national rate.

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 and rate of infectious syphilis notifications in 2012 was lower than that observed in 2011 (the second highest peak in the last ten years) and comparable to that observed in 2009 and 2010 (Figure 4.1). The highest peak observed in 2008 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, 2003 to 2012

4.1.2 Distribution by sex and age

While the highest number of infectious syphilis notifications in 2012 occurred in people aged 50 years and over, the highest rate was observed in 25 to 49 year olds (Figure 4.2). Among those aged 20 years and over, there were more notifications among males (Figure 10.6).
4.1.3 Notifications by Aboriginality

In 2012, 83% of infectious syphilis notifications occurred in non-Aboriginal people and 17% in Aboriginal people. The Aboriginal to non-Aboriginal rate ratio declined steadily from a peak of 122:1 in 2004 to 9:1 in 2007. Since 2010, the Aboriginal to non-Aboriginal rate ratio has been lower than in previous years (Figure 4.3). The highest infectious syphilis rate among Aboriginal people was observed in the Goldfields region (120/100,000 population) and among non-Aboriginal people in the North Metropolitan region (3.6/100,000 population) (Table 10.26 and Table 10.28).

4.1.4 Regional distribution

The highest infectious syphilis notification rate in 2012 was observed in the Goldfields region, a great departure from what has been observed in the past years. In 2012, the rate in the Goldfields region was nearly four-times greater than the overall WA rate (11 vs. 3/100,000 population) (Map 4.1 and Table 10.23).

4.1.5 Place of acquisition

Among infectious syphilis notifications in 2012 that had place of acquisition recorded, 73% were reported as having been acquired in WA, 11% interstate and 16% overseas (Table 10.30).

4.1.6 Interstate comparisons

In 2012, crude infectious syphilis rates ranged from 3.1/100,000 population in SA to 8.4/100,000 population in Victoria (VIC). The crude rate for WA in 2012 was half the national rate (3.3 vs. 6.6/100,000 population) (Figure 4.4 and Table 10.31).
4.1.7 Enhanced infectious syphilis surveillance

In 2012, enhanced surveillance forms were sent to the notifying doctors of all persons with infectious syphilis (n=76). Ninety-one percent completed the form (n=69). A completed form was received for 100% (n=13/13) of Aboriginal, and 89% (n=50/56) of non-Aboriginal notifications (Table 4.1). There were more male than female cases, with most infections diagnosed at a sexual health/family planning clinic, general practice or an Aboriginal medical service as a result of symptomatic or opportunistic sexual health testing. The majority of Aboriginal cases reported acquiring infectious syphilis through vaginal intercourse with casual partners while non-Aboriginal acquired infections through anal intercourse from a same sex and casual partner. Nearly one-third of non-Aboriginal cases reported meeting their partners at sex on premises venues or sauna (Table 4.1).

4.2 Non-infectious syphilis

4.2.1 Trends over time

The number of non-infectious syphilis notifications reached a ten-year low of 61 cases in 2010 from a peak of 179 cases in 2005 and increased annually to 112 cases in 2012. The number of notifications in 2012 was 22% higher than the number of notifications in 2011 (n=92) and 14% higher than the 2007 to 2011 five-year average of 98 cases. From 2010 to 2012, the non-infectious syphilis rate increased by 73% (from 2.6 to 4.6/100,000 population) (Figure 4.5).

4.2.2 Distribution by sex and age

In 2012, 49% of non-infectious syphilis notifications occurred among people aged 50 years and over while the highest rate was observed in the 40 to 44 year old age group (Figure 4.6). More males than females were notified annually from 2003 to 2012 (Figure 10.7).

4.2.3 Notifications by Aboriginality

In 2012, 70% of non-infectious syphilis notifications occurred in non-Aboriginal people, 29% in Aboriginal people, and only 1% of notifications were of unknown
Aboriginal status. From 2003 to 2012, non-infectious syphilis notifications declined by 61% in Aboriginal people (n=85 to 33) and increased by 95% in non-Aboriginal people (n=40 to 78). The Aboriginal to non-Aboriginal rate ratio declined from a peak of 107:1 in 2004 to 17.1:1 in 2011 and stabilised in 2012 at 17.9:1 (Figure 4.7). The highest non-infectious syphilis rates in Aboriginal people were observed in the Goldfields region (384/100,000 population) and in non-Aboriginal people in the Kimberley region (15/100,000 population) (Table 10.28).

Figure 4.7 ASR of non-infectious syphilis notifications by Aboriginality, WA, 2003 to 2012

4.2.4 Regional distribution
The highest notification rates of non-infectious syphilis in 2012 were observed in the Goldfields region (24/100,000 population), followed by the Kimberley region (16/100,000 population) and the lowest rate was observed in the Midwest region (2.8/100,000 population) (Map 4.2 and Table 10.21).

4.2.5 Place of acquisition
Among non-infectious syphilis notifications in 2012 that had place of acquisition recorded, 63% were reported as having been acquired in WA and 35% overseas. This trend was equally noticeable in male and female notifications (Table 10.30).

4.2.6 Interstate comparisons
In 2012, the crude non-infectious syphilis rate in WA was the same as the crude rate reported nationally (6/100,000 population). The number of notifications of non-infectious syphilis in WA was the fourth highest (n=140) in Australia after Victoria (VIC) (n=506), New South Wales (NSW) (n=283) and Queensland (QLD) (n=249). However, the WA rate was the third highest in the nation (Figure 4.8 and Table 10.32).
4.3 Syphilis testing

Between 2009 and 2012, the syphilis testing rate increased 14% (35 to 40/1,000 population) while the test positivity rate decreased 34% (0.09% to 0.06%). From 2011 to 2012, the testing rate increased 11% (36 to 40/1,000 population) while the syphilis test positivity rate decreased 49% (0.11% to 0.06%).

In 2012, the syphilis testing rate in the Kimberley region was more than eight-times the state-wide rate (323 vs. 40/100,000 population). From 2011 to 2012, the testing rate in the Kimberley region nearly doubled (173 to 323/1,000 population) and test positivity dropped from 2% to zero. These increases in testing rate reflect inclusion of routine screening of detainees at Christmas Island and Curtin Immigration Detention Centres (Map 4.3).

4.4 Outbreaks and other investigations

No significant outbreaks or clusters of infectious syphilis infections were reported in 2012.

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. The WAAC promotes syphilis reduction through its safer sex and testing campaigns via online, print and display media.

The WAAC’s community-based M Clinic offers expanded clinic hours and free STI testing (including syphilis) for MSM under its unique model of peer-led service delivery aimed at gaining greater acceptance and uptake for testing and prevention among
high-risk sub-populations. Research conducted by the Kirby Institute indicates that these clinics are particularly attractive to younger MSM who may not have sought sexual health testing before, but who report high numbers of sexual partners (Conway 2013).

In response to the 2008 spike in syphilis notifications, the DoH has continued to participate actively in the WA working group tasked with implementing the National Gay Men’s Syphilis Action Plan (NGMSAP), which brings together key clinical, non-government and government stakeholders in monitoring and evaluating the state response syphilis control and prevention.
Table 4.1 Behavioural characteristics of people notified with infectious syphilis by Aboriginality, WA, 2012

<table>
<thead>
<tr>
<th>Behavioural and demographic characteristics</th>
<th>Aboriginality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aboriginal</td>
</tr>
<tr>
<td></td>
<td>(n = 13)</td>
</tr>
<tr>
<td></td>
<td>Number  %</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>8  61.5%</td>
</tr>
<tr>
<td>Diagnosis facility</td>
<td>Public hospital/community health clinic</td>
</tr>
<tr>
<td></td>
<td>Sexual health clinic/family planning clinic</td>
</tr>
<tr>
<td></td>
<td>Aboriginal medical service</td>
</tr>
<tr>
<td></td>
<td>General practice</td>
</tr>
<tr>
<td></td>
<td>Prison/Detention centre</td>
</tr>
<tr>
<td></td>
<td>Other</td>
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<tr>
<td>Reason for presentation</td>
<td>Symptomatic</td>
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<tr>
<td></td>
<td>Opportunistic testing - Sexual health</td>
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<tr>
<td></td>
<td>- Antenatal/pap smear</td>
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<td></td>
<td>No sexual contact</td>
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<tr>
<td>Infection acquired from</td>
<td>Casual partner</td>
</tr>
<tr>
<td></td>
<td>Regular partner</td>
</tr>
<tr>
<td></td>
<td>Sex worker</td>
</tr>
<tr>
<td></td>
<td>Client (i.e. patient is a sex worker)</td>
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<tr>
<td></td>
<td>Other</td>
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<td>Unknown</td>
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<tr>
<td>Partner meeting place</td>
<td>Beat, e.g. public toilet</td>
</tr>
<tr>
<td></td>
<td>Internet</td>
</tr>
<tr>
<td></td>
<td>Brothel</td>
</tr>
<tr>
<td></td>
<td>Sex on premises venue/sauna</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>Missing/unknown</td>
</tr>
<tr>
<td>Mode of transmission</td>
<td>Vaginal intercourse</td>
</tr>
<tr>
<td></td>
<td>Anal intercourse</td>
</tr>
<tr>
<td></td>
<td>Vaginal intercourse/Anal intercourse</td>
</tr>
<tr>
<td></td>
<td>Oral sex</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
</tr>
</tbody>
</table>

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

Key points
- A total of five donovanosis notifications were reported from 2003 to 2012.
- Notifications from 2003 to 2005 were acquired in WA among Aboriginal people from remote areas of WA.

5.1 Trends over time
There were a total of five donovanosis notifications from 2003 to 2012. From 2003 to 2005 there were two male and two female cases acquired in WA among Aboriginal people aged 30 to 54 years from remote areas of WA. In 2012, there was one case in a non-Aboriginal male in the 20 to 24 years 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.

6 Chancroid

Key points
- A total of three chancroid notifications were reported from 2003 to 2012.
- 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 recorded from 2003 to 2012. Two cases were acquired overseas among non-Aboriginal males aged 25 to 49 years who resided in the Perth metropolitan area. The third case was acquired in WA in an Aboriginal female aged 25 to 29 years from a remote area of WA.
7 HIV/AIDS

Key points

- 121 HIV infections were notified in 2012, the highest number on record.
- Notifications were increased among MSM and people reporting heterosexual acquisition overseas.
- Newly acquired HIV increased among MSM and remained stable among cases reporting heterosexual contact.
- There were no HIV notifications among Aboriginal people in 2012.

7.1 Trends over time

Since the first WA HIV notification in 1983, 1,906 infections have been notified to the end of 2012, including 552 AIDS cases (29%) and 452 deaths (24%) among people with HIV infection (Figure 7.1). The annual number of HIV notifications in WA more than doubled during the last decade to 121 cases in 2012. This was the highest number of cases reported in a year, and a 15% increase compared to 2011. The number of AIDS notifications and deaths among HIV infected persons also increased in 2012 compared to the previous year (13 vs. 8 AIDS notifications and 13 vs. 6 deaths), although these numbers remain well below the levels experienced in the 1990s (Figure 7.1).

7.2 Distribution by sex and age

Of the 1,906 HIV infection notifications reported since 1983, 1,563 were male, 337 were female, and six were transgender persons, with a male to female ratio of 4.6:1 and a median age of 35 years (range: less than one to 78 years). In 2012, there were 94 male and 27 female HIV notifications (male to female ratio 3.5:1). The median age of all HIV cases notified in 2012 was 37 years (range: 18 to 64 years) with the median age for males six years older than for females (39 vs. 33 years) (Figure 7.2).

7.3 Notifications by Aboriginality

No HIV infections were notified among Aboriginal people in 2012, whereas from 2008 to 2011, between two and five cases were notified each year. HIV notifications among non-Aboriginal people increased from

Figure 7.1 Number of notifications for HIV, AIDS and deaths in persons infected with HIV, WA 1983 to 2012

Figure 7.2 Number of HIV notifications by age group and sex, WA, 2012

No HIV infections were notified among Aboriginal people in 2012, whereas from 2008 to 2011, between two and five cases were notified each year. HIV notifications among non-Aboriginal people increased from
74 to 121 notifications (64% increase) between 2008 and 2012. The male to female notification ratio between 2008 and 2012 was 0.8:1 for Aboriginal people and 2.7:1 for non-Aboriginal people. In 2012, the majority of HIV cases (85%) were Perth metropolitan area residents. In the 2008 to 2012 period, the majority of non-Aboriginal cases (87%) were metropolitan residents while Aboriginal cases were evenly distributed between metropolitan and non-metropolitan regions.

7.4 Exposure category
In the five-year period from 2008 to 2012, the number and proportion of HIV cases reporting heterosexual contact increased by 83% and 14% respectively, compared to the previous five-year period. The number of HIV notifications among MSM also increased over the same time period (32% increase) (Table 7.1).

Between 2008 and 2012, heterosexual contact was the most commonly reported exposure category (54%), followed by MSM (40%) (Table 7.1). This trend was not observed nationally, where the predominant exposure category for new HIV diagnoses between 2007 and 2011 was MSM (66%), followed by heterosexual contact (25%) (Kirby Institute, 2012).

While the proportion of Aboriginal and non-Aboriginal females reporting heterosexual exposure in the 2008 to 2012 period was similar (88% vs. 91%), the heterosexual exposure was more commonly reported by Aboriginal males than non-Aboriginal males (67% vs. 40%).

7.5 Place of acquisition
The recent increase in HIV notifications in WA was mostly attributable to a rise in the number of overseas-acquired HIV infections. Between the five-year periods 2003 to 2007 and 2008 to 2012, the number of overseas-acquired infections almost doubled, while locally acquired cases increased by 30%.

The most common region of overseas acquisition in the 2008 to 2012 period was sub-Saharan Africa, followed by South-East Asia (Table 7.2). Between 2008 and 2012, most people who acquired HIV in sub-Saharan Africa were born in that region (92%; n=99). Over the same period, most people who acquired HIV in South-East Asia were born in that region (51%; n=54), followed by those born in Australia (35%; n=37).

In the 2008 to 2012 period, most of the male overseas-acquired HIV cases reported heterosexual contact (64%; n=108), followed by MSM (31%; n=53), while the majority of men who acquired HIV in Australia were MSM (78%; n=148), followed by men who reported heterosexual contact (17%; n=33).

7.6 Newly acquired HIV and late diagnosis
Newly acquired HIV infection is defined on the basis of a case having had either a negative HIV test result or symptoms consistent with HIV seroconversion illness within the 12 months prior to their diagnosis. A late HIV diagnosis is defined by a CD4+ count, closest to the time of diagnosis, of less than 350 cells/µL, and excludes cases with newly acquired HIV. Cases previously diagnosed with HIV overseas were excluded from all analyses on newly acquired HIV and late HIV diagnosis.

Between 2006 and 2012, increases were seen in the number (8 to 25 cases) and proportion (27% to 49%) of newly acquired HIV infection among MSM cases. These trends were particularly notable after the commencement of the M Clinic, a peer-led STI testing and clinical service for MSM provided by WAAC, in 2010 (Figure 7.3). In 2012, 75% of HIV cases diagnosed at the M Clinic were newly acquired infections, compared to 37% of MSM diagnosed with HIV at other clinics. In the same year, 48% of all newly acquired HIV infections notified among MSM in WA were diagnosed at the M Clinic.

Both the number and proportion of newly acquired HIV infections among cases
reporting heterosexual contact were generally lower compared to MSM, ranging from three to eight cases, and 7% to 19% of cases, between 2008 and 2012.

In the 2008 to 2012 period, late HIV diagnosis was higher among cases reporting heterosexual contact (49%; 102 cases), and particularly among heterosexually acquired cases who were born overseas and acquired their infection overseas (58%; 63 cases), compared to MSM (20%; 36 cases).

Figure 7.3 Newly acquired HIV infection among men who have sex with men (MSM) by clinic of diagnosis, WA, 2003 to 2012

Notes: Newly acquired infection = Cases reporting a negative HIV test result and/or seroconversion illness 12 months prior to their HIV diagnosis
Data exclude cases previously diagnosed with HIV overseas

7.7 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, needle and syringe programs and provision of condoms) are provided primarily through non-government agencies, including WAAC, MMRC and WASUA.

HIV and STI testing and clinical services targeting MSM are provided by sexual health clinics and WAAC’s community-based M Clinic. A recent report indicated that a greater proportion of younger MSM who may not have sought sexual health testing before, but who report high numbers of sexual partners, attended the M Clinic (Conway 2013).

Access to non-occupational post-exposure prophylaxis against HIV infection is promoted by WAAC and provided through hospital clinical services.

CDCD staff provide a state-wide intensive case management program for HIV-infected people who knowingly put others at risk of infection.

Workforce development programs for GPs and other healthcare providers are provided by the Australasian Society for HIV Medicine (ASHM), WAAC and hospital clinical services.
Table 7.1 Number and proportion of persons notified with HIV infection by exposure category and sex, WA, 2003 to 2012

<table>
<thead>
<tr>
<th>Exposure category</th>
<th>Year</th>
<th>2003-2007</th>
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<th>2012</th>
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<td>Number</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSM</td>
<td>152</td>
<td>61.0%</td>
<td>30</td>
<td>201</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>87</td>
<td>34.9%</td>
<td>17</td>
<td>144</td>
</tr>
<tr>
<td>IDU</td>
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<td>1.6%</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Vertical</td>
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<td>0.4%</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Recipient of blood products</td>
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<td>0.0%</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Needlestick/splash</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unknown/other</td>
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<td>2.0%</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Male Total</td>
<td>249</td>
<td>100.0%</td>
<td>50</td>
<td>364</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
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<td>91.3%</td>
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<td>IDU</td>
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<td>2.9%</td>
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</tr>
<tr>
<td>Vertical</td>
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</tr>
<tr>
<td>Recipient of blood products</td>
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<td>0.0%</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Needlestick/splash</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unknown/other</td>
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<td>2.9%</td>
<td>0</td>
<td>2</td>
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<tr>
<td>Female Total</td>
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<td>14</td>
<td>143</td>
</tr>
<tr>
<td>Male + Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSM</td>
<td>152</td>
<td>47.8%</td>
<td>30</td>
<td>201</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>150</td>
<td>47.2%</td>
<td>30</td>
<td>274</td>
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<td>IDU</td>
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<tr>
<td>Vertical</td>
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</tr>
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<td>Recipient of blood products</td>
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<td>Grand Total</td>
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<td>100.0%</td>
<td>63.6</td>
<td>507</td>
</tr>
</tbody>
</table>

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
Table 7.2 Number and proportion of persons notified with HIV infection by country/region acquired and sex, WA, 2003 to 2012

<table>
<thead>
<tr>
<th>Country/region HIV acquired</th>
<th>Male</th>
<th></th>
<th></th>
<th>Female</th>
<th></th>
<th></th>
<th>Male + Female</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Percent</td>
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<td>Percent</td>
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<td>Number</td>
<td>Percent</td>
<td>Average</td>
</tr>
<tr>
<td>Australia</td>
<td>140</td>
<td>56.2%</td>
<td>28</td>
<td>189</td>
<td>51.9%</td>
<td>35</td>
<td>249</td>
<td>53.8%</td>
<td>34</td>
</tr>
<tr>
<td>Overseas</td>
<td>106</td>
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<td>21</td>
<td>170</td>
<td>46.7%</td>
<td>34</td>
<td>142</td>
<td>44.7%</td>
<td>28</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>61</td>
<td>24.5%</td>
<td>12</td>
<td>68</td>
<td>18.7%</td>
<td>14</td>
<td>74</td>
<td>23.3%</td>
<td>15</td>
</tr>
<tr>
<td>Europe</td>
<td>11</td>
<td>4.4%</td>
<td>2</td>
<td>21</td>
<td>5.8%</td>
<td>4</td>
<td>16</td>
<td>5.0%</td>
<td>3</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
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<td>8.8%</td>
<td>4</td>
<td>52</td>
<td>14.3%</td>
<td>10</td>
<td>38</td>
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<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
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<td>2</td>
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<td>8.0%</td>
<td>6</td>
<td>14</td>
<td>4.4%</td>
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<tr>
<td>Male Total</td>
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<td>50</td>
<td>364</td>
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<td>73</td>
<td>318</td>
<td>100.0%</td>
<td>64</td>
</tr>
<tr>
<td>Australia</td>
<td>31</td>
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<td>6</td>
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<td>23.1%</td>
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<td>34</td>
<td>53.8%</td>
<td>34</td>
</tr>
<tr>
<td>Overseas</td>
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<td>52.2%</td>
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<td>44.7%</td>
<td>28</td>
</tr>
<tr>
<td>South-East Asia</td>
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<td>18.8%</td>
<td>3</td>
<td>37</td>
<td>25.9%</td>
<td>7</td>
<td>16</td>
<td>23.3%</td>
<td>3</td>
</tr>
<tr>
<td>Europe</td>
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<td>7.2%</td>
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<td>6</td>
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</tr>
<tr>
<td>Sub-Saharan Africa</td>
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<td>23.2%</td>
<td>3</td>
<td>56</td>
<td>39.2%</td>
<td>11</td>
<td>38</td>
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<td>8</td>
</tr>
<tr>
<td>Other</td>
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<td>2.9%</td>
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<td>10</td>
<td>7.0%</td>
<td>2</td>
<td>14</td>
<td>4.4%</td>
<td>3</td>
</tr>
<tr>
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<td>2.9%</td>
<td>0</td>
<td>1</td>
<td>0.7%</td>
<td>0</td>
<td>5</td>
<td>1.6%</td>
<td>1</td>
</tr>
<tr>
<td>Female Total</td>
<td>69</td>
<td>100.0%</td>
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<td>29</td>
<td>84</td>
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<tr>
<td>Australia</td>
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<td>171</td>
<td>53.8%</td>
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<tr>
<td>Overseas</td>
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<td>55.0%</td>
<td>56</td>
<td>142</td>
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<tr>
<td>South-East Asia</td>
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<td>23.3%</td>
<td>15</td>
<td>105</td>
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<tr>
<td>Europe</td>
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<td>5.0%</td>
<td>3</td>
<td>27</td>
<td>5.3%</td>
<td>5</td>
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<td>5.0%</td>
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</tr>
<tr>
<td>Sub-Saharan Africa</td>
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<td>11.9%</td>
<td>8</td>
<td>108</td>
<td>21.3%</td>
<td>22</td>
<td>38</td>
<td>11.9%</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
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<td>4.4%</td>
<td>3</td>
<td>39</td>
<td>7.7%</td>
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<td>507</td>
<td>100.0%</td>
<td>101</td>
<td>318</td>
<td>100.0%</td>
<td>64</td>
</tr>
</tbody>
</table>

Notes: Average = the average number of cases notified each year in that period and subgroup
8 Hepatitis B

Key points


- In 2012, the highest rate of newly acquired hepatitis B was observed in people aged 35 to 39 years while that of unspecified hepatitis B was in 30 to 34 year olds.

- In 2012, the Aboriginal to non-Aboriginal rate ratio for newly acquired hepatitis B increased, while that of unspecified hepatitis B was similar to that observed over the past five years.

- The highest notification rates of newly acquired hepatitis B were observed in the South Metropolitan region. The Kimberley region had the highest rates of unspecified hepatitis B notification and hepatitis B testing.

- The majority of newly acquired hepatitis B infections were reported to have been acquired in WA while 49% of unspecified hepatitis B infections did not have place of acquisition reported.

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) and increased in 2012 (n=23). The number of notifications in 2012 was 28% higher than the number of notifications in 2011 but 35% lower than the 2007 to 2011 five-year average of 35.6 notifications. The rate of newly acquired hepatitis B decreased from a peak in 2006 to 2011 and stabilised in 2012 (Figure 8.1 and Figure 10.10).

Figure 8.1 Number and ASR of newly acquired hepatitis B notifications, WA, 2003 to 2012

8.1.2 Distribution by sex and age

In 2012, 70% of newly acquired hepatitis B notifications were recorded among people aged 35 years and over. From 2003 to 2012, more males (78%) than females were notified with newly acquired hepatitis B (Figure 10.11). In 2012 the highest rate was observed in people aged 40 to 44 years (Figure 8.2).
8.1.3 Notifications by Aboriginality

For the past ten years, rates of newly acquired hepatitis B have been consistently higher in Aboriginal than non-Aboriginal people, except in 2003 and 2009 when no Aboriginal cases were notified (Figure 8.3).

8.1.4 Regional distribution

The highest newly acquired hepatitis B notification rate in 2012 was reported in the South Metropolitan area (1.5/100,000 population) and the second highest in the Pilbara region (1.3/100,000 population) (Table 10.34). In 2012, only the North Metropolitan, South Metropolitan, South West and Pilbara regions in WA recorded notifications of newly acquired hepatitis B (Map 8.1 and Table 10.34).

8.1.5 Place of acquisition

Among newly acquired hepatitis B notifications in 2012 that had place of acquisition recorded, 63% were reported as having been acquired in WA and 31% overseas (Table 10.39).

8.1.6 Interstate comparisons

In comparison with other Australian states and territories, the crude WA rate was comparable to the national rate (0.8 vs. 0.7/100,000 population) (Figure 8.4 and Table 10.40). The crude rates for both WA and the nation decreased from 2008 to 2011 and stabilised in 2012.
8.2 Unspecified hepatitis B

8.2.1 Trends over time

Unspecified hepatitis B notifications in 2012 (n=568) were comparable with that reported in 2011 (n=542) and the five-year average (2007 to 2011) of 595.6. The rate increased from 2005 to a peak in 2008 and thereafter decreased annually to 2011 before stabilising in 2012 (Figure 8.5 and Figure 10.10).

8.2.2 Distribution by sex and age

In 2012, 51% of unspecified hepatitis B notifications occurred in people aged 25 to 39 years and 16% in people aged 50 years and over. More males were notified with unspecified hepatitis B infections than females (309 vs. 259 notifications) (Figure 10.12). The highest rates were recorded among people aged 25 to 39 years (Figure 8.6).

8.2.3 Notifications by Aboriginality

In 2012, 77% of unspecified hepatitis B notifications were non-Aboriginal people, 8% were Aboriginal people, and 15% were missing Aboriginality data. The Aboriginal to non-Aboriginal rate ratio in the last ten years decreased to a low of 2.6:1 in 2009, and the rate ratio in 2012 was 3.4:1 (Figure 8.7). In 2012, the Goldfields region recorded the highest rate of unspecified hepatitis B among both Aboriginal and non-Aboriginal people in WA (167/100,000 population and 24/100,000 population respectively) (Table 10.37).

8.2.4 Regional distribution

The highest unspecified hepatitis B notification rates in 2012 were recorded in the
Kimberley and Goldfields regions (50/100,000 population and 40/100,000 population respectively). The lowest rate was in the Wheatbelt region (9/100,000 population) (Map 8.2).

Map 8.2 ASR of unspecified hepatitis B notifications by PHU, WA, 2012

8.2.5 Place of acquisition
Among unspecified hepatitis B notifications in 2012 that had place of acquisition recorded, 79% were reported to have acquired the infection overseas and 18% in WA. These trends were similar in male and female notifications (Table 10.39).

8.2.6 Interstate comparisons
In 2012, the crude unspecified hepatitis B notification rate in WA (32/100,000 population) was the second highest in Australia after the NT (72/100,000 population) and was 27% higher than that reported for the nation (25/100,000 population) (Figure 8.8 and Table 10.41).

8.3 Hepatitis B testing
Between 2009 and 2012, the hepatitis B testing and test positivity rates increased by 6% and 15% respectively. In 2012, the greatest increase in test positivity rate occurred in people aged 15 to 24 years. In 2012, the highest testing rate and test positivity rate was observed in 15 to 24 year olds and people aged under 15 years respectively (Figure 8.9).
Island and Curtin Immigration Detention Centres.

Map 8.3 Crude rate of hepatitis B testing by PHU, WA, 2012

8.4 Outbreaks and other investigations

No significant outbreaks or clusters of hepatitis B infections were reported in 2012.

8.5 Disease prevention and control strategies

Hepatitis B vaccination has been provided to infants in accordance with the National Immunisation Program Schedule since 2000. Funded hepatitis B vaccination is also made available through general practitioners for people diagnosed with hepatitis C and through targeted services for at-risk adults (DoH 2012). Household and sexual contacts of hepatitis B carriers can also access hepatitis B vaccine (DoH 2009).

In addition to vaccination, HepatitisWA is a non-government organisation supported by the DoH to undertake hepatitis B community development work, particularly with culturally and linguistically diverse communities. There is a hepatitis B education program for health professionals also available online (http://hepatitis.ecu.edu.au/).
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 76 in 2010 before increasing each year to 2012 (n=124). The number of notifications in 2012 was 6% higher than the number in 2011 (n=117) and 33% greater than the 2007 to 2011 five-year average of 93 notifications (Figure 9.1, Figure 10.15).

Figure 9.1 Number and ASR of newly acquired hepatitis C notifications, WA, 2003 to 2012

9.1.2 Distribution by sex and age

In 2012, 56% of newly acquired hepatitis C notifications occurred in people aged 20 to 29 years (Figure 9.2). From 2003 to 2012, more males than females were notified with newly acquired hepatitis C each year (Figure 10.16).

Key points

- Newly acquired hepatitis C notifications reached a ten-year low in 2010 before increasing each year to 2012. Unspecified hepatitis C notifications peaked in 2008 before decreasing each year to 2012.
- Notifications for newly acquired and unspecified hepatitis C were highest in the 20 to 29 years and 50 years and over age groups respectively.
- The numbers of tests were highest in the 15 to 24 years age group.
- In comparison to other parts of the state, notification rates were higher in the Great Southern region (newly acquired) and the Midwest region (unspecified), and testing rates were higher in the Kimberley region.
- Aboriginal to non-Aboriginal rate ratios for newly acquired and unspecified infections were 13:1 and 7:1 respectively.
- The majority of newly acquired infections were acquired in WA while most unspecified infections did not have place acquired recorded.
- In comparison to the national rates, the WA newly acquired hepatitis C rate was more than double and the unspecified hepatitis C rate was comparable.
- There were marked differences between Aboriginal and non-Aboriginal people in terms of reasons for testing and risk factors for hepatitis C.
9.1.3 Notifications by Aboriginality

The Aboriginality of all newly acquired hepatitis C notifications has been known every year since 2009 (Figure 10.18). The Aboriginal to non-Aboriginal rate ratio fluctuated over the period between 2003 and 2012, however the newly acquired hepatitis C rate in Aboriginal people was still far greater than for non-Aboriginal people (Aboriginal to non-Aboriginal rate ratio=12.7:1 in 2012) (Figure 9.3). In 2012, the highest newly acquired hepatitis C rates were reported in both Aboriginal and non-Aboriginal people from the Great Southern region (211 and 14/100,000 population respectively) (Table 10.46).

9.1.4 Regional distribution

The highest newly acquired hepatitis C notification rate in 2012 was reported from the Great Southern region, where the rate was more than four-times greater than the WA rate (24 vs. 5/100,000 population) (Map 9.1 and Table 10.43).

9.1.5 Place of acquisition

Among newly acquired hepatitis C notifications in 2012 that had place of acquisition recorded, 99% were reported as having been acquired in WA. These trends were equally apparent in males and females (Table 10.48).

9.1.6 Interstate comparisons

It is important to note that all cases of hepatitis C in the NT and QLD are reported as unspecified, so limited comparisons can be made between jurisdictions and for the nation as a whole. In 2012 the crude newly acquired hepatitis C notification rate in WA was more than double the crude national rate (5.3 vs. 2.6/100,000 population (Figure 9.4).
Excluding QLD, the crude newly acquired hepatitis C notification rate in WA in 2012 was the highest in Australia (Table 10.49).

9.2 Unspecified hepatitis C

9.2.1 Trends over time

Unspecified hepatitis C notifications in WA reached a peak of 1,260 in 2008. The number of notifications in 2012 (n=954) was comparable to that reported in 2011 (n=957) and 12% lower than the 2007 to 2011 five-year average of 1,086 (Figure 9.5).

9.2.2 Distribution by sex and age

In 2012, 25% of unspecified hepatitis C notifications occurred in people aged 50 years or over. From 2003 to 2012, more males than females were notified with unspecified hepatitis C each year (Figure 9.6 and Figure 10.17).

9.2.3 Notifications by Aboriginality

In 2012, 89% of unspecified hepatitis C notifications were identified by Aboriginality. The Aboriginal to non-Aboriginal rate ratio fluctuated from 2003 to 2012, when it was the highest reported in the previous ten-year period (Aboriginal to non-Aboriginal rate ratio=6.5:1) (Figure 9.7). Among Aboriginal people, the highest unspecified hepatitis C rate in 2012 was observed in the Great Southern region and among non-Aboriginal people the highest rate was in the Kimberley region (652 and 60/100,000 population respectively) (Table 10.46).

9.2.4 Regional distribution

The highest unspecified hepatitis C notification rates in 2012 were reported from
the Midwest, Goldfields and Great Southern regions, (Map 9.2 and Table 10.44).

Map 9.2 ASR of unspecified hepatitis C notifications by PHU, WA, 2012

9.2.5 Place of acquisition
Among unspecified hepatitis C notifications in 2012 that had place of acquisition recorded, 75% were reported as having been acquired in WA, 14% overseas and 11% interstate. These trends were equally apparent in males and females (Table 10.48).

9.2.6 Interstate comparisons
It is important to note that all cases of hepatitis C in the NT and QLD are reported as unspecified so limited comparisons can be made between jurisdictions and for the nation as a whole. In 2012, the crude unspecified hepatitis C notification rate in WA was comparable to the crude national rate (43.0 vs. 42.7/100,000 population) (Figure 9.8). Excluding the NT and QLD, the crude unspecified hepatitis C notification rate in WA in 2012 was the third highest in Australia after Tasmania (TAS) and NSW (47 and 44/100,000 population respectively) (Table 10.50).

Figure 9.8 Number and crude rate of unspecified hepatitis C notifications, WA and Australia, 2008 to 2012

9.3 Enhanced hepatitis C surveillance
In 2012, 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 69% (n=85/124) of newly acquired infections and 19% (n=179/954) of unspecified infections. A completed form was received for 30% (n=55/183) of Aboriginal, and 26% (n=204/792) 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 prison entry screening while more non-Aboriginal people were diagnosed as a result of an abnormal liver test. 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, 65% reported injecting drug use. However, when the data were limited to those with ‘yes’ and ‘no’ responses to that question only, 86% of cases reported a history of
injecting drug use. Aboriginal people were more likely than non-Aboriginal people to have a history of imprisonment as a risk factor for hepatitis C (Table 9.1).

9.4 Hepatitis C testing

Between 2009 and 2012, the hepatitis C testing rate increased 8% (52 to 56/1,000 population) and the test positivity rate remained stable (5.5 to 5.3%) (Figure 9.9).

The highest testing rate in 2012 was observed in people aged 15 to 24 years (87/1,000 population) while the highest test positivity rate was in people aged 25 years and older (5.8%) (Figure 9.9).

Figure 9.9 Hepatitis C testing rate and test positivity rate by age group, WA, 2009 to 2012

In 2012, the testing rate in the Kimberley region was more than five-times the statewide rate (301 vs. 56/100,000 population). Between 2011 and 2012 in the Kimberley region, the testing rate more than doubled (135 to 301/1,000 population) and test positivity increased 59% (4.9 to 7.8%). These increases reflect inclusion of routine screening of detainees at Christmas Island and Curtin Immigration Detention Centres (Map 9.3).

9.5 Outbreaks and other investigations

No significant outbreaks or clusters of hepatitis C infections were reported in 2012.

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.

An online needle and syringe program (NSP) orientation and training package is available (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 online (http://hepatitis.ecu.edu.au/).
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 WA Substance User’s Association (WASUA).

Table 9.1 Behavioural characteristics of people notified with hepatitis C by Aboriginality, WA, 2012

<table>
<thead>
<tr>
<th>Behavioural and demographic characteristics</th>
<th>Aboriginality</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>(n = 55)</td>
</tr>
<tr>
<td></td>
<td>Number</td>
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<tr>
<td>Sex</td>
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</tr>
<tr>
<td>Male</td>
<td>37</td>
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<tr>
<td>Female</td>
<td>18</td>
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<td>Reason for testing</td>
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</tr>
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<td>History of risk factors</td>
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<tr>
<td>Signs/symptoms of hepatitis</td>
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<td>Abnormal liver test</td>
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<td>Prison screen</td>
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<td>Antenatal screen</td>
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<td>Sexual health screen</td>
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<td>Employment screen</td>
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<td>Blood or organ donor</td>
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<td>Drug/alcohol program screen</td>
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<tr>
<td>Migrant/refugee screen</td>
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<tr>
<td>Occupational exposure - exposed</td>
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<td>Occupational exposure - source</td>
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<tr>
<td>Patient request</td>
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<tr>
<td>Other</td>
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<td>Risk factors</td>
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<td>Injecting drug use</td>
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<td>Blood products/tissues in Australia</td>
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<tr>
<td>Blood products/tissues overseas</td>
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<td>Organ transplant</td>
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<td>Body piercing</td>
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<td>Perinatal transmission</td>
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<td>Opposite sex partner with HCV</td>
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<td>Health care worker with no documented exposure</td>
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<td>Household contact with HCV</td>
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<tr>
<td>Other risk factor</td>
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</table>

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

CDNA - see Communicable Diseases Network Australia.


DoH - see Department of Health.


The Kirby Institute. HIV, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2012. NSW: The Kirby Institute, the University of New South Wales; 2012.
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