Suggested citation:


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ISSN 1927-4149

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August 2012
Overview

There are over 100 communicable diseases in Alberta which are notifiable to public health officials. While only seven of the notifiable diseases are sexually transmitted infections (STI), they are by far the most commonly reported notifiable diseases in Alberta. In 2011, STI made up 67 per cent of all notifiable disease cases reported (Figure 1).

The seven reportable STI are: chlamydia, chancroid, gonorrhea, non-gonococcal urethritis (NGU), lymphogranuloma venereum (LGV), mucopurulent cervicitis (MPC) and syphilis.

In 2011, there were no cases reported of chancroid or LGV. Chlamydia and gonorrhea were the two most commonly reported STIs.

Table 1: STI Cases by Alberta Health Zone, 2011

<table>
<thead>
<tr>
<th>STI</th>
<th>South</th>
<th>Calgary</th>
<th>Central</th>
<th>Edmonton</th>
<th>North</th>
<th>ALBERTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlamydia</td>
<td>911</td>
<td>4,384</td>
<td>1,579</td>
<td>4,909</td>
<td>2,310</td>
<td>14,093</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>25</td>
<td>346</td>
<td>118</td>
<td>693</td>
<td>319</td>
<td>1,501</td>
</tr>
<tr>
<td>Syphilis (all)</td>
<td>27</td>
<td>134</td>
<td>5</td>
<td>113</td>
<td>21</td>
<td>300</td>
</tr>
<tr>
<td>NGU</td>
<td>31</td>
<td>626</td>
<td>124</td>
<td>465</td>
<td>148</td>
<td>1,394</td>
</tr>
<tr>
<td>MPC</td>
<td>9</td>
<td>165</td>
<td>23</td>
<td>80</td>
<td>37</td>
<td>314</td>
</tr>
<tr>
<td>Total Cases</td>
<td>1,003</td>
<td>5,655</td>
<td>1,849</td>
<td>6,260</td>
<td>2,835</td>
<td>17,602</td>
</tr>
<tr>
<td>Rate/100,000</td>
<td>345.1</td>
<td>398.0</td>
<td>406.1</td>
<td>523.7</td>
<td>628.3</td>
<td>461.5</td>
</tr>
</tbody>
</table>

Overall, in 2011, the highest STI rate was in the North zone with 628.3 cases per 100,000 persons and the lowest rates of diseases in the South zone with 345.1 cases per 100,000 persons (Table 1).

Although the greatest number of STI cases occurred in Calgary and Edmonton zones, the North zone had the highest rates of chlamydia and gonorrhea.
Chlamydia

Chlamydia is the most commonly reported notifiable disease in Alberta. In 2011, over 14,000 cases were reported to the province with the largest proportion being young Caucasian females.

Gonorrhea

After 2 years of consecutive decline (2009-2010), the number of gonorrhea cases slightly increased in 2011 with 1,501 cases. Overall, the rate for females was lower than that for males (34.4 and 44.3 cases per 100,000, respectively).

Syphilis

In March 2007, a syphilis outbreak was declared in Alberta by the acting Chief Medical Officer of Health. The infectious syphilis rate was much lower in 2011 than in the previous four years.

Cases of congenital syphilis continue to be identified in the province despite changes to the provincial prenatal screening program. One case was identified in 2011 bringing the total number of congenital syphilis cases to 32 since 2000.

Non-Gonococcal Urethritis (NGU) and Mucopurulent Cervicitis (MPC)

Rates for NGU have been steady for the last eight years (2004-2011), fluctuating between 34 and 40 cases per 100,000 males. In 2011, MPC cases and rates slightly increased (314 cases in 2011 vs 285 cases in 2010).

Data Note:

Data for this report was pulled July 26, 2012. Information received after July 26 is not reflected in this report.
Chlamydia

Chlamydia is the most commonly reported notifiable disease in Alberta. This is a bacterial infection, transmitted through sexual contact or from mother to child during delivery. Chlamydia is easily treatable with antibiotics, but because it is often asymptomatic it may be left untreated allowing complications to become severe. The risk of pelvic inflammatory disease, ectopic pregnancy, infertility, pelvic pain and reactive arthritis are the associated complications for females. For males, risk of infertility, reactive arthritis and infection of the epididymis and testes may occur if chlamydia is untreated.

Figure 1.1

Cases and rates of chlamydia have steadily increased in Alberta between 2000 and 2009 (from 196 cases to 373 cases per 100,000 persons, respectively), then decreased in 2010, and then increased in 2011 with 370 cases per 100,000 persons.

Figure 1.2

Females have historically reported higher rates of chlamydia than males. In 2011, female rates were almost twice as high as male rates (481 cases per 100,000 vs. 259 cases per 100,000 persons, respectively), but had decreased since 2009. The 2011 number and rate of male cases were higher than what was seen in 2010.
Chlamydia rates differ within the province by health zone, and appear to increase from south to north.

In 2011, the highest rate of chlamydia was in North zone and the lowest rate of disease was in Calgary zone (512 cases vs. 309 cases per 100,000 persons, respectively).

Edmonton had the second highest rate, with South zone having the second lowest rate (411 cases and 313 cases per 100,000, respectively).

As mentioned, females make up the majority of chlamydia cases, as seen consistently across health zones in 2011. Female rates were 171% - 209% higher than male rates.

As seen on Figure 1.4, there were approximately twice as many female chlamydia cases than male cases in the Central, North, South, and Calgary zones.
Figure 1.5

In Alberta, 81 per cent of all chlamydia cases were in people between the ages of 15 and 29 years old in 2011.

The highest rates of chlamydia occurred among older teens/young adults. The rates for the 20 to 24 year age group were 1,915 cases per 100,000 persons in 2011. The second highest rates occurred in the 15 to 19 age group with 1,390 cases per 100,000 persons.

In 2011, 65 per cent of all chlamydia cases were female, with 84 per cent of those females between the ages of 15 and 29 years.

The rate of chlamydia for 15 to 19 year olds was almost four times higher in females than males (2,258 cases per 100,000 females vs. 565 cases per 100,000 males).
Figure 1.7

Over the past 12 years, the proportion of chlamydia cases by known ethnicity has remained consistent.

Between 65 and 71 per cent of chlamydia cases were Caucasian, with the next largest identified ethnic group being Aboriginal.

Figure 1.8

In 2011, the majority of chlamydia cases were Caucasian (51% or 7,188/14,088 cases). The next largest group was Aboriginal (18% or 2,553 cases).

There were more female cases than male in all ethnic groups except for Black (204 female cases vs. 289 male cases).

The majority of chlamydia cases with known sexual preference were heterosexual.
Gonorrhea

Gonorrhea is the second most commonly reportable sexually transmitted infection in Alberta, and is caused by the bacterium *Neisseria gonorrhoeae*. Many gonorrheal infections are asymptomatic, particularly in women. Common symptoms in males are painful urination and urethral discharge; in women they are mucopurulent cervicitis and sometimes urethritis. Untreated gonorrhea can spread through the body affecting joints and even heart valves. Resistance to antibiotics traditionally used to treat gonorrheal infections is developing, thus prevention is key.

Figure 2.1

Cases and rates of gonorrhea increased until 2006. After remaining steady for a few years, both cases and rates then dropped significantly since 2009. In 2010, the rate of gonorrhea was 32 cases per 100,000 persons, or half the rate from 2007. But in 2011, the rate of gonorrhea increased again, up to 39 cases per 100,000 persons.

Figure 2.2

Since 2000, males have had predominately higher rates of gonorrhea than females. In 2010, there was a marked decrease in cases and rates of gonorrhea among males. The rates of disease for males and females have almost converged, something that has not occurred within the last 10 years. In 2011, both male and female rates have started to increase (5 cases more for females and 10 cases more per 100,000 for males compared to 2010).
In 2011, the gonorrhea rate in the North zone was eight times more than the rate in the South zone (70.7 cases per 100,000 vs. 8.6 cases, respectively).

The rate of disease in the Edmonton zone was twice as high as the Calgary zone rate (58.0 cases per 100,000 vs. 24.4 cases, respectively).

Central, Calgary and South zones had lower rates of gonorrhea than the provincial rate of 39.4 cases per 100,000 persons.

Within health zones in 2011, the rate of gonorrhea for males was generally higher than for females.

The discrepancy of 130 cases between males and females in Calgary zone was noticeable; this number accounted for 66.6% or 130/197 of the total difference in cases from both genders (848 male cases vs. 653 female cases) in 2011.
In Alberta, 74 per cent of all 2011 gonorrhea cases were in people between the ages of 15 and 24 years old.

The highest rates of gonorrhea occurred among older teens/young adults; the highest rate was in the 20 to 24 years age group with 163.4 cases per 100,000 persons. The second highest rate of disease was 136.1 cases per 100,000 persons in those aged 15 to 19 years.

The breakdown of gonorrhea cases by gender and age groups show that females had higher rates of disease than males for those under 25 years of age.

The highest reported rates were for 15 to 19 year-old females (173 cases per 100,000 females). Male rates peaked in the 20 to 24 year age group (181 cases per 100,000 males).

Males had significantly higher rates than females in those 20 years and over.
The ethnicity of gonorrhea cases has also changed over the years.

Aboriginal people have been overrepresented through the years as cases, and have the largest proportion as an ethnic group in 2008, 2009, 2010, and 2011.

The proportion of Caucasian gonorrhea cases has been trending down since 2007 (829 cases in 2007, 347 cases in 2010), and then increase to 541 cases in 2011.

There were a higher number of male gonorrhea cases than female for all ethnic groups except Aboriginal.

Sixty four per cent of the total number of gonorrhea cases among males were Caucasian (344/541 cases).

Fifty eight per cent of the total number of gonorrhea cases among females were Aboriginal (311/532 cases).
Syphilis

One of the oldest sexually transmitted diseases recorded is syphilis. Syphilis is caused by the bacterium *Treponema pallidum*. Undiagnosed or untreated syphilis progresses through several stages: primary, secondary, latent and tertiary. Untreated syphilis can lead to destruction of soft tissues, bone, blindness and heart failure. More importantly, a mother with untreated syphilis may transmit the disease to her unborn child, which can lead to death or lifelong deformity of the child. This section discusses infectious syphilis which covers the primary and secondary stages, as well as early latent. The breakdown of infectious syphilis cases by stage of infection for 2010-2011 is below:

### Table 3.1 Infectious Syphilis by Stage, Alberta 2011

<table>
<thead>
<tr>
<th>Stage of Infectious Syphilis 2010-2011</th>
<th>2010 Cases</th>
<th>2011 Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Latent</td>
<td>89</td>
<td>40</td>
</tr>
<tr>
<td>Primary</td>
<td>38</td>
<td>33</td>
</tr>
<tr>
<td>Secondary</td>
<td>32</td>
<td>11</td>
</tr>
<tr>
<td>Symptomatic CNS (Central Nervous System)</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Symptomatic CNS Ocular</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Asymptomatic CNS</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>174</strong></td>
<td><strong>94</strong></td>
</tr>
</tbody>
</table>

Syphilis regained notoriety in Alberta as cases continued to rise, when a province wide outbreak was declared in March 2007. The last outbreak occurred in the mid-1980’s, with a peak of 574 cases in 1984. Between outbreaks, reports of syphilis cases were rare.

Beginning in 2003, there was an exponential increase in the number of syphilis infections reported.

In 2009, there were 280 cases reported in the province. In 2010, the number of cases of syphilis reported in Alberta sharply dropped to 174 cases, and then continued to decrease to 94 cases in 2011.
Figure 3.2

Compared to other STIs in Alberta, infectious syphilis was reported more often among men, ranging from a low of 59 per cent (2008) to a high of 77 per cent (2003-2004) of total annual cases.

The chart to the left shows the difference between the genders over the years.

In 2011, the male rate was twice as high as the female rate.

Figure 3.3

Infectious syphilis rates also differ within the province by health zone. In 2011, there were no cases in Central zone; the highest rate of disease was in the South zone (5.2 cases per 100,000 persons); the lowest rate was in North zone with 1.3 cases per 100,000.

The rate for infectious syphilis in the Calgary and Edmonton zones is similar (2.5 cases per 100,000 persons vs. 3.1 cases per 100,000 persons, respectively).
Figure 3.4

Not only do case counts and rates of infectious syphilis differ by health zone, cases and rates by gender also vary greatly depending on the health zone.

In 2011, the majority of male cases occurred in the Edmonton zone with the highest rate of 4.9 cases per 100,000 males. The highest rate of disease for females was in the South zone (6.9 cases per 100,000 females).

Figure 3.5

While cases of chlamydia and gonorrhea are skewed toward young adults, newly reported infectious syphilis cases are more evenly distributed over age groups until 50 years of age where the number of cases decreases.

In 2011, the highest rate of disease was 8.0 cases per 100,000 persons in the 20 to 24 years age group, with the next highest rate in the 25 to 29 year old group (6.8 cases per 100,000).
Figure 3.6

The highest rate for females was in the 25 to 29 years age group at 5.1 cases per 100,000 females. Males have the highest rate in the 20 to 24 years age group (11.7 cases per 100,000 males).

In 2011, the male rate of infectious syphilis between 40 to 59 years was 5.7 times higher than the rate for females (3.4 cases vs. 0.6 cases per 100,000, respectively).

Figure 3.7

For the past 12 years (2000-2011), the majority of infectious syphilis cases with known ethnicity have been Caucasian (56.6%), followed by Aboriginal (31.5%).
In 2011, the majority of infectious syphilis in each ethnic group were males (more than 71%), except for Aboriginals, where there were more female cases than male cases (22 female cases vs. 13 male cases).

The number of syphilis cases identified by sexual preference as homosexual varies from year to year. The proportion of homosexual identified cases range from no cases in 2001 to 31 per cent (29/94 cases) in 2011.

In 2007, when the outbreak of infectious syphilis was declared, the proportion of homosexual and bisexual cases accounted for one-third of all cases (62/247 cases and 19/247 cases, respectfully).
Congenital Syphilis

Congenital syphilis is the vertical transmission of syphilis from an infected mother to her infant. Congenital syphilis has increased in Alberta, with the first case in years reported in 2002. In 2011 only one case of congenital syphilis was reported.

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congenital Syphilis</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

Since August 2002, Alberta has had a centralized provincial prenatal screening program in place to screen women early in their pregnancy for five infectious diseases – infectious syphilis, HIV, hepatitis B, rubella and varicella.
Non-Gonococcal Urethritis (NGU)

Non-gonococcal urethritis is the inflammation of the urethra in males where the case has tested negative for gonorrhea and chlamydia. Approximately one-quarter of NGU infections are asymptomatic. NGU is treated with antibiotics. If NGU is not treated it can cause epididymitis and infertility. NGU is not reportable at the national level.

Figure 4.1

Rates for NGU have been steady for the last 8 years (2004-2011), fluctuating between 69 and 80 cases per 100,000 males.

Please note that the case definition for NGU was modified in 2003 and thus comparisons cannot be made between the time periods before and after 2003.

Figure 4.2

In 2011, the rate of disease varied across the province, with the highest rate in Calgary zone (88 cases per 100,000 males) followed by Edmonton and North zones (rate of 78 and 64 cases per 100,000 males, respectively). The lowest NGU rate was in South zone with 21 cases per 100,000 males.
Figure 4.3

In 2011, the majority of NGU cases were diagnosed in males under the age of 30, with the highest rates occurring between the age of 20 and 29 years (268 and 240 cases per 100,000 males).

Figure 4.4

In the last 8 years (2004 to 2011), Caucasians accounted for the majority of NGU infection cases. Aboriginals followed with the proportion ranging from 9 per cent to 12 per cent.
### Table 4.1: NGU 2011 – Cases by Ethnicity and Sexual Preference

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Bisexual</th>
<th>Heterosexual</th>
<th>Homosexual</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>25</td>
<td>728</td>
<td>111</td>
<td>89</td>
<td>953</td>
</tr>
<tr>
<td>Black</td>
<td>1</td>
<td>105</td>
<td>5</td>
<td>8</td>
<td>119</td>
</tr>
<tr>
<td>Aboriginal</td>
<td>4</td>
<td>120</td>
<td>3</td>
<td>16</td>
<td>143</td>
</tr>
<tr>
<td>Asian</td>
<td>0</td>
<td>36</td>
<td>5</td>
<td>2</td>
<td>43</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>31</td>
<td>1</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>40</td>
<td>4</td>
<td>56</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
<td><strong>1,060</strong></td>
<td><strong>129</strong></td>
<td><strong>173</strong></td>
<td><strong>1,394</strong></td>
</tr>
</tbody>
</table>

In 2011, the majority of NGU cases are heterosexual (76%). Among 1,060 cases identified as heterosexual, 69 per cent were Caucasian.
Mucopurulent Cervicitis (MPC)

Mucopurulent cervicitis is the clinical syndrome of inflammation of the cervix in females, most often caused by *C. trachomatis* or *N. gonorrhea*. It is associated with higher risk of poor pregnancy outcome, upper genital tract disease and transmission of HIV. MPC can be treated with antibiotics. If left untreated, it can cause pelvic inflammatory disease (PID), chronic pelvic pain, ectopic pregnancy and infertility. As with NGU, MPC is not reportable nationally.

**Figure 5.1**

The case definition for MPC was modified in 2003 and thus comparisons cannot be made between the two time periods before and after 2003.

MPC cases and rates increased from 2004 to 2008 (13.6 cases vs. 20.5 cases per 100,000 females, respectively). The rate was 16.5 cases per 100,000 females in 2011.

**Figure 5.2**

Rates varied among Alberta health zones; the lowest was 6.2 cases per 100,000 females in the South zone and the highest was 23.2 cases in the North zone.

53 per cent of MPC cases were in the Calgary zone. The other health zones had MPC rates under or similar to the provincial rate (16.5 cases per 100,000 females).
50 per cent of MPC cases in 2011 were between 15 and 24 years of age.

The highest rate of MPC was 72 cases per 100,000 females among 20 to 24 year olds. Young females aged 15 to 19 years had MPC rate of 46 cases per 100,000.

Overall from 2004 to 2011, the majority of females infected with MPC were Caucasian (65% of cases over those eight years).
Table 5.1: MPC 2010 – Cases by Ethnicity and Sexual Preference

The majority of MPC cases in 2011 were identified as heterosexual (85.7%). Among these, 65 per cent were Caucasian and 22 per cent were Aboriginal.

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Bisexual</th>
<th>Heterosexual</th>
<th>Homosexual</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>4</td>
<td>176</td>
<td>4</td>
<td>9</td>
<td>193</td>
</tr>
<tr>
<td>Black</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Aboriginal</td>
<td>1</td>
<td>60</td>
<td>0</td>
<td>10</td>
<td>71</td>
</tr>
<tr>
<td>Asian</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>9</td>
<td>0</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6</strong></td>
<td><strong>269</strong></td>
<td><strong>5</strong></td>
<td><strong>34</strong></td>
<td><strong>314</strong></td>
</tr>
</tbody>
</table>