Gonorrhoea and Syphilis
The Forgotten Epidemics

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Sexual Health Physician Fremantle and FSH
Number of gonorrhoea notifications by sex, WA, 2007 to 2016

Source: Epidemiology and Surveillance Program, Communicable Disease Control Directorate (CDCD)
Number of gonorrhoea notifications by age group and sex, WA, 2016

Source: Epidemiology and Surveillance Program, Communicable Disease Control Directorate (CDCD)
Number of infectious syphilis notifications by sex, WA, 2007 to 2016

Source: Epidemiology and Surveillance Program, Communicable Disease Control Directorate (CDCD)
STI, BBV and HIV Aboriginal:non-Aboriginal rate ratios\(^1\), WA, 2016

<table>
<thead>
<tr>
<th>Infection</th>
<th>Aboriginal:Non-Aboriginal Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlamydia</td>
<td>4:1</td>
</tr>
<tr>
<td>Gonorrhoea</td>
<td>11:1</td>
</tr>
<tr>
<td>Infectious syphilis</td>
<td>6:1</td>
</tr>
<tr>
<td>Hepatitis B (Total)</td>
<td>2:1</td>
</tr>
<tr>
<td>Hepatitis C (Total)</td>
<td>10:1</td>
</tr>
<tr>
<td>HIV</td>
<td>1.5:1</td>
</tr>
<tr>
<td>Males</td>
<td>1.4:1</td>
</tr>
<tr>
<td>Females</td>
<td>3:1</td>
</tr>
</tbody>
</table>

\(^1\) Ratio of age-standardised notification rates

Source: Epidemiology and Surveillance Program, Communicable Disease Control Directorate (CDCD)
Age-standardised rates\(^1\) of chlamydia and gonorrhoea notifications by region, WA, 2016

<table>
<thead>
<tr>
<th>Region</th>
<th>Chlamydia</th>
<th>Gonorrhoea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goldfields</td>
<td>606.8</td>
<td>201.0</td>
</tr>
<tr>
<td>Great Southern</td>
<td>381.4</td>
<td>30.8</td>
</tr>
<tr>
<td>Kimberley</td>
<td>1,341.3</td>
<td>1,083.1</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>406.7</td>
<td>102.8</td>
</tr>
<tr>
<td>Midwest</td>
<td>561.7</td>
<td>207.7</td>
</tr>
<tr>
<td>Pilbara</td>
<td>451.6</td>
<td>293.4</td>
</tr>
<tr>
<td>South West</td>
<td>373.9</td>
<td>61.4</td>
</tr>
<tr>
<td>Wheatbelt</td>
<td>302.3</td>
<td>46.4</td>
</tr>
<tr>
<td><strong>WA (Total)</strong></td>
<td><strong>428.0</strong></td>
<td><strong>124.1</strong></td>
</tr>
</tbody>
</table>

\(^1\) Rate per 100,000 population
\(^2\) WA (Total) includes unknown/other regions

Source: Epidemiology and Surveillance Program, Communicable Disease Control Directorate (CDCD)
### Number and age-standardised rate$^1$ of gonorrhoea notifications by region and Aboriginality, WA, 2016

<table>
<thead>
<tr>
<th>Region</th>
<th>Aboriginal</th>
<th></th>
<th>non-Aboriginal</th>
<th></th>
<th>Rate ratio (Aboriginal: non-Aboriginal)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>ASR</td>
<td>Number</td>
<td>ASR</td>
<td></td>
</tr>
<tr>
<td>Goldfields</td>
<td>114</td>
<td>1,471.0</td>
<td>14</td>
<td>24.4</td>
<td>60.3</td>
</tr>
<tr>
<td>Great Southern</td>
<td>2</td>
<td>82.1</td>
<td>12</td>
<td>28.3</td>
<td>2.9</td>
</tr>
<tr>
<td>Kimberley</td>
<td>451</td>
<td>2,100.1</td>
<td>14</td>
<td>56.3</td>
<td>37.3</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>155</td>
<td>373.4</td>
<td>2,118</td>
<td>97.2</td>
<td>3.8</td>
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<tr>
<td>Midwest</td>
<td>81</td>
<td>801.8</td>
<td>48</td>
<td>90.6</td>
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<tr>
<td>Pilbara</td>
<td>188</td>
<td>1,768.6</td>
<td>28</td>
<td>46.1</td>
<td>38.4</td>
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<tr>
<td>South West</td>
<td>4</td>
<td>87.4</td>
<td>91</td>
<td>60.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Wheatbelt</td>
<td>9</td>
<td>158.0</td>
<td>19</td>
<td>33.7</td>
<td>4.7</td>
</tr>
<tr>
<td><strong>WA (Total)$^2$</strong></td>
<td><strong>1,010</strong></td>
<td><strong>935.0</strong></td>
<td><strong>2,377</strong></td>
<td><strong>88.5</strong></td>
<td><strong>10.6</strong></td>
</tr>
</tbody>
</table>

$^1$ Rate per 100,000 population

$^2$ WA (Total) includes unknown/other regions

Source: Epidemiology and Surveillance Program, Communicable Disease Control Directorate (CDCD)
Number and age-standardised rate\(^1\) of infectious syphilis notifications by region and Aboriginality, WA, 2016

<table>
<thead>
<tr>
<th>Region</th>
<th>Aboriginality</th>
<th></th>
<th>Rate ratio (Aboriginal: non-Aboriginal)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aboriginal</td>
<td>rate ASR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>non-Aboriginal</td>
<td>rate ASR</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goldfields</td>
<td>1</td>
<td>64.5</td>
<td>4</td>
</tr>
<tr>
<td>Great Southern</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>Kimberley</td>
<td>43</td>
<td>236.2</td>
<td>1</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>5</td>
<td>16.0</td>
<td>255</td>
</tr>
<tr>
<td>Midwest</td>
<td>3</td>
<td>36.3</td>
<td>3</td>
</tr>
<tr>
<td>Pilbara</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
</tr>
<tr>
<td>South West</td>
<td>0</td>
<td>0.0</td>
<td>8</td>
</tr>
<tr>
<td>Wheatbelt</td>
<td>0</td>
<td>0.0</td>
<td>5</td>
</tr>
<tr>
<td><strong>WA (Total)(^2)</strong></td>
<td><strong>52</strong></td>
<td><strong>63.3</strong></td>
<td><strong>287</strong></td>
</tr>
</tbody>
</table>

\(^1\) Rate per 100,000 population

\(^2\) WA (Total) includes unknown/other regions

Source: Epidemiology and Surveillance Program, Communicable Disease Control Directorate (CDCD)
GONORRHOEA

• GONO = seed  RRHOEA = flow
• Organism
  – *Neisseria gonorrhoeae*
  – Gram negative intracellular diplococcus
    • intracellular in polymorphs
• Human only host
• Rapid growth
Uncomplicated Disease

- 80% Females and 10% males asymptomatic though many have signs
- incubation 2-5 days
- Males: urethritis, epididymitis, proctitis, pharyngitis
- Females: Cervicitis, PID, pharyngitis disseminated disease
- Local inflammation increases the risk of HIV acquisition 5 fold
Associated conditions

• Associated Rectal infection in 30% of women
  – Most asymptomatic

• Pharyngitis sole site in only 5%. Cunnilingus rare cause
  – 90% asymptomatic

• Complications
  – Male: epididymitis, strictures very rare
  – Females Infertility, adhesions
Disseminated Disease

• Arthritis/dermatitis picture 0.5-3% of untreated patients, though higher in higher prevalence areas

• Arthritis
  – Wrist. MCPs, ankle and knee Often multiple
  – Often no growth if low WCC in joint aspirate
  – Genital testing therefore important in diagnosis.

• Tenosynovitis also commonly associated

• Skin lesions
  – Typically necrotic on extremities but often atypical can be haemorrhagic but usually <30 cf meningococcus
Diagnosis

• Culture still important.
  – 80-95% sensitive and gives antibiotic sensitivities
• Provide slide for Gram stain
  – Intracellular organisms required for diagnosis
  – 90% sensitivity in urethritis
  – 70% in cervicitis
• NAATs
  – beware of commensal *Neisseria* species causing false positive test results
Treatment

• *N. gonorrhoeae* is becoming increasingly resistant

• Empirical treatment covers *N. gonorrhoeae* and *C. trachomatis* as they frequently occur concurrently

• Standard treatment is:
  – Ceftriaxone 500mg IMI AND Azithromycin 1 g orally
  – Kimberley, Pilbara and remote Goldfields only
    • ZAP pack (3g amoxicillin, 1g probenecid and 1 g Azithromycin
  – Alternatives
    • Gentamicin 240mg IMI
    • Ciprofloxacin 1 g orally ONLY if sensitivities known
    • Azithromycin 2 g stat
PID

• Spectrum of diseases
  – endometritis, salpingitis, tubo-ovarian abscess and peritonitis

• Poorly defined and diagnosed condition

• Important cause of tubal infertility, ectopic pregnancy and chronic pelvic pain

• Worse outcome with repeated infections
  – 10% of those with PID infertile
  – Ectopic 40% risk with >2 episodes
PID

• Causative organisms
  – GC 15-25 % risk
  – CT 10-15% risk Most important cause
    • Worse inflammation with each infection
  – Anaerobes
    • BV and UTI causing
  – Myco and Ureaplasma
  – Actinomyces
  – TB
Symptoms

• Many asymptomatic early in disease
• Bilateral pelvic pain
• RUQ pain
• Vaginal discharge
• Low Back Pain
• Irregular vaginal bleeding
• Dysuria
• Dyspareunia
• Toxic
SIGNS

• Abdo tenderness
• Cervicitis
• Cervical excitation
• Adnexal tenderness
  – usually bilateral
• Fever
• RUQ tenderness
  – Fitzhugh Curtis Synd
New onset of low abdominal pain in young women (15-35)

- PID is likely – exclude other causes
- TEST
  - UA – nitrites pos – treat for UTI (MCS)
    - Not leucocytes
  - Pregnancy test pos – exclude ectopic (US)
  - PCR
- EXAMINE for assessment of low abdominal pain
- TREAT
  - Low threshold for treating PID
  - Over treatment causes few problems
  - Under (or no) treatment → significant tubal damage
  - If not response to treatment – refer for US +/- laparascopy
TREATMENT

• SEXUALLY ACQUIRED
  – Cover GC, CT, Anaerobes
  – IMMEDIATE TREATMENT
    • Azithromycin 1 g
    • Ceftriaxone 500 mg (know your sensitivities)
  – CONTINUING TREATMENT for 2 weeks
    • Doxycycline 100mb bd
    • Metronidazole 400mg bd
    • Use of Azithromycin
  – Pregnancy substitute Azithromycin or roxithromycin for Doxy
Syphilis

- The great POX
- Late 15th century
- ? Columbus
- ? Change in virulence
Epidemiology

- Increasing in WA
- More common in MSM (older)
- More common in Indigenous Australians
PRIMARY SYPHILIS

• nine to ninety days following exposure
• painless *(usually)* ulcer *(chancre)* on genitalia, perianal area, rectum, pharynx, tongue, lip or elsewhere depending on entry site *(usually 2-6 weeks after exposure)*
• non tender enlargement of regional lymph nodes
• Resolves without treatment
• Increases risk of HIV transmission 10 fold
SECONDARY SYPHILIS

- six weeks to six months following exposure
- generalised maculopapular skin rash in most cases
- alopecia/patchy hair loss to scalp and eyebrows
- mucous membrane lesions
- moist papules (condylomas) in moist skin areas
- associated generalized non tender lymphadenopathy, may be associated fever.
- complications of meningitis, hepatitis, osteitis, arthritis, iritis. These may be presenting complaint
- Often resolves without treatment
EARLY LATENT SYPHILIS

- within two years of exposure
- clinical signs and symptoms similar to that of secondary syphilis
- lesions of secondary syphilis can heal spontaneously however relapse may occur if untreated or inadequately treated.
- neurological involvement in secondary syphilis may be asymptomatic but neurological relapses in early latent syphilis may be fulminant.
  - Cranial nerve palsies important
LATE LATENT SYphilis

• can occur after the first 2 years of infection
• usually no physical signs however there may be positive serological tests
• maybe a history of syphilis which has been inadequately treated
• cerebrospinal fluid is negative for treponemes, and x-ray and physical examination shows no evidence of cardiac involvement
• may last from months to a lifetime.
• Patient not infectious
TERTIARY SYPHILIS

• occurs between one to thirty five years after exposure
• infiltrative tumours of the skin, bones and liver
  – Gummas
• aortitis, aneurysms and aortic regurgitation
• affects the central nervous system causing meningovascular and degenerative changes
• paresthesias, shooting pains, abnormal reflexes, dementia or psychosis
• Uveitis or retinitis
• Nerve deafness
Congenital Syphilis

- Preventable with early antenatal care
- Treat mother before 20 weeks if possible
- If treat late in pregnancy may not be curative
- Cord blood not best test
  - Maternal testing is most important
- IgM for neonate if mother’s serology positive
Diagnosis

• Ulcer PCR is available and can be done with herpes testing

• Serology  Just ask for the test
  – First positive is EIA
  – Then TPPA
  – Then RPR  not so reliable in early infection
    • Role of IgM
<table>
<thead>
<tr>
<th>TEST</th>
<th>Primary</th>
<th>Secondary</th>
<th>Late Latent</th>
<th>Late Active</th>
<th>Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDRL/RPR</td>
<td>70-80%</td>
<td>95-100%</td>
<td>50-60%</td>
<td>60-70%</td>
<td>10-50%</td>
</tr>
<tr>
<td>TPHA/TPPA</td>
<td>70-80%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>98-99%</td>
</tr>
<tr>
<td>EIA</td>
<td>85-90%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>98-99%</td>
</tr>
<tr>
<td>FTA-abs</td>
<td>85-90%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>95-98%</td>
</tr>
</tbody>
</table>

Sensitivity of serological tests (McMillan, Young Oglivie & Scott, 2002)
When to test

• Syphilis serology repeated on day of treatment so can assess response to treatment.
TREATMENT

Infectious syphilis (primary, secondary and early latent)

**BENZATHINE** Penicillin 1.8 G IMI stat dose
- Alternative Doxycycline 100mg orally bd for 2 weeks
- Ceftriaxone 1g daily for 2 weeks
  (Herxheimer reaction)

Only use penicillin in pregnancy

Late latent Syphilis

**Benzathine** Penicillin 1.8 IMI weekly for 3 dose
- (up to 10 days between doses)
- Alternative Doxycycline for 4 weeks (adherence)

• CONTACT and treat PARTNERS
• Tertiary needs IV penicillin
Syphilis: Follow-up

• Follow Up of index case:
  – If RPR negative prior to treatment, no follow up required after 3/12
  – If RPR titre raised prior to treatment requires follow up at 3, 6 & 12 months
    • Look for 4 fold (2 titre) fall in RPR
National goals

- Zero congenital syphilis
- Control the current outbreak

Testing of at-risk populations
- 100% antenatal women tested at 1st visit & according to regional clinical guidelines (28 weeks)
- 100% of those diagnosed with another STI (chlamydia, gonorrhoea) have a test for syphilis

Management of people with infectious syphilis
- >=80% of cases investigated & treated within 2 weeks of diagnosis
- >=80% symptomatic cases examined, tested & treated for syphilis on 1st presentation.
- >=80% infectious syphilis cases have repeat syphilis serology at 3-6 months post-treatment

Management of contacts of infectious syphilis
- >= 80% of contacts of infectious syphilis cases examined, tested & treated for syphilis on 1st presentation.
- >= 80% of infectious syphilis cases have >=1 named contact examined, tested & treated within 2 weeks of case treatment.
- >= 80% of named contacts examined, tested & treated for syphilis within 1 month of being named.
Where to refer

• STIs
  – Fremantle  9431 2149
  – RPH  9244 2178

• HIV
  – FSH  6152 6744
  – RPH  9224 2899

• Hepatitis
  – FSH  6152 3738
  – SCGH  9431 3228
  – RPH  9224 2186