Sexually Transmitted Infections (STI)

Dr Remco Peters
Programme Manager
ANOVA Health Institute
Mopani District
Perception of sex

"It's all right, dear — we're just male-bonding."
We all enjoy sex.... So why talk about STIs?
What are STIs?

• Reproductive tract infection that is transmitted primarily through sexual contact with an infected partner
• Not: endogenous and iatrogenic infections of reproductive tract
• Affects men and women
Why are STIs important?

- May affect sexual health
- May affect fertility
- May affect relationships
- May be affected by social stigma and taboo
Risk of transmission

- When there is risk for STI, there is risk for HIV
- When there is risk for HIV, there is risk for STI

- Transmission:
  - HIV = 0.03%
  - Chlamydia = 60-80%
  - Gonorrhoea = 70%
  - HSV >90%
### Microbiology of STIs

<table>
<thead>
<tr>
<th>Bacterial</th>
<th>Viral</th>
<th>Protozoa</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Chlamydia trachomatis</em></td>
<td>HIV</td>
<td><em>Trichomonas vaginalis</em></td>
</tr>
<tr>
<td><em>Neisseria gonorrhoeae</em></td>
<td>HPV</td>
<td></td>
</tr>
<tr>
<td><em>Treponoma pallidum</em></td>
<td>HBV/HCV</td>
<td></td>
</tr>
<tr>
<td><em>Haemophilus ducreyi</em></td>
<td>HSV</td>
<td></td>
</tr>
</tbody>
</table>

- **Bacterial vs. viral STI**
This presentation

• Clinical characteristics and relation to HIV:
  - HSV as example for ulcerating infection
  - Chlamydia as example for bacterial infection
• Relation with sexual behaviour
• Public health aspects of STI
HSV and HIV (2)

- ‘Typical lesions’ are clinically diagnostic
- Condom use: only partial prevention
- No need for symptoms to be infective

Herpes lesion:
Found on shaft of penis (male), vagina, vulva, cervix (female), and around anus

Most people infected with genital herpes do not know they have it
HSV and HIV (3)

- Majority of people infected with HSV in South Africa; small proportion symptomatic
• HSV-1, HSV-2, herpes labialis, herpes genitalis and oral sex..
• Anorectal HSV-1, HSV-2 and anal sex.
HSV and HIV (4)

- HIV and low CD4 --> atypical presentation:
  - Larger ulcers; ’Unusual places’
  - Poorly and slowly healing (WHO stage IV)
HSV and HIV (5)

- HSV-infection: increased risk of HIV transmission

\[ p=0.34 \]. The probability of transmission per act was higher if genital ulcer disease was reported by the HIV-1-positive partner than if it was not \((\gamma=0.0041 \text{ vs } \gamma=0.0011; p=0.02)\), and this higher transmission probability among individuals with ulceration was seen at all viral loads. The
HSV and HIV (6)

- Aciclovir treatment: reduces plasma viral load but seems not to decrease HIV transmission.
Chlamydia (1)

- *Chlamydia trachomatis*: intracellular bacteria

- Cervicitis
- Urethritis
- Proctitis
- Pharyngitis
- PID
- Epididymitis
- (peri)hepatitis
- Arthritis
Chlamydia (2)

- Usually infections are asymptomatic...
### Chlamydia (3)

Carletonville, South Africa:

**Table 4** Prevalence of urethritis pathogens in 301 men overall, asymptomatic men (*n* = 274) and men with symptoms and/or signs of STI (*n* = 27)

<table>
<thead>
<tr>
<th>Infection</th>
<th>Symptomatic for STI (<em>n</em> = 27)</th>
<th>Asymptomatic for STI (<em>n</em> = 274)</th>
<th>Overall (<em>n</em> = 301)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No (%) 95% CI</td>
<td>No (%) 95% CI</td>
<td>No (%) 95% CI</td>
</tr>
<tr>
<td><em>N. gonorrhoeae</em></td>
<td>6 (22.2) 6.5 to 37.9</td>
<td>13 (4.7) 2.2 to 7.3</td>
<td>19 (6.3) 3.6 to 9.1</td>
</tr>
<tr>
<td><em>C. trachomatis</em></td>
<td>1 (3.7) 0.0 to 10.8</td>
<td>25 (9.1) 5.7 to 12.6</td>
<td>26 (8.6) 5.5 to 11.8</td>
</tr>
<tr>
<td><em>T. vaginalis</em></td>
<td>6 (22.2) 6.5 to 37.9</td>
<td>37 (13.5) 9.5 to 17.5</td>
<td>43 (14.3) 10.3 to 18.2</td>
</tr>
<tr>
<td><em>M. genitalium</em></td>
<td>2 (7.4) 0.0 to 17.3</td>
<td>18 (6.6) 3.6 to 9.5</td>
<td>20 (6.6) 3.8 to 9.4</td>
</tr>
</tbody>
</table>

STI, sexually transmitted infection.
Chlamydia (4)

• Pelvic inflammatory disease
• Risk of infertility
• Increased risk of ectopic pregnancy
• Unclear relation with HIV transmission
• Reduced sexual health
Chlamydia and HIV

- Increased viral RNA in secretions
- Unclear risk factor for HIV transmission
- Mass treatment: conflicting evidence

Johnson LF et al. Sex Transm Dis 2008
Chlamydia (5)
Chlamydia & sexual behaviour (1)

![Graph showing prevalence of Chlamydia trachomatis and Neisseria gonorrhoeae infection per anatomic site in MSM.](image)

- **Urethral**: N=1451
- **Anorectal**: N=1141
- **Oral**: N=1283

**Figure 1**: Prevalence of Chlamydia trachomatis and Neisseria gonorrhoeae infection per anatomic site in MSM. MSM: men who have sex with men.

Peters RP et al. BMC Infect Dis 2011
Chlamydia & sexual behaviour (2)

<table>
<thead>
<tr>
<th>Anatomic Site(s) Tested</th>
<th>Number (%) Positive for Chlamydia</th>
<th>Number (%) Positive for Gonorrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 sites tested (n = 850)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cervical only</td>
<td>16 (1.9)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>Oropharynx only</td>
<td>7 (0.9)</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>Anorectum only</td>
<td>16 (1.9)</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>Cervical and oropharynx</td>
<td>1 (0.1)</td>
<td>3 (0.4)</td>
</tr>
<tr>
<td>Cervical and anorectum</td>
<td>51 (6.0)</td>
<td>8 (0.9)</td>
</tr>
<tr>
<td>Cervical, oropharynx,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and anorectum</td>
<td>8 (0.9)</td>
<td>3 (0.4)</td>
</tr>
<tr>
<td>2 sites tested (n = 2921)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cervical only</td>
<td>260 (9.0)</td>
<td>13 (0.5)</td>
</tr>
<tr>
<td>Oropharynx only</td>
<td>17 (0.6)</td>
<td>9 (0.3)</td>
</tr>
<tr>
<td>Anorectum only</td>
<td>0</td>
<td>2 (0.8)</td>
</tr>
<tr>
<td>Cervical and oropharynx</td>
<td>37 (1.2)</td>
<td>13 (0.4)</td>
</tr>
<tr>
<td>Cervical and anorectum</td>
<td>1 (0.4)</td>
<td>0</td>
</tr>
<tr>
<td>1 site tested (n = 528)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cervical only (n = 523)</td>
<td>60 (11.5)</td>
<td>7 (1.3)</td>
</tr>
<tr>
<td>Oropharynx only (n = 4)</td>
<td>1 (25)</td>
<td>0</td>
</tr>
<tr>
<td>Anorectum only (n = 1)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total (n = 4299)</td>
<td>475 (11)</td>
<td>63 (1.5)</td>
</tr>
</tbody>
</table>

*Tests for cervical and oropharyngeal infection were obtained from 2896 women and for cervical and anorectal infection from 25 women.
Partner notification (1)

Partner notification is crucial for treatment!!
Partner notification (2)

- Challenges with partner notification:
  - Unclear diagnosis and reasons
  - Lack of knowledge of relevance of diagnosis
  - Feelings of guilt, stigma and taboo
  - Poor communication with and by HCWs
STI management South Africa (1)

- Syndrome-based protocols
STI management South Africa (2)

Figure 1  Predicted numbers of asymptomatic and symptomatic men with laboratory-confirmed urethritis pathogens per 10,000 adult male patients attending the mobile service.
CT, chlamydial infection; GC, gonorrhoea; MG, M genitalium infection; TV, trichomoniasis.

Key messages

- Asymptomatic infections with urethritis pathogens were highly prevalent among men who accessed a mobile STI/HIV screening service in informal settlements on South Africa’s West Rand.
- The syndromic management approach would not treat many of these asymptomatic infections.
- Although syndromic management is the preferred public health approach for STI treatment in resource-poor settings, there may be a case for selective STI screening of high-risk populations.

Lewis DA *et al*. Sex Transm Infect 2008
ANOVA Research project

• Screening of women in Mopani District for asymptomatic STIs: *C. trachomatis*, *N. gonorrhoeae*, and *T. vaginalis*

• Identify high-risk groups for asymptomatic infection for possible screening

• Collaborate in project to design screening test for resource-poor settings
In summary

• STIs are a diverse group of diseases
• Transmission rate, symptoms and association with HIV transmission are highly variable
• Many STIs are asymptomatic and may occur at various anatomic locations
• Screening protocol is currently asymptomatic, but research is focussed on identifying high-risk groups
Conclusion

• Let’s all enjoy sex responsibly!