Today

• 1,000,000 new curable STIs every day

• Is the story all gloomy?

• Briefly discuss recent trends in STIs and their implications (though ~90% are in low- and middle-income countries)

• Disclosures: bioCSL and Australian Department of Health (research funding), Merck (speaker honoraria), NHMRC Fellowship.

Curable (non-viral) STIs

- *Chlamydia trachomatis* (inc. LGV)
- *Neisseria gonorrhoeae*
- *Treponema pallidum* subsp. *pallidum* (syphilis)
- *Haemophilus ducreyi*
- *Calymmatobacterium* (Klebsiella) *granulomatis* (donovanosis)
- *Trichomonas vaginalis*
- *Phthirus pubis* (pubic lice)

Chlamydia notifications, Australia 2004 – 2013, by year and sex

Percentage change in notification rate, positivity rate in ACCESS, and Medicare testing rate in young people, 2006-2010

Percentage change in notification rate, positivity rate in ACCESS, and Medicare testing rate in young people, 2006-2010

All H, et al. Sex Transm Infect 2012

Hospitalisations for PID: 6 countries, 1999-2008

Bender N, et al. Sex Transm Infect 2011; 87: 601

Hospitalisations for PID-related sequelae by age group, NSW 2001-2008


Lymphogranuloma venereum (LGV) cases at the Amsterdam STI clinic, 2005-2013


Gonorrhoea notifications, Australia 2004 – 2013, by year and sex

Gonococcal rectal infection among men, 2004 – 2013, by State/Territory and year
Gonorrhoea in men, Sydney Sexual Health Centre, 1978-2005

Infectious syphilis notifications, 2004 – 2013, by year and sex

Infectious syphilis notifications, Australia 2005-2009, by Indigenous status and sex

Pregnancy outcomes among women with untreated syphilis

Global elimination of congenital syphilis

- Political commitment
- Increase access to antenatal care
- Screen and treat (ASAP)
- Surveillance and evaluation

WHO 2012

Congenital syphilis and syphilis in women, Cuba 1980-2014

EDO Information System and Birth Information System 2015
Haemophilus ducreyi – a disappearing pathogen?

- 95% reduction in the incidence of chancroid in Thailand between 1987 and 1994
- Virtually disappeared in Nairobi by the late 1990s
- Now involved in <1% of genital ulcers in South Africa and Uganda, and none in Namibia and Paris.
- >99% decline in cases in the USA between 1990 and 2010 (n=24)

Lewis DA. Expert Rev Anti Infect Ther 2014; 12: 687


SSHC prevalence 0.4%

<table>
<thead>
<tr>
<th>Risk factor</th>
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<tbody>
<tr>
<td>Vaginitis</td>
<td>6.47</td>
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<tr>
<td>No prior Pap</td>
<td>7.22</td>
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<tr>
<td>Other STI</td>
<td>3.65</td>
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<tr>
<td>Foreign partner</td>
<td>2.33</td>
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<td>Sex work</td>
<td>0.45</td>
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<tr>
<td>IDU</td>
<td>7.27</td>
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</tbody>
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Donovanosis in Australia, 1991-2004

Only one case since 2010

Bowden F. Sex Transm Infect 2005;81:365

Pubic lice and habitat loss


Foster R et al, unpublished

Viral STIs

- Human immunodeficiency virus
- Hepatitis B virus
- Hepatitis A virus (gay men)
- Human papillomaviruses
- Herpes simplex viruses

The impact of combination prevention on the annual number of new HIV infections

Cremin I et al. AIDS 2013; 27: 447
HIV viral load and CD4+ cell count among people enrolled on the Australian HIV Observational Database, 2004 – 2013, by year

1. Undetectable viral load equals 50 copies/ml or less.

Kirby Annual Surveillance Report 2014

ART use in pregnant women with HIV, Kenya 2013-2015

Kirby Annual Surveillance Report 2014

Prevention of mother-to-child transmission of HIV in Cuba, 2012-2014

- HIV serology testing in all three trimesters of pregnancy
- Screening of sexual partners
- Combined anti-retroviral therapy
- Cesarean delivery
- Preventive treatment to newborns

The rate of mother-to-child HIV transmission has been equal to or lower than 2% in the last three years.

EDO Information System and Birth Information System 2015

Newly acquired hepatitis B notifications, Australia 2004 – 2013, by year and sex

Kirby Annual Surveillance Report 2014

HBV status of Australian MSM at first visit to sexual health clinics by age group, 2014

ACCESS Project: unpublished

Global and regional HBV vaccine coverage

HAV status of MSM at first visit to the Sydney Sexual Health Centre, 1996-2012


HPV prevalence in Australian females following a National Vaccination Program

Differences in HPV detected by PCR between pre-vaccine and post-vaccine populations

High risk genotypes included HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, or 68.

Proportion of Australian born women diagnosed with genital warts at first visit, 2004 – 2013, by year and age group

Proportion of Australian born heterosexual men diagnosed with genital warts at first visit, 2004 – 2013, by year and age group

Kirby Annual Surveillance Report 2014

Early qHPV vaccine population impact on warts

Coverage (youngest females) | 83% | 52% | 85% | 32% | 32% | 40%
---|---|---|---|---|---|---
Decline in GW in youngest females | 93% | 63% | 90% | 41% | 35% | 47%
Decline in high-grade abnorm. | Y | - | Y | - | - | -
Decline in target HPV prevalence | 67% | - | 49% | - | 56% | -
Herd protection for males | ++++ | ++ | Too early | + | + | -

High grade cervical abnormalities in Victorian women, by age group, 2003-2009

Brotherton JML et al. Lancet 2011
The predicted impact of giving boys the qHPV vaccine on genital warts in Australian heterosexuals

Seroprevalence of HSV-2 and HSV-1 in USA, by ethnic and age group, 1976-2004

Korostil I, et al. Sex Transm Dis 2013

Xu F, et al. JAMA 2006; 296: 964

Summary

• The STI story is not entirely gloomy

• Large in-roads are possible with once common STIs, sometimes approaching elimination

• Ongoing problems in some marginalised problems in high-income countries

• Limited surveillance of aetiological diagnoses in low- and middle-income countries

When do we do well against STIs?

• Vaccines – HBV, HAV, and HPV

• Limited sub-clinical pool – chancroid, donovanosis, LGV (L. gonorrhoea)

• Whole of population screening – trichomoniasis, mother-to-child transmission of syphilis and HIV

• Health services that are acceptable and affordable

• Political will, resources, and good program science