Syphilis – A Review

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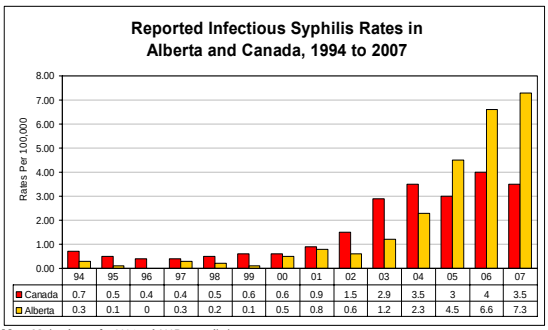
Association Between Genital Ulcers and HIV

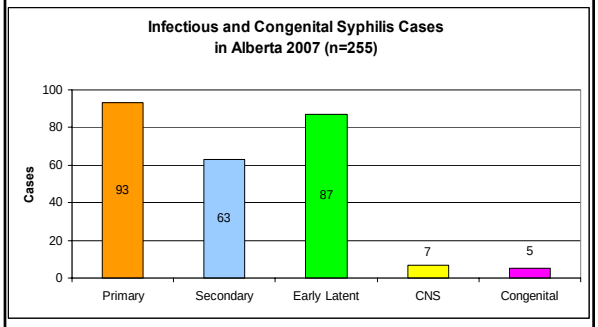
- Any genital ulceration is associated with an increased risk of HIV acquisition and transmission
- HIV can be cultured from lesion exudate
- Therefore, HIV serology for all patients with genital ulcers and vice versa

Reported Infectious Syphilis Rates in Alberta and Canada, 1994 to 2007



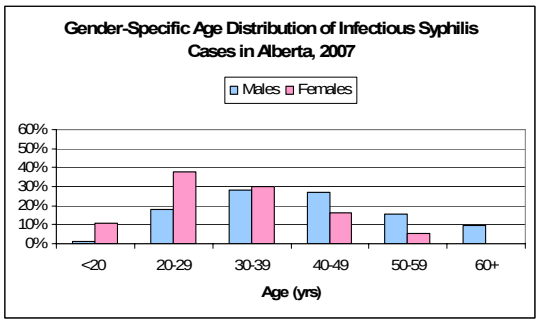
	94	95	96	97	98	99	00	01	02	03	04	05	06	07
Canada	0.7	0.5	0.4	0.4	0.5	0.6	0.6	0.9	1.5	2.9	3.5	3	4	3.5
Alberta	0.3	0.1	0	0.3	0.2	0.1	0.5	0.8	0.6	1.2	2.3	4.5	6.6	7.3

Note: National rates for 2006 and 2007 are preliminary.
Source: Surveillance and Epidemiology Section, Centre for Communicable Disease and Infection Control, Public Health Agency of Canada 2008; http://www.phac-aspc.gc.ca/std-mts/stdcases casmts/index.html) and Alberta Health and Wellness Communicable Disease Reporting System: Notifiable Diseases and Sexually Transmitted Infections Databases as of June 11, 2008



* 4 of the 7 symptomatic CNS cases were ocular

Source: Alberta Health and Wellness Communicable Disease Reporting System: Notifiable Diseases and Sexually Transmitted Infections Databases as of June 11, 2008



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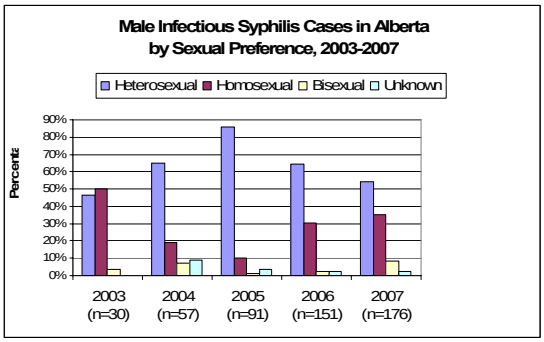

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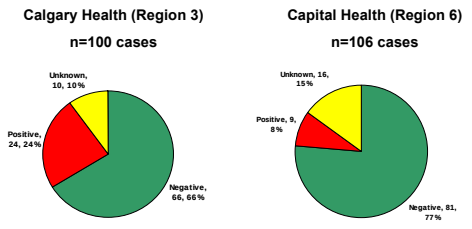
Infectious Syphilis – HIV Status in Regions 3 and 6, Alberta, 2007



Note: In 2007, there was one HIV positive infectious syphilis case outside of Capital and Calgary Health Region.

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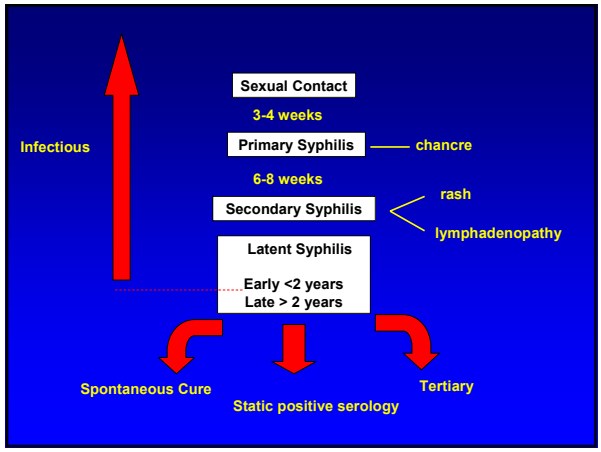

Primary Syphilis

Incubation 9-90 days (average 21 days)

- Chancre
- Regional lymphadenopathy

Secondary Syphilis

- Mucocutaneous eruption
- Generalized lymphadenopathy
- Constitutional symptoms

Latent Syphilis

- asymptomatic
- positive serology
  - < 2 years – early latent
    - infectious
    - 25% relapse to secondary
  - > 2 years – late latent
    - non-infectious

Tertiary Syphilis

- 3-30 years after primary infection
- Non-infectious
- Types
  - ➡ late benign – skin, bone, viscera
  - ➡ Cardiovascular – aorta, heart
  - ➡ Neurosyphilis – meninges, brain

Outcome of Pregnancy in Relation to Stage of Untreated Maternal Syphilis

Outcome	Primary or Secondary	Early Latent	Late Latent	Normal
Prematurity	50%	20%	9%	8%
Perinatal death		20%	11%	1%
Congenital syphilis	50%	40%	10%	
Healthy child		20%	70%	90%

Congenital Syphilis

Early < 2 years of age

- mucocutaneous & bony lesions
- hepatosplenomegaly
- meningitis

Late > 2 years of age

- interstitial keratitis
- mulberry molars
- Hutchinson's teeth
- saddle nose
- perforation of hard palate

Summary of Congenital Syphilis Cases, Alberta, 2005 to 2007

- All 14 cases were born in Edmonton to 13 mothers (1 set of twins)
- 5 neonatal deaths
- Ethnicity: 8 First Nations, 4 Caucasian, 1 Asian
- Marital status: 6 married/common-law
- 5 sex trade workers
- 8 mothers did not access antenatal care and were not tested for syphilis until delivery; 1 mother was tested in the second trimester but could not be located and the remaining 4 tested negative for syphilis early in pregnancy

Source: Communicable Disease Reporting System: Notifiable Diseases and Sexually Transmitted Infections Databases as of June 11, 2008

Diagnosis of Syphilis

1. History
2. Physical Examination
3. Laboratory Investigations
   A) Darkfield examination / DFA
   B) Serology

Serologic Tests for Syphilis

- Non-treponemal test
  - RPR
  - VDRL
  - ART
  - EIA
  - RST
- Treponemal test
  - MHA-TP / TP-PA
  - FTA-Abs

Serologic Tests for Syphilis

- EIA – treponema specific test – detects IgG / IgM
- improved sensitivity / specificity
- has replaced RPR, TPPA, FTA-Abs
- cannot differentiate venereal from non-venereal treponemal infection i.e. yaws / pinta

INNO-LIA®

- measures antibodies to *T pallidum* antigens
- will remain positive for life
- will be only run initially to confirm EIA

Interpretation of Syphilis EIA

- EIA -ve - no syphilis or incubating. Consider repeating in 2 – 4 weeks
- EIA +ve - syphilis. RPR will be done to determine titres
- EIA +ve / RPR –ve / LIA +ve – syphilis

False Positive Reactions

NON-TREPONEMAL	TREPONEMAL
• viral infections • pregnancy • malaria • leprosy • elderly • injection drug abuse • autoimmune disease	• autoimmune disease • genital herpes • yaws • pinta • cirrhosis

Indications for CSF Examination

- any neurological abnormalities
- before re-treatment of patients who have had a relapse
- in all infants
- in the investigation of patients with late latent syphilis and an RPR ≥ 16

Diagnosis of Congenital Syphilis

- physical examination
- serology
  - if maternal transfer – titre should gradually decrease & disappear by 6-12 months.
  - if congenital infection – titre will increase
- CSF examination
- long bone x-rays

Treatment of Syphilis

"A night on Venus, but a month on Mercury"

Primary, secondary, early latent

- Benzathine penicillin 2.4 mu IM STAT
- Doxycycline 100 mg bid x 14 days

Latent > 1 year duration

- Benzathine penicillin 2.4 mu IM weekly for 3 successive weeks
- Doxycycline 100 mg bid x 28 days

Treatment of Syphilis in Pregnancy

- All women not previously treated should receive penicillin appropriate to their stage of disease
- Some experts suggest that pregnant women with early syphilis received 4.8 mu benzathine penicillin
- Retreatment during pregnancy is unnecessary unless there is clinical or serologic evidence of new infection
- When penicillin allergy is reported, desensitization should be attempted

Syphilis Screening during Pregnancy

- All pregnant women should have syphilis serology undertaken at their 1st pre-natal visit
- Serology should be repeated at 28 – 32 weeks gestation
- For "high-risk' women serology should again be repeated at term

Congenital Syphilis

Neonates should be treated at birth if:

- They demonstrate symptoms/signs of congenital syphilis
- Maternal treatment was inadequate
- Maternal treatment is unknown
- Maternal treatment was with drugs other than penicillin

RPR Titre Decrease After Treatment of Infectious Syphilis

PRIMARY
- 2 tube decrease at 6 months
- 3 and 4 tube decrease at 12 and 24 months

SECONDARY
- 3 and 4 tube decrease at 6 and 12 months

EARLY LATENT
- 2 tube decrease at 12 months

Source: Romanowski B. Annals Int Med 1991;114:1005