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ITS et le Laboratoire

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Gonorrhea Specimens

Urethra

- Discharge best
- Male: 3-4cm; Female: 1-2cm

Urine

- 1st 10-20ml, not mid-stream
- Ideally >= 2h since last void, but does not preclude sample collection

Cette présentation a été effectuée le 23 octobre 2006, au cours du Symposium "L'utilisation des analyses de laboratoire en santé publique" dans le cadre des Journées annuelles de santé publique (JASP) 2006. L'ensemble des présentations est disponible sur le site Web des JASP, à l'adresse http://www.inspq.qc.ca/jasp.

Gonorrhea Specimens

- Cervical
  - Postpubertal
  - 2-3cm in endocervical canal
- Vaginal
- Rectal
  - 2-3cm
- Throat
- Conjunctiva
- Sterile body fluids

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Gonorrhea Tests
Non-NAAT

Gram stain:
- Urethral male
  - Sensitivity 95%+
  - Specificity 95%+
- Endocervical
  - sensitivity 45-65%
  - Specificity 90%

Culture:
- can give resistance information
- Sentinel surveillance
- Sexual abuse/assault
- Treatment failure

Gonorrhea tests - NAAT

NAAT cervix, urethra, urine, vaginal

- False positives an issue, especially in low prevalence setting
- Positive confirmed using a different set of primers

Neisseria gonorrhoeae NAAT: Pooled Sensitivities & Specificities (%)*

		PCR	PCR	TMA	TMA	SDA	SDA
		Sens	**Spec**	**Sens**	**Spec**	**Sens**	**Spec**
F	**Urine**	55.6	98.7	91.3	99.3	84.9	99.4
	Cervix	94.2	99.2	99.2	98.7	96.5	99.5
M	**Urine**	90.4	99.7	------	-----	-----	-----
	Urethra	96.1	99.0	------	-----	-----	-----

PCR-Polymerase Chain Reaction TMA-Transcription Mediated Amplification SDA-Strand Displacement Amplification

* Cook RL et al. Systematic Review: Non-invasive testing for Chlamydia trachomatis and Neisseria gonorrhoeae. Ann Intern Med 2005;142:914-25

Chlamydia trachomatis NAAT: Pooled Sensitivities & Specificities (%)*

		PCR	PCR	TMA	TMA	SDA	SDA
		Sens	Spec	Sens	Spec	Sens	Spec
F	Urine	83.3	99.5	92.5	98.6	79.9	99.1
	Cervix	85.5	99.6	96.7	99.1	93.6	97.9
M	Urine	84.0	99.3	87.7	99.4	93.1	93.8
	Urethra	87.5	99.2	95.9	99.4	92.5	96.4

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Chlamydia trachomatis - LGV

Culture or NAAT (NAAT not cleared by Health Canada or FDA on rectal or throat specimens)

- DNA sequencing
- Restriction fragment length polymorphism (RFLP)

Serology

- Only supportive, NOT confirmatory evidence
- Microimmunofluorescence (MIF) >=1:256
- Complement fixation (CF) >=1:64
- MIF more specific than CF

Swabs

Gonorrhea & Chlamydia

- GC- Dacron or rayon swabs best, not Calcium alginate, not some cotton swabs
- Chlamydia – Dacron or rayon, cotton, calcium alginate

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Advantages of NAAT

Gonorrhea and Chlamydia

Less-invasive or alternative specimens

- Urine testing can help improve screening compliance
- Self-collected vaginal swabs
- Ability to test Thin Prep Pap liquid-based cytology for CT and GC (PCR)
- More sensitive detecting *C. trachomatis*

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Potential Challenges

Gonorrhea and Chlamydia

- Loss of ability to track gonorrhea drug resistance
  - Implications in the setting of escalating quinolone resistance
- Not approved to test non-urogenital sites
- NAAT responsible for increase in reported rate?

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Potential Challenges

Gonorrhea and Chlamydia

False-positives due to:

- *N. gonorrhoeae* cross-reactivity with other *Neisseria*
- Testing too soon after treatment
- contamination of specimens, reagents or work surfaces
- Low positive predictive value in low prevalence setting

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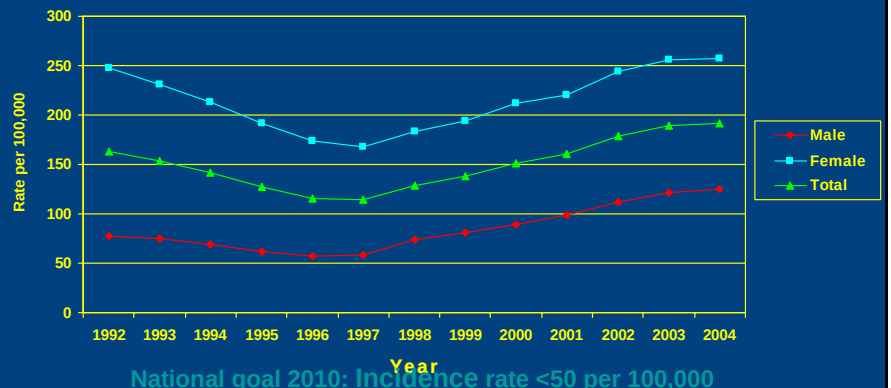
Reported Chlamydia Rates in Canada, by sex*



National goal 2010: Incidence rate <50 per 100,000

- Data for 2003 and 2004 have not yet been verified by provinces and territories and may be subject to change
- Data unavailable for Saskatchewan and Nunavut for 2004
- Source: Surveillance and Epidemiology Unit, Community Acquired Infections Division, Public Health Agency of Canada 2005

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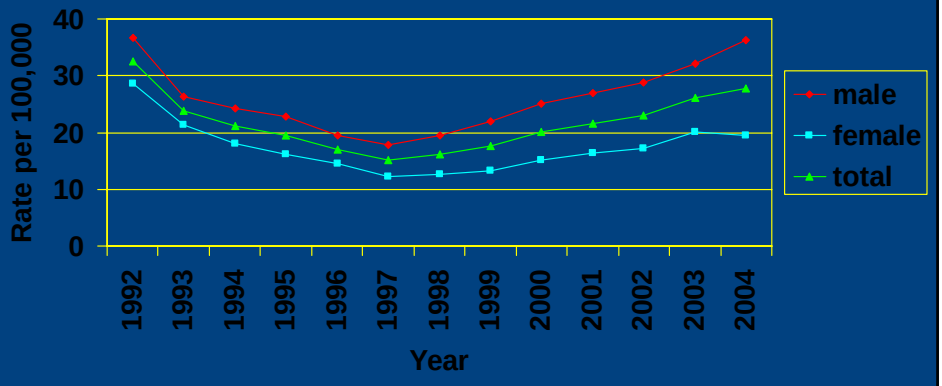
Reported Gonorrhea Rates in Canada, by sex*



National goal 2010: Eliminate locally transmitted infection

- Data for 2003 and 2004 have not yet been verified by provinces and territories and maybe subject to change
- Data unavailable for Saskatchewan and Nunavut for 2004
- Source: Surveillance and Epidemiology Unit, Community Acquired Infections Division, Public Health Agency of Canada 2005

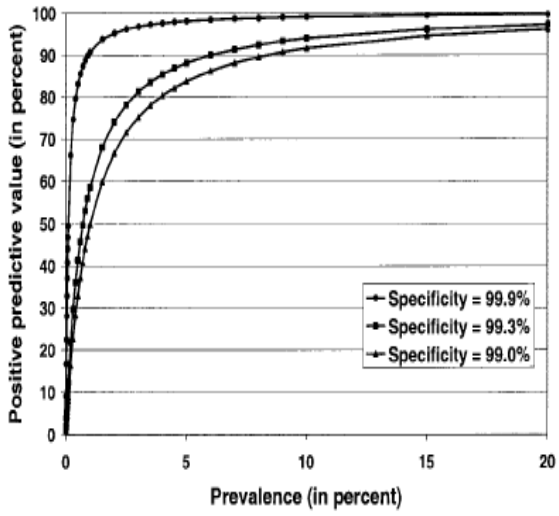


Figure 1. Positive predictive values for a test with a sensitivity of 98.2% across a range of values of specificity and prevalence of infection.

Syphilis

Swabs from lesions

- Dark field microscopy
  - not reliable for oral or rectal specimens because of oral/rectal non-pathogenic treponemes
  - Need immediate testing
  - Need polarizing microscope, not readily available
- Fluorescent antibody, direct or indirect (DFA/IFA)
  - Can cross-react with oral/rectal non-pathogenic treponemes
  - Less cross-reaction using polyclonal antibody
  - No need for immediate testing
- Immunoblot
- PCR
  - Genotypic azithromycin resistance surveillance

Syphilis serology

In Canada, until recently

- **Non-treponemal tests used for screening, commonly**
  - VDRL (Venereal Disease Research Laboratory)
  - RPR (Rapid plasma Reagin)
    - No microscope needed, simpler
    - Titre tends to be higher than VDRL.
  - Don't switch between RPR and VDRL when monitoring treatment response
- **Treponemal tests for confirmation, commonly**
  - FTA-ABS (Fluorescent Treponemal Antibody Absorption)
  - MHA-TP (Microhemagglutination assay – *T pallidum*)
  - TPPA (*T pallidum* particulate agglutination)
- **Using both non-treponemal and treponemal tests when**
  - primary or late stage syphilis is suspected
  - Syphilis outbreaks

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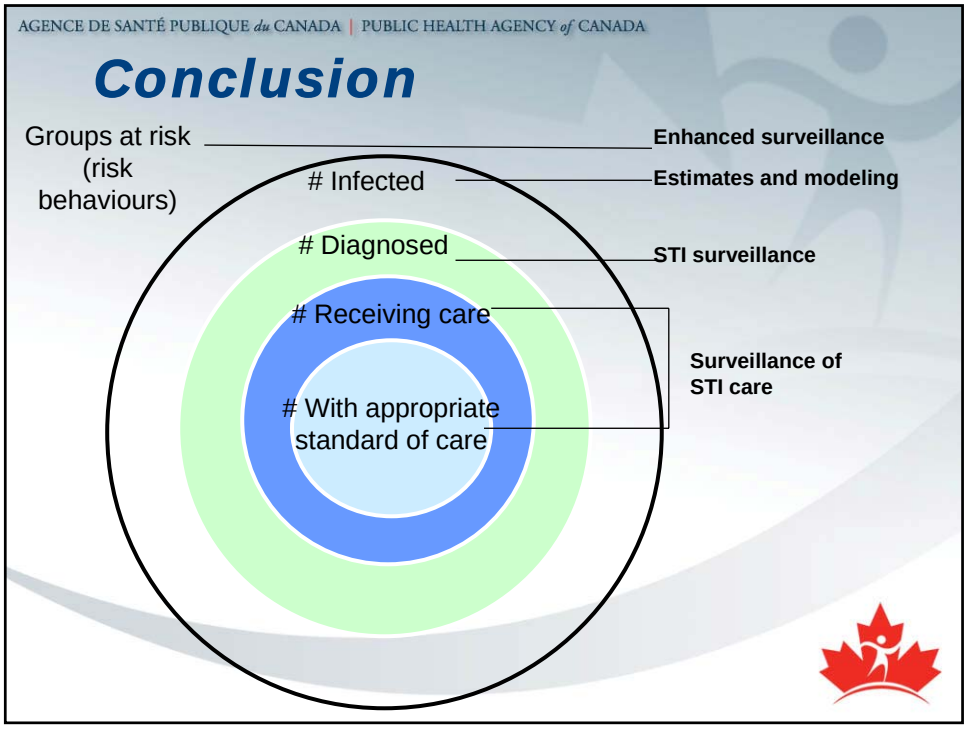
Syphilis serology

Increasingly, treponemal specific enzyme immunoassay (EIA) is being used for both screening & confirmation

- More sensitive than VDRL/RPR for primary & late syphilis
- Automation advantage
- False EIA +, especially in low prevalence setting
- If not false +, EIA+ indicates exposure sometime in the past, not necessarily untreated syphilis.
- Remains + like FTA-ABS/MHA-TP/TPPA even after treatment
- Won't give titres and therefore can't be used to monitor treatment response
- If EIA+, needs to run RPR.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Conclusion
Groups at risk (risk behaviours)
Infected
Diagnosed
Receiving care
With appropriate standard of care
Enhanced surveillance
Estimates and modeling
STI surveillance
Surveillance of STI care