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# Case

- 37-year-old male mechanic, who lives in downtown Winnipeg, presents with rash of 5 days duration



# Case

## What is the diagnosis?

- A. Eczema
- B. Erythema multiforme
- C. Psoriasis
- D. Seborrheic dermatitis
- E. Tinea corporis (ringworm)



## Case

What is the diagnosis?

- A. Eczema
- B. Erythema multiforme
- C. Psoriasis
- D. Seborrheic dermatitis
- E. Tinea corporis (ringworm)
- F. None of the above



## What other history?

- no travel history
- no pets/animal contacts
- meets men on the internet and has occasional casual sexual encounters (only knows the internet IDs of 9 contacts in the last 3 months)
- also complaining of hair loss

# Case

What is his diagnosis UPO?

- A. Primary Syphilis
- B. Secondary Syphilis
- C. Tertiary Syphilis
- D. Latent Syphilis
- E. Neurosyphilis

# Syphilis – the Basics

- Re-emerging disease (since 2000)
- *Treponema pallidum*, spp. *pallidum*



Syphilis - *Treponema pallidum*



# Syphilis – the Basics

- Direct (sexual) contact; blood transfusion; congenital
- Incubation Period: 10-90 days
- Stages – **primary, secondary, early latent**, late latent, and tertiary





# Infectious Syphilis

- Primary – Ulcers (chancres) on penis/vagina
- Secondary – Rash (any kind except vesicular); may be on palms of hands or soles of feet; systemic illness
- Latent – Asymptomatic (12 months)

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# Primary Syphilis



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# Primary Syphilis



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# Primary Syphilis (Extragenital)



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# Secondary Syphilis





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## Secondary Syphilis (Condylomata)

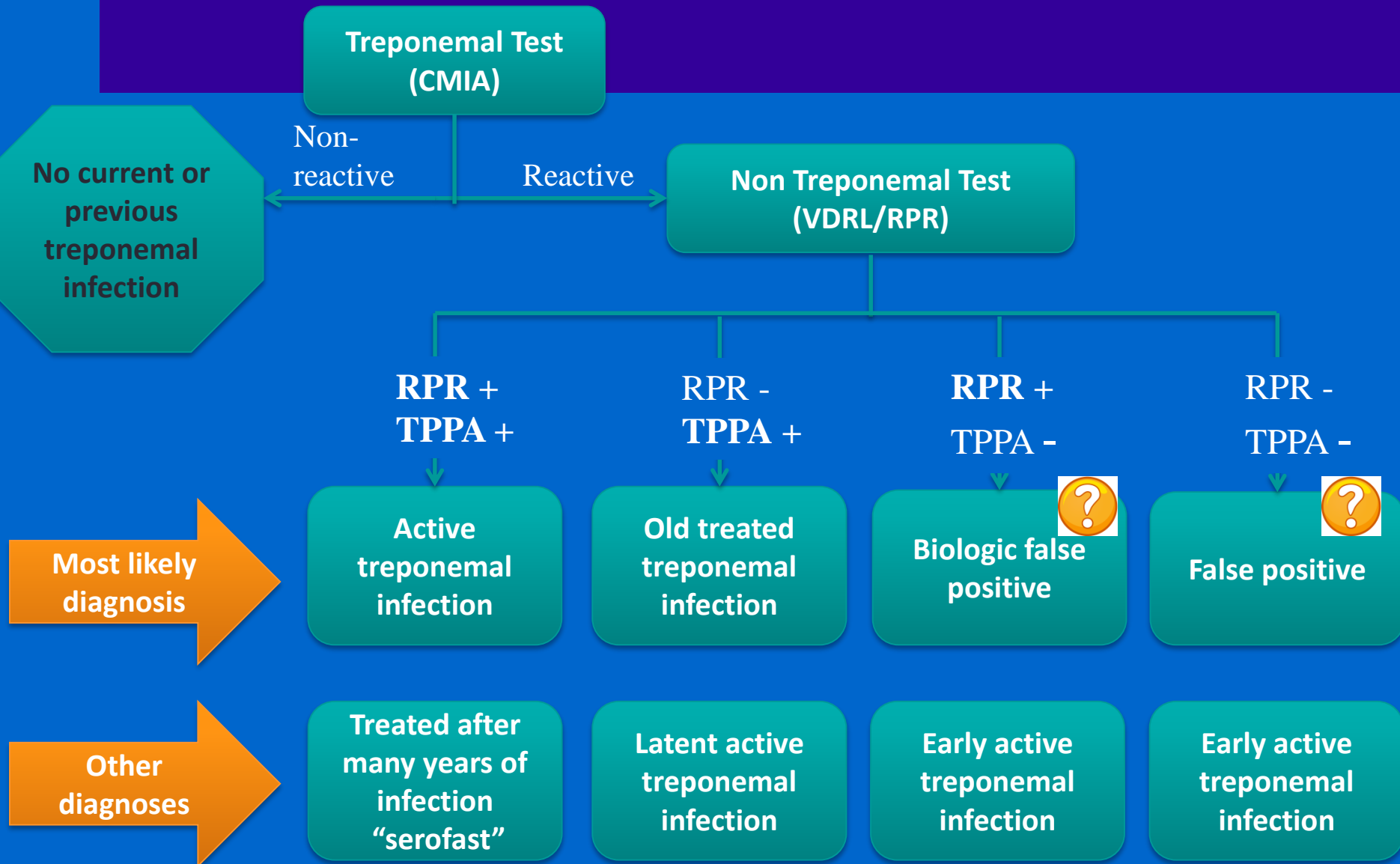


**Condylomata lata**



**Condylomata  
acuminata  
(HPV)**

# Serology – Testing Algorithm





**Cadham Provincial Laboratory**  
**General Requisition**



ONLY ONE SPECIMEN TYPE PER REQUISITION

All areas of the requisition must be completed (please print clearly)  
 See back for requisition/specimen instructions

Cadham Provincial Laboratory  
 P.O. Box 8450  
 750 William Avenue  
 Winnipeg, MB R3C 3Y1

Tel: (204) 945-6123  
 Fax: (204) 786-4770  
 E-mail: cadham@gov.mb.ca  
 Website: www.gov.mb.ca/health/publichealth/cpl

# Ordering serology

SEROLOGY					
<b>Serology Test Panels (see #1 over)</b>					
<input type="checkbox"/> STI Panel				<input type="checkbox"/> Prenatal Panel	
<input type="checkbox"/> Post Exposure: Source Panel (1, 3)				<input type="checkbox"/> Prenatal HIV OPT OUT (2)	
<input type="checkbox"/> Post Exposure: Exposed Panel (1)				<input type="checkbox"/> Blood-borne Pathogen	
<b>HIV (4)</b>					
<input type="checkbox"/> HIV1/2Ab				<input type="checkbox"/> Syphilis Screen	
<b>Hepatitis</b>					
<input type="checkbox"/> HAV IgG (Immunity)				<input type="checkbox"/> HBsAb (Immunity)	
<input type="checkbox"/> HAV IgM (acute HAV)				<input type="checkbox"/> HBsAg	
<input type="checkbox"/> HBcAb (Total)				<input type="checkbox"/> HCV Ab	
<b>Nucleic Acid (Plasma Only) (5)</b>					
<input type="checkbox"/> HBV PCR/Quant	<input type="checkbox"/> HCV PCR/Quant			<input type="checkbox"/> WNV PCR	
<input type="checkbox"/> HCV PCR/Qual	<input type="checkbox"/> HCV Genotyping				
<b>Miscellaneous Serology</b>					
	<b>Acute</b>	<b>Immune Status</b>		<b>Acute</b>	<b>Immune Status</b>
CMV	<input type="checkbox"/> IgM	<input type="checkbox"/> IgG	Parvo B19	<input type="checkbox"/> IgM	<input type="checkbox"/> IgG
EBV	<input type="checkbox"/> IgM	<input type="checkbox"/> IgG	Rubella	<input type="checkbox"/> IgM	<input type="checkbox"/> IgG
HSV	<input type="checkbox"/> IgM	<input type="checkbox"/> IgG	Toxoplasma	<input type="checkbox"/> IgM	<input type="checkbox"/> IgG
Measles	<input type="checkbox"/> IgM	<input type="checkbox"/> IgG	Varicella	<input type="checkbox"/> IgM	<input type="checkbox"/> IgG
Mumps	<input type="checkbox"/> IgM	<input type="checkbox"/> IgG	WNV	<input type="checkbox"/> IgM	
<input type="checkbox"/> Lyme Ab	<input type="checkbox"/> H. pylori Ab		<input type="checkbox"/> Mycoplasma pneumoniae IgM		

# Syphilis: How to treat?

	<b>First</b>	<b>Second</b>	<b>Allergy</b>
<b>SYPHILIS (Primary, Secondary, Early latent)</b>	Benz Pen G 2.4 M units IM X1 (?Azithro 2g)	Ceftriaxone 1g IM daily x10 d	Doxycycline 100mg PO BID x14 d
<b>SYPHILIS (Late latent)</b>	Benz Pen G 2.4 M units IM wkly X3	Ceftriaxone 1g IM daily x10 d	Doxycycline 100mg PO BID x28 d
<b>Neurosyphilis</b>	Cryst Pen G 3-4 M units IV q4h X10-14 d	Proc Pen G 2.4 M units IM daily X10-14 d (+ probenecid) or Ceftriaxone 2g IM/IV daily x10-14 days	

## How to obtain Bicillin<sup>®</sup>?

- Benzathine penicillin G (Bicillin<sup>®</sup>) 2.4 million units IM in a single session (separated into 2 injections)
- Bicillin<sup>®</sup> in preloaded syringes provided free of charge by Manitoba Health
- Can only be obtained by faxing a completed Manitoba Health STD Medication Administration Form (call Materials Distribution Agency at 945-0570 or download form:

<http://www.gov.mb.ca/health/publichealth/cdc/protocol/form11.pdf>

# Manitoba Health STI Medication Order Form (PLEASE PRINT)



Fax order to: Tache Pharmacy – Fax: (204) 231-1739 • Phone: (204) 233-3469 • For Inquiries only e-mail tache@mts.net

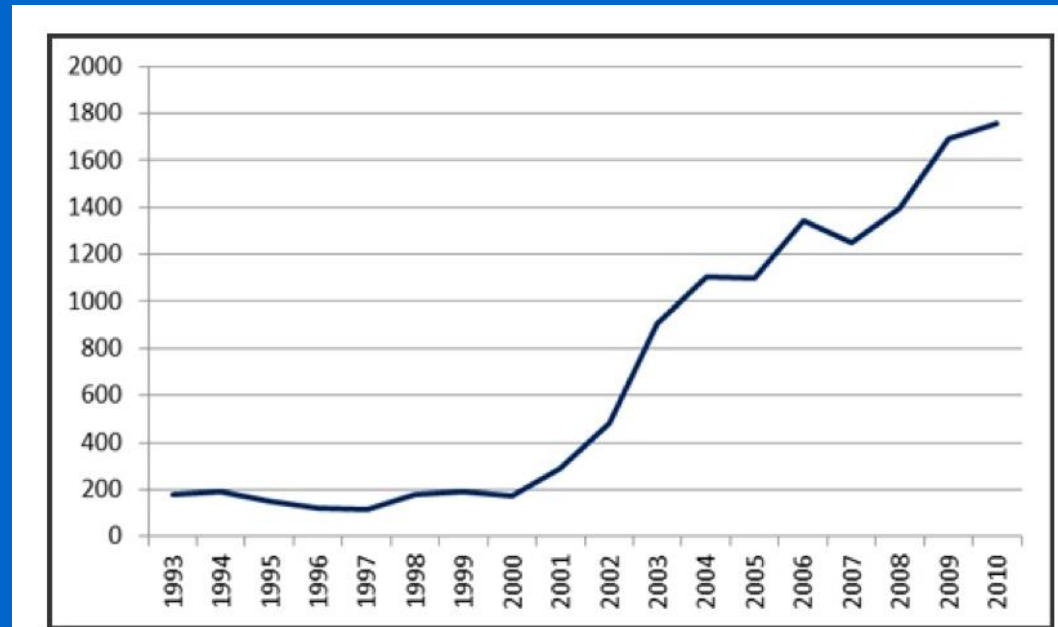
Date (yyyy/mm/dd)	_____ / _____ / _____	Contact Person:	
Facility Name:		Physician:	
Address:			
Telephone #:		Ext:	
<p>Refer to Sexually Transmitted and Blood-Borne Infections webpage: <a href="http://www.gov.mb.ca/health/publichealth/cdc/cg/index.html">http://www.gov.mb.ca/health/publichealth/cdc/cg/index.html</a>                  All treatments provided to patients must be recorded and reported to Manitoba Health using the STI Administration Form                  (<a href="http://www.gov.mb.ca/health/publichealth/cdc/protocols/stiadminform.pdf">http://www.gov.mb.ca/health/publichealth/cdc/protocols/stiadminform.pdf</a>)</p>			
Units Ordered	Drug	Dosage Forms & Unit Quantity	Indication
<b>CHANCROID</b>			
	Ceftriaxone	250 mg x 1 vial	First line treatment for adults and adolescents
	Erythromycin base	250 mg x 36 tablets	Alternative treatment for cephalosporin or penicillin allergy.
	Azithromycin	250mg x 4 tablets	
<b>CHLAMYDIA*</b>			
	Azithromycin	250 mg x 4 tablets	First line treatment in children > 9 years of age and adults
	Doxycycline	100 mg x 14 capsules	Alternative treatment in children > 9 years of age and adults
	Erythromycin base	250 mg x 36 tablets	Pregnant and lactating women
	Amoxicillin	500 mg x 21 capsules	Pregnant and lactating women allergic to erythromycin or azithromycin
<b>GONORRHEA*</b>			
	Cefixime	400 mg x 2 tablet	First line treatment in combination with 1 g azithromycin
	Ceftriaxone	250 mg x 1 vial	First line treatment in combination with 1 g azithromycin
	Azithromycin	250 mg x 4 tablets	First line treatment treatment in combination with cefixime OR ceftriaxone
	Azithromycin	250 mg x 8 tablets	Alternative treatment when there is severe cephalosporin allergy
<b>LGV</b>			
	Doxycycline	100 mg x 42 capsules	First line treatment
	Erythromycin base	250 mg x 168 tablets	Alternative treatment
	Azithromycin	250 mg x 12 tablets	Alternative treatment
<b>PID</b>			
	Ceftriaxone	250 mg x 1 vial	Recommended treatment for acute PID (in combination with doxycycline and metronidazole)
	Doxycycline	100 mg x 28 capsules	Recommended treatment for acute PID (in combination with ceftriaxone and metronidazole)
	Metronidazole	250 mg x 36 tablets	Recommended treatment for acute PID (in combination with doxycycline and ceftriaxone). Metronidazole is included to provide optimal anaerobic coverage.
	Azithromycin	250 mg x 7 tablets (1 tablet daily for 7 days) OR	Alternative treatment for acute PID (in combination with oral metronidazole) for patients with cephalosporin contraindication.
	Azithromycin	250 mg x 8 tablets (4 tablets once weekly for 2 weeks)	
<b>SYPHILIS</b>			
	Benzathine Penicillin G* (Bicillin)	1.2 MU x 2 syringes	First line for primary, secondary, and early latent stages of infection and epidemiologic treatment of sexual contacts
	Benzathine Penicillin G* (Bicillin)	1.2 MU x 6 syringes	First line for late latent infection, infection of unknown duration and tertiary syphilis NOT involving the CNS
	Doxycycline	100 mg x 28 capsules	Alternative treatment for penicillin allergic adults and adolescents staged with primary, secondary or early latent infection
	Doxycycline	100 mg x 36 capsules	Alternative treatment for penicillin allergic adults and adolescents staged with late latent infection, infection of unknown duration or tertiary syphilis NOT involving the CNS
	Azithromycin	250 mg x 8 tablets	Azithromycin alone should not be routinely used as a treatment option for early or incubating syphilis as azithromycin resistance has been reported and is increasing*
<p>* Pediatric dosing available upon request.                  * In exceptional circumstances, azithromycin should be reserved for suspect syphilis cases (at the time that serology is performed) only if Bicillin (Benzathine Penicillin G) is not readily available, with the understanding that the patient will require Bicillin if their serology confirms that they have syphilis.                  * Must be stored in a refrigerator that is temperature monitored and kept between 2-8°C.</p>			
Printed Name		Physician's Signature:	

<http://www.gov.mb.ca/health/publichealth/cdc/protocol/form11.pdf>

SYPHILIS			
	Benzathine Penicillin G† (Bicillin)	1.2 MU x 2 syringes	First line for primary, secondary, and early latent stages of infection and epidemiologic treatment of sexual contacts
	Benzathine Penicillin G† (Bicillin)	1.2 MU x 6 syringes	First line for late latent infection, infection of unknown duration and tertiary syphilis NOT involving the CNS
	Doxycycline	100 mg x 28 capsules	Alternative treatment for penicillin allergic adults and adolescents staged with primary, secondary or early latent infection
	Doxycycline	100 mg x 56 capsules	Alternative treatment for penicillin allergic adults and adolescents staged with late latent infection, infection of unknown duration or tertiary syphilis NOT involving the CNS
	Azithromycin	250 mg x 8 tablets	Azithromycin alone should not be routinely used as a treatment option for early or incubating syphilis as azithromycin resistance has been reported and is increasing*
<p>‡Pediatric dosing available upon request.</p> <p>*In exceptional circumstances, azithromycin should be reserved for suspect syphilis cases (at the time that serology is performed) only if Bicillin (Benzathine Penicillin G) is not readily available, with the understanding that the patient will require Bicillin if their serology confirms that they have syphilis.</p> <p>†Must be stored in a refrigerator that is temperature monitored and kept between 2-8°C.</p>			
Printed Name		Physician's Signature:	

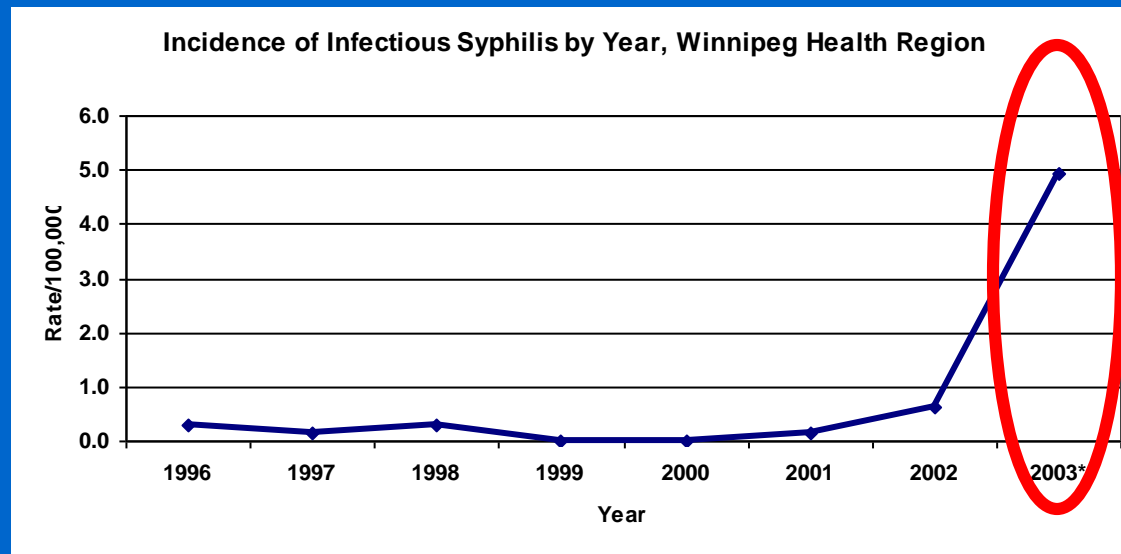
# Background - Canada

- Since 2000, there have been outbreaks of infectious syphilis reported in Vancouver, Calgary, Edmonton, Toronto, Ottawa, Montreal, Halifax ...
- Vancouver - MSM
- Calgary - MSM/Hetero
- Edmonton – MSM/Hetero
- Toronto - MSM
- Ottawa - MSM
- Montreal - MSM
- Halifax - MSM



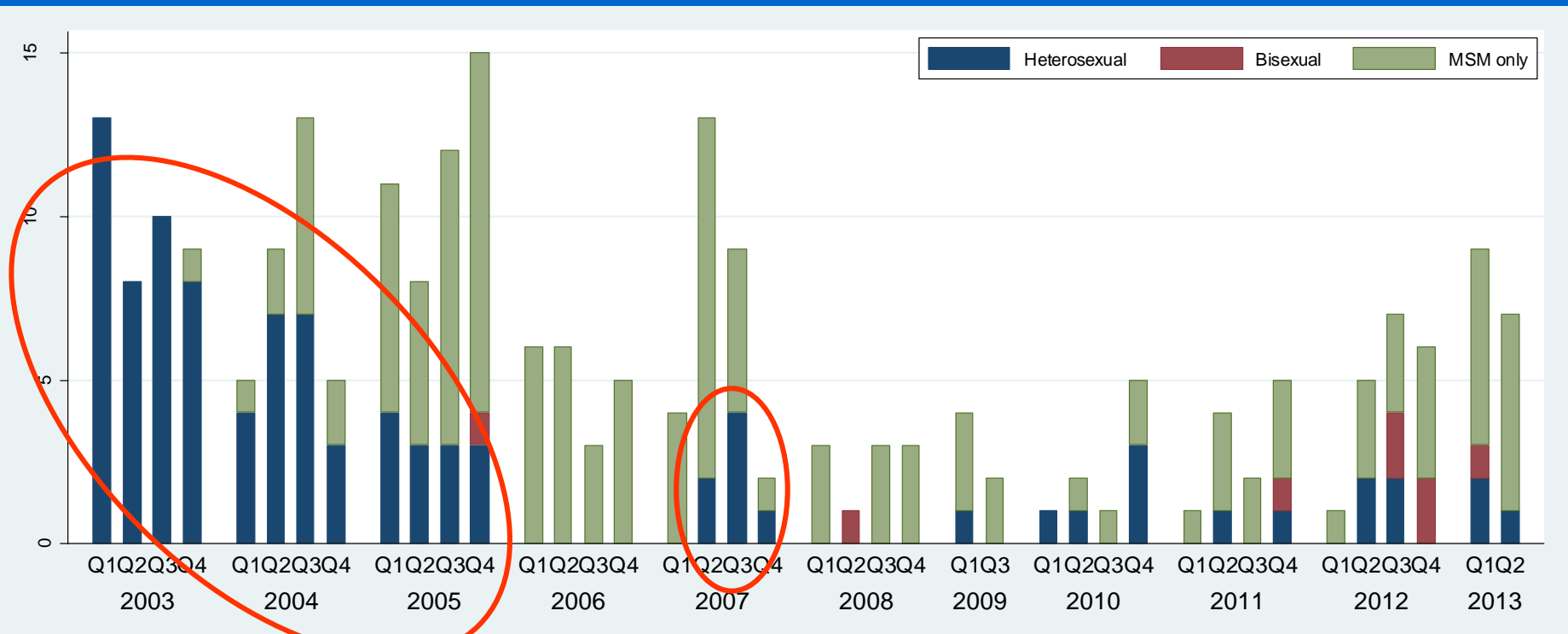
# Background - Winnipeg

- Until January 2003, the incidence of syphilis infection (imported cases) had remained stable at less than 1 case per 100,000 population
- No *locally acquired* infectious syphilis since 1995



# Infectious Syphilis Cases - WHR

N=238



Source: Syphilis Surveillance Database, Population and Public Health Program, Winnipeg Regional Health Authority, June 2013



# Outbreak Demographics

## Predominant risk factors

- **2007 cluster**
  - place of meeting at inner city bars
  - significant alcohol use
  - casual unprotected sex (male-female)
  - no link to sex trade work
  - numerous sexual networks ranging in size from 2 to more than 15 individuals

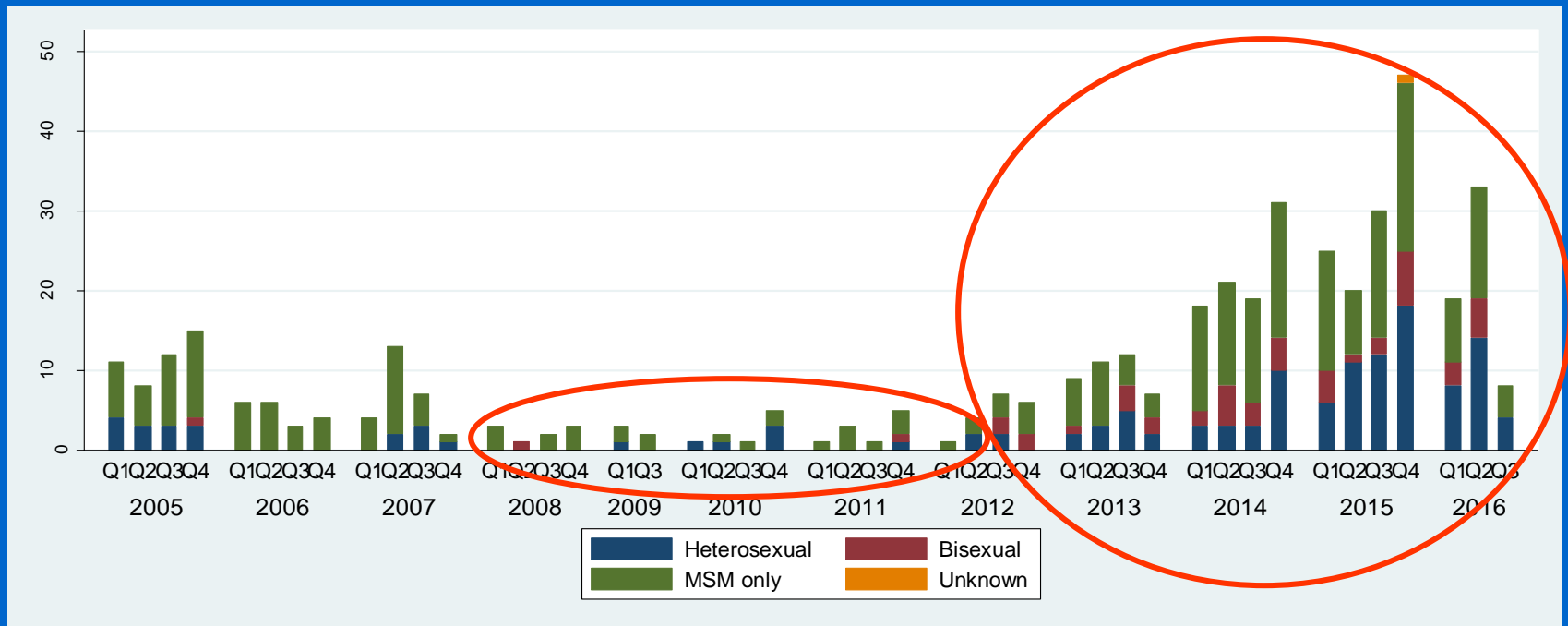
# Outbreak Demographics

## Predominant risk factors

- December 2003 to January 2009
  - exclusively MSM
  - frequenting MSM-specific meeting places
  - anonymous unprotected sex (male-male)
- **40-50% HIV +**

# Infectious Syphilis Cases – WHR\*

N=456



Source: Syphilis Surveillance Database, Population and Public Health Program, Winnipeg Regional Health Authority, October 2016

\*Has postal code in WHR or is identified as resident in WHR; excludes cases not resident in Winnipeg

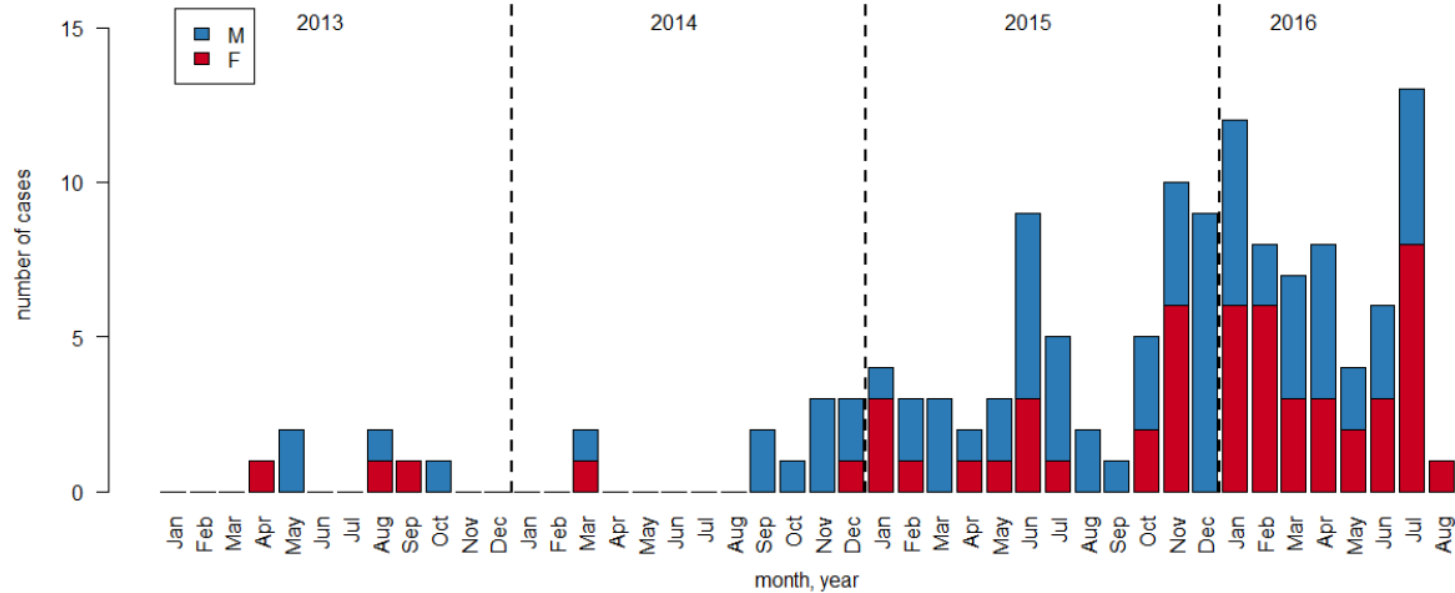
# Demographics (WHR\* cases 2012-16)

- >320 Infectious Cases (since 2012 Q3)
- 83% male (63% MSM + **16% bisexual**)
- Downtown (30%), Point Douglas (13%), and River Heights (9%)
- 83% “locally acquired” (10% “imported”)

# Demographics (WHR\* cases 2012-16)

- 42% “meeting” on **social media**
- 19% HIV (?resistant) – although much lower recently – **7% in 2016**
- 71% primary/secondary
- 76% 20-49 yo

# Infectious Syphilis – Rural Mb



**Figure 5:** Distribution of infectious syphilis per month and by sex at the Northern RHA 01 Jan 2013 to 29 Aug 2016.

# Outbreak summary

## Predominant risk factors

- September 2012 to October 2016
  - mostly MSM/MSMW
  - meeting online or via mobile phone apps
  - anonymous unprotected sex (male-male)
  - increasing heterosexual transmission (?bisexual bridges, sex trade)
- Less than 10% are HIV + (all male)

# INFECTIOUS SYPHILIS MANAGEMENT TOOL

## WHO SHOULD I TEST?

**ALL PERSONS WHO PRESENT WITH SYMPTOMS OF SYPHILIS** such as painless genital, anal or oral ulcers, generalized maculopapular rash (typically including palms and soles) and/or lymphadenopathy.

See *Manitoba Health, Healthy Living and Seniors (MHLS)* protocol (below) for details on clinical presentations

**IN ADDITION TO TESTING SYMPTOMATIC PERSONS, ALSO SCREEN THE FOLLOWING PERSONS:**

- ALL pregnant persons - congenital syphilis is often severe, disabling, and life-threatening
- ALL persons reporting unprotected sex with casual or anonymous partners should be routinely tested for sexually transmitted infections (STI) every 3-6 months
- ALL persons requesting STI testing
- ALL persons with any confirmed or suspected STI such as gonorrhoea, chlamydia or HIV
- consider offering serology for all patients as part of routine care

## WHO IS INFECTIOUS?

**PRIMARY SYPHILIS:** painless genital, anal or oral ulcerative lesions, +/- inguinal lymphadenopathy. The initial ulcer typically heals spontaneously.

**SECONDARY SYPHILIS:** usually a generalized maculopapular nonpruritic rash (typically including palms and soles) +/- other rash types, +/- fever, +/- generalized lymphadenopathy +/- alopecia +/- condyloma lata.

**EARLY LATENT SYPHILIS:** cases are asymptomatic, only detected with serologic screening.

**NOTE:** neurosyphilis can occur during any stage of infection. Consult ID if neurologic symptoms.

## HOW DO I TEST?

- 5-10 ml blood in a red-stoppered tube or a serum separator tube (red top with yellow cap)
- Cadham Provincial Laboratory (CPL) requisition form should request syphilis serology testing and HIV antibody testing; and should provide information on reason for testing, including symptoms or suspected stage of syphilis. (Consider choosing CPL's STI panel which includes serology testing for syphilis, HIV and hepatitis B and test for hepatitis C as well.)
- Swab ulcers, sores, or moist skin lesions with a dacron swab (ex: swab from GenProbe package) of the lesion and place into viral transport medium. The sample must remain refrigerated until sent to CPL and the CPL requisition should clearly indicate the site and test requested: T. pallidum PCR testing.

## WHAT IS THE TREATMENT?

- Benzathine penicillin G (Bicillin®) 2 injections of 1.2 million units IM in a single session (2.4 MU total). See MHLS protocol for information on allergy, pregnancy and HIV positive persons.
- The Bicillin® in preloaded syringes is provided free of charge by MHLS (see order form below).
- Sex contacts of known syphilis cases **MUST ALSO** immediately be offered treatment for syphilis, without awaiting testing results.
- When staging is questionable in asymptomatic person, consider staging as Early Latent for reporting purposes, but treating as Late Latent (3 weekly treatments of Bicillin).
- Follow serologic response as per provincial protocol and current outbreak response. If titres do not decrease as per protocol, repeat HIV testing and consult ID.

**IS IT REPORTABLE?** Cases of syphilis are reportable under The Public Health Act, as are identified contacts of cases. If you are contacted by a public health nurse for follow up of your patient who has an STI, your collaboration and assistance would be greatly appreciated.

## WHERE CAN I GET MORE INFO?

- Any complicated cases, all cases of neurosyphilis, or for assistance, consult Infectious Diseases.
- Consult Pediatric Infectious Diseases for any pregnant patient diagnosed with syphilis, any newborn if maternal syphilis was diagnosed at any time during pregnancy, or if congenital syphilis is suspected.
- MHLS - Syphilis Protocol <http://www.gov.mb.ca/health/publichealth/cdc/protocol/syphilis.pdf>
- CPL - Cadham Provincial Laboratory - Serology section: 204-945-6123
- MHLS STI Medication Order Form <http://www.gov.mb.ca/health/publichealth/cdc/protocol/form11.pdf>

## POSITIVE SYPHILIS SEROLOGY

### CLIENT HISTORY OR CADHAM LAB DOCUMENTATION OF REMOTE POSITIVE SYPHILIS SEROLOGY?

#### NO NEW INFECTION:

REPEAT SYPHILIS SEROLOGY SAME DAY AS TREATMENT  
TEST FOR GONORRHEA, CHLAMYDIA, HIV & HEPATITIS B AND C  
DO A SEXUAL HEALTH HISTORY & PHYSICAL TO STAGE INFECTION

#### YES POSSIBLE REMOTE CASE:

COLLECT DETAILS ABOUT PREVIOUS INFECTION  
DO SEXUAL HEALTH & IMMIGRATION HISTORY AND PHYSICAL  
TEST FOR GONORRHEA, CHLAMYDIA, HIV & HEPATITIS B AND C

#### STAGING: SYMPTOMS?¹

**CHANCRE**  
ORAL, ANAL,  
VAGINAL, PENILE  
SWAB FOR  
SYPHILIS PCR

**RASH**  
ALOPECIA,  
LYMPHADENOPATHY

NO

PRIMARY

SECONDARY

LATENT

**TREAT (2.4 MU BICILLIN) x1**  
**FOLLOW SEROLOGY AS PER PROTOCOL**  
COLLECT INFORMATION ABOUT CONTACTS  
COMPLETE FORM FOR CONTACT TRACING

**SYMPTOMS/  
EXPOSURE  
IN LAST 12  
MONTHS?  
OR 4 FOLD RISE IN  
VDRL/RPR TITRE?**

**YES:**  
EARLY LATENT

**TREAT (2.4 MU BICILLIN)  
WEEKLY x3**  
**FOLLOW SEROLOGY**

**NO:**  
LATE LATENT

**NEWBORNS:** IF MATERNAL SYPHILIS WAS DIAGNOSED AT ANY TIME DURING PREGNANCY, OR IF CONGENITAL SYPHILIS IS SUSPECTED, CONSULT PEDIATRIC INFECTIOUS DISEASES.

#### SYMPTOMS?

**YES:**  
REFER TO NEW INFECTION

**NO:**  
EXPOSURE TO INFECTIOUS CASE, CURRENT UNPROTECTED SEX, RISE IN VDRL/RPR, OR OTHER REASON TO SUSPECT NEW INFECTION?

**NO:**  
LIKELY AN OLD TREATED CASE

**YES:**  
RETEST IN 7-21 DAYS

**HISTORY OF TREATMENT:**  
NO FOLLOW UP REQUIRED

**4 FOLD RISE IN VDRL/RPR:**  
NEW INFECTION (REFER TO EARLY LATENT)

**NO HISTORY OF TREATMENT:**  
STAGE AND TREAT AS LATE LATENT

**NO CHANGE IN VDRL/RPR:**  
RETEST IN 2-3 MONTHS  
STAGE AND TREAT AS LATE LATENT

1. NEUROSYPHILIS CAN OCCUR DURING ANY STAGE OF INFECTION. CONSULT ID IF NEUROLOGIC SYMPTOMS.



# Outbreak Interventions

- Assertive Testing Strategy (SasP)
- Bathhouse Outreach
- Case Management (TasP)
- Social media advertising
- Health Care Provider Information
- Mapping (“frequent transmitters”)
- Contact Notification (anonymity)

# Assertive Testing Strategy

- Offer q3mo syph testing to all previous syphilis cases (phone/text/email reminders)
- Only 22% completed 3/6/9/12 mo testing
- 20 repeat syphilis infections detected (10% of all cases/12 mo; 2 new HIV)
- Very positive PHN/client interaction
- Future – focus on “core transmitting networks” = MSM/MSMW, <35 yo, past Hx STBBI (HIV), low income



## Case One:

28 y. pregnant female with a history of spontaneous first trimester abortion x 2, and is seen at 10 weeks of pregnancy for a first screening visit. She has no complaints and is in a monogamous relationship. She has no chronic illnesses and no history of STI.

**Physical Exam:** normal

**Lab Tests:**

HBSAg – HBSAb + , HIV-

Rubella - Chlamydia, GC both negative,

**Syphilis: CMIA +, TPPA+, RPR –**

## Case One cont'd

① What does this test result mean?

Two different Treponema specific screening tests are positive but RPR neg.

- could be very early syphilis , late-latent or treated syphilis

② What should you do next?

Repeat test in 7-10 days

③ Is treatment advised? If so what?

If persistently positive, treat as late-latent syphilis, since patient is pregnant, worst case scenario is passing syphilis to fetus, Treat with 3 doses of IM penicillin 2.4 mil. U x 3 doses

④ Is anything advised after treatment?

Document Treatment! Since RPR negative no need to follow titers.

## Case Two



A 63 year old female Filipino bookkeeper returns from an ophthalmologist referral with confirmed uveitis.

PMH: hypertension, elevated lipids.

Review of systems is negative, Social History: married with adult sons. No history of TB or STI.

**Physical Exam:** normal, eye exam not done

**Lab Tests:** HBSAg – , HBSAb + , Toxo – , CMV–, HIV–

**Syphilis:** CMIA +, TPPA–, RPR –

## Case two cont'd

① What does this test result mean?

The CMIA indicates a positive screening Treponemal test for syphilis but the TPPA, a second Treponemal test for syphilis aimed at a different antigen is negative, as is the RPR, a non-Treponemal test.

② What should you do next?

Since both a second Teponema test and non-Treponemal test are negative, we conclude the first test ( CMIA) is a False Postive and no further testing is necessary

③ Is syphilis treatment advised? If so what? **NO!**

④ Is contact tracing advised? No

④ What about the uveitis? It still needs workup! *TB, lymphoma, spondyloarthritis etc ..*

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## Summary

- Syphilis outbreak in 2005-2006 was in large part heterosexual, traditional risk factors operated, traditional control measures were successful to manage it
- Recent outbreak in 2013-16 is more -social media driven , fewer imported cases, highly infectious, multifocal –all over province: rural as well as northern,
- Large infectious MSM component with bisexual men bridging the epidemic into the female population
- Traditional control methods less successful, resorting to novel methods such as assertive or intensive testing strategies in key populations have other risk factors.

# Acknowledgements

*Kamran Kadkhoda* my colleague and expert on syphilis diagnostics in Manitoba

*Allan Ronald* who taught me about Syphilis first hand in the public health clinics of Nairobi as a 4<sup>th</sup> year medical student)

*Pierre Plourde* Medical Officer of Health in charge of STD's in Winnipeg

## Information:

Cadham Provincial Lab:

[cadham@gov.mb.ca](mailto:cadham@gov.mb.ca)

Tel. 204-945-6123

[www.gov.mb.ca/health](http://www.gov.mb.ca/health) (use search word "syphilis")

Public health Canada (search on PHAC-Syphilis)

<http://www.phac-aspc.gc.ca/sti-its-surv-epi/rep-rap-2012/rep-rap-3-eng.php>

