2013 WINNIPEG REGION SYPHILIS OUTBREAK

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Winnipeg Regional Health Authority

Sex and Drug Matters Conference – March 18 2014

LESSONS LEARNED

CASE

- **37-year-old male mechanic, who lives in River Heights 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)

WHAT OTHER HISTORY?

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

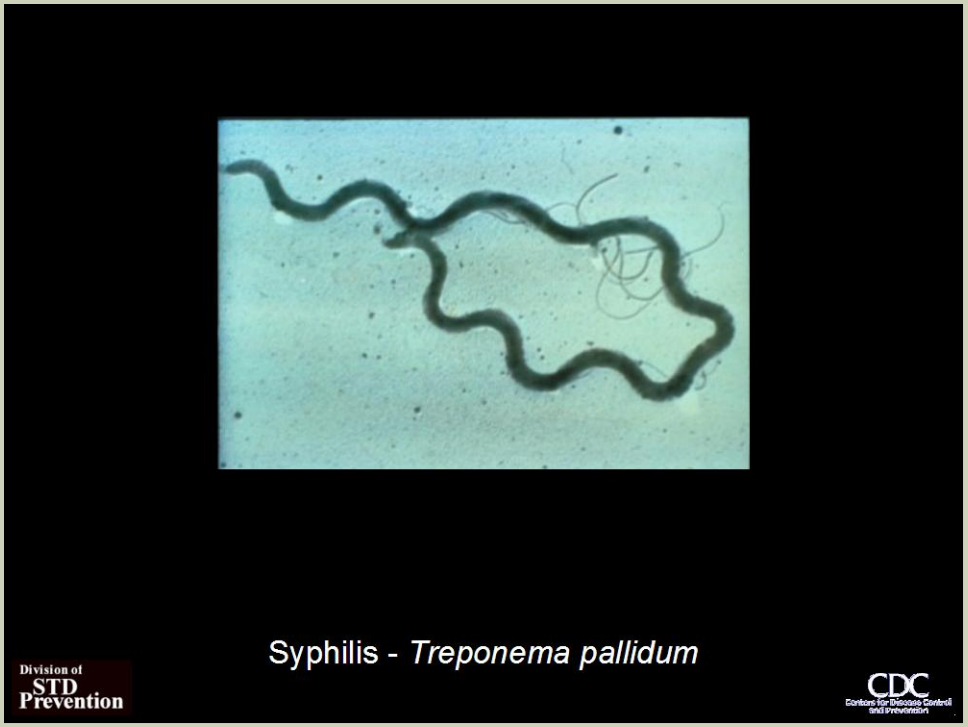
CASE

What is his diagnosis?

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

Syphilis – The Basics

- **Re-emerging disease**
- ***Treponema pallidum*, spp. *pallidum***



Syphilis – The basics

Direct (sexual) contact; blood transfusion; perinatal

Incubation Period: 10-90 days

Stages

- **incubating**
- **primary**
- **secondary**
- **early latent**
- **late latent**
- **tertiary**
- **congenital**

PREDOMINANT SYMPTOMS

- **Painless ulcers (chancres) on penis/vagina**
- **Rash (any kind except vesicular); may be on palms of hands or soles of feet**
- **Asymptomatic**

SEROLOGY

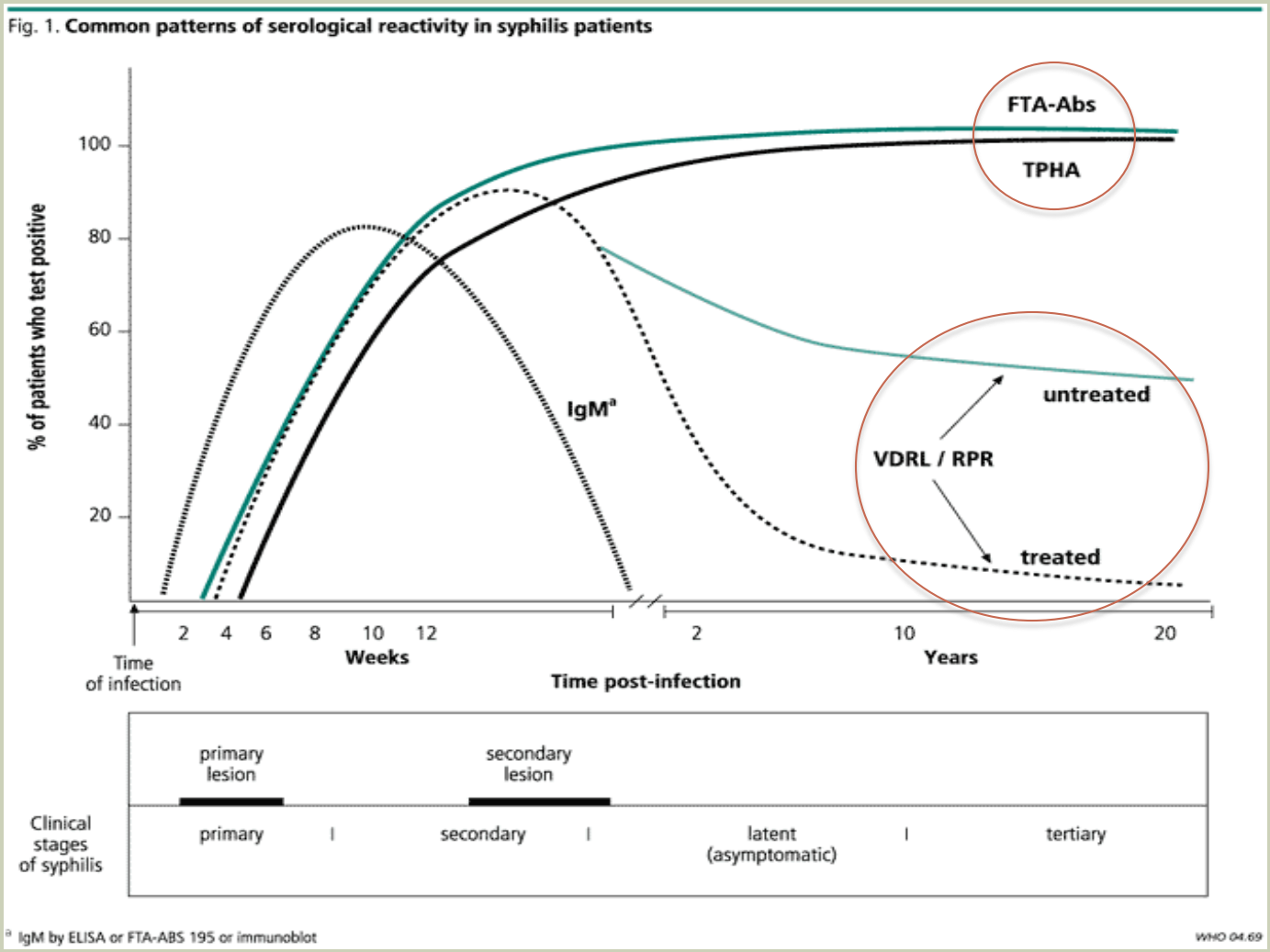


Fig. 1. Common patterns of serological reactivity in syphilis patients
% of patients who test positive
100
80
60
40
20
FTA-Abs
TPHA
IgM[a]
untreated
VDRL / RPR
treated
2 4 6 8 10 12
Weeks
Time of infection
2 10 20
Years
Time post-infection
primary lesion
secondary lesion
Clinical stages of syphilis
primary
secondary
latent (asymptomatic)
tertiary
[a] IgM by ELISA or FTA-ABS 195 or immunoblot
WHO 04.69

Table 2: Interpretation of Serologic Tests for Syphilis (6)

Screening test (RPR/VDRL)	Confirmatory test TP-PA	Reference test FTA-ABS	Most likely condition
NR	NR	R	Early primary syphilis with compatible history and clinical findings
R (dilutions can vary)	R	R (test not indicated if screening and confirmatory tests are positive)	Infectious syphilis (primary, secondary, or early latent) especially if titre >1:8 OR Old treated syphilis (especially if titre <1:8) OR Follow-up of treated syphilis OR In persons from endemic countries, yaws (e.g. Caribbean), pinta (e.g. Central America), or bejel
NR	R	R	Usually treated syphilis OR Late latent of unknown duration if no history of confirmed treatment OR In persons from endemic countries, yaws (e.g. Caribbean), pinta (e.g. Central America), or bejel OR Early infection (primary syphilis)
R	NR	NR	Biological false positive (see Table 3 for possible causes of a biologic false positive result) Repeat testing in 3-4 weeks
R	NR	R	Possible incubating or primary syphilis. Suspect incubating or primary syphilis based on client history and/or clinical findings

NR = non-reactive; R = reactive

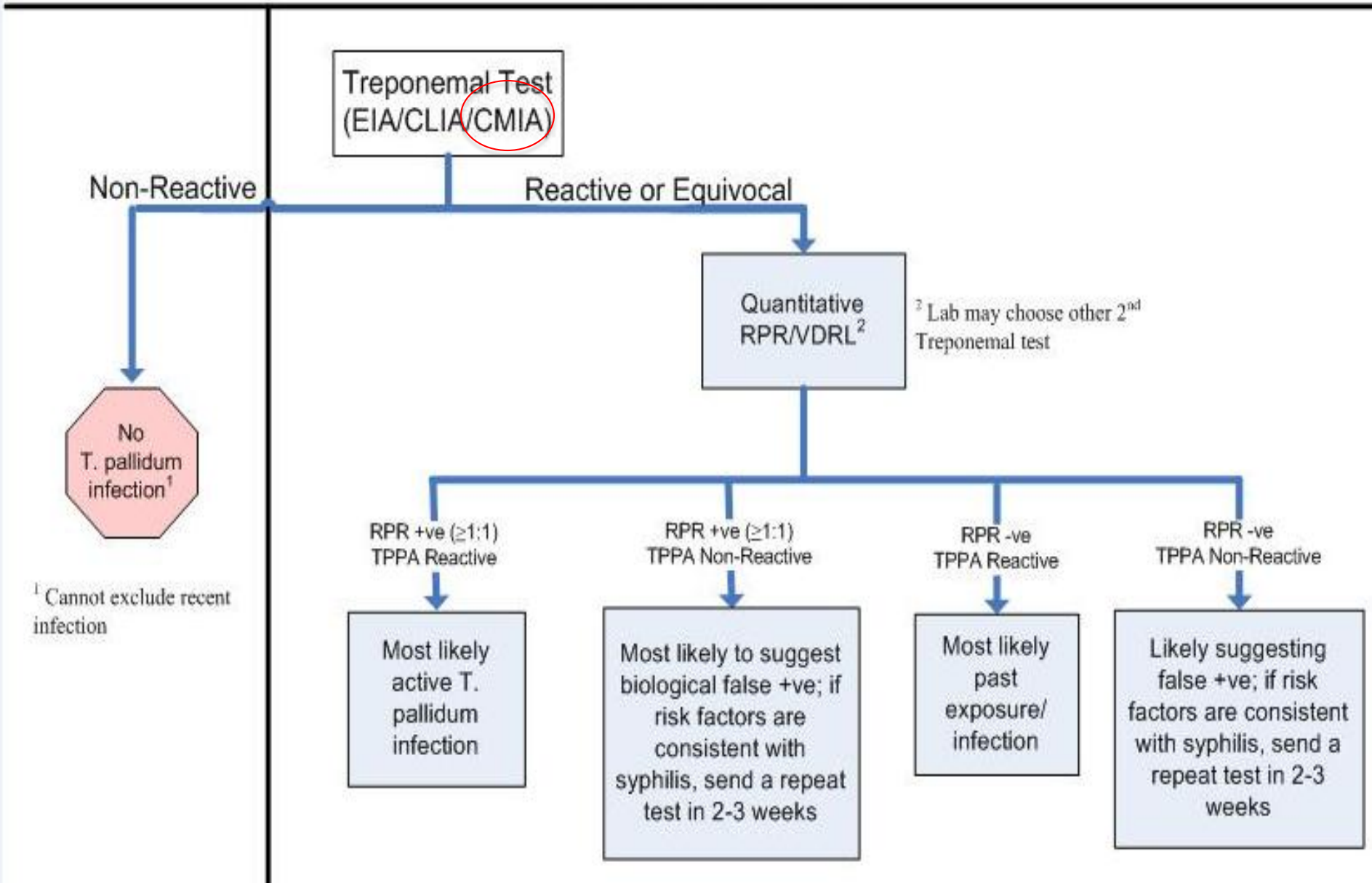
PROBLEMS WITH TRADITIONAL ALGORITHM

102 Biologic False Positives Last Year

Table 3: Causes of Biologic False Positive Syphilis Nontreponemal Test Serology (RPR/VDRL)

Acute		Chronic
Hepatitis		Connective tissue/autoimmune diseases
Viral pneumonia	Mycoplasma	Immunoglobulin abnormalities
Measles	Relapsing fever	Narcotic addiction
Malaria	Leptospirosis	Aging
Pregnancy	Rickettsia	Leprosy
Infectious mononucleosis		Malignancy
Chicken pox		Lyme disease
Other viral infections		Tuberculosis
Immunizations		Subacute bacterial endocarditis
Drug use		
Lab/technical error		

CPHLN Syphilis Treponemal Serological Testing Algorithm



Cadham Provincial Laboratory
P.O. Box 8450
750 William Avenue, Winnipeg, MB R3C 3Y1
Director: Dr. P. Van Caeseele

Manitoba
Health and Healthy Living
Public Health Division

Report Delivered By: Mail
Ordering Practitioner:

Dr. Paul G. Van Caeseele
Cadham Provincial Laboratory
750 William Avenue
Winnipeg, MB R3C 3Y1

Patient: Mickey Mouse
PHIN: 123456789
MHSC:
Birth Date:
Gender: Male

Sample Requisition #: SBSYPHTEST01
Source: Blood
Type:
Outbreak #:
Specimen Note:

Date Collected: 2013/06/17
Date Received: 2013/06/18
Date Reported: 2013/06/18

Test Name	Result	Date Approved
Final Syphilis Interpretation	Cannot exclude recent infection if specimen collected within 2-3 weeks after appearance of suspect lesions.	2013/06/18
Treponema pallidum antibody (CMIA)	Non-reactive	2013/06/18

Test Name	Result	Date Approved
Final Syphilis Interpretation	Indeterminate Syphilis results. This result suggests recent infection or a non-specific reaction. Please repeat 7 – 10 days after this draw if clinically indicated.	2013/06/18
Treponema pallidum antibody (CMIA)	**Reactive**	2013/06/18
Reagin antibody (VDRL)	Non-Reactive	2013/06/18
Treponema pallidum antibody (Aggl)	Non-reactive	2013/06/18

Test Name	Result	Date Approved
Final Syphilis Interpretation	**The results suggest either recent or remote Treponemal infection.**	2013/06/18
Treponema pallidum antibody (CMIA)	**Reactive**	2013/06/18
Reagin antibody (VDRL)	**Weakly Reactive**	2013/06/18
	Undiluted, 1 dil.	2013/06/18
Treponema pallidum antibody (Aggl)	**3+/Reactive**	2013/06/18

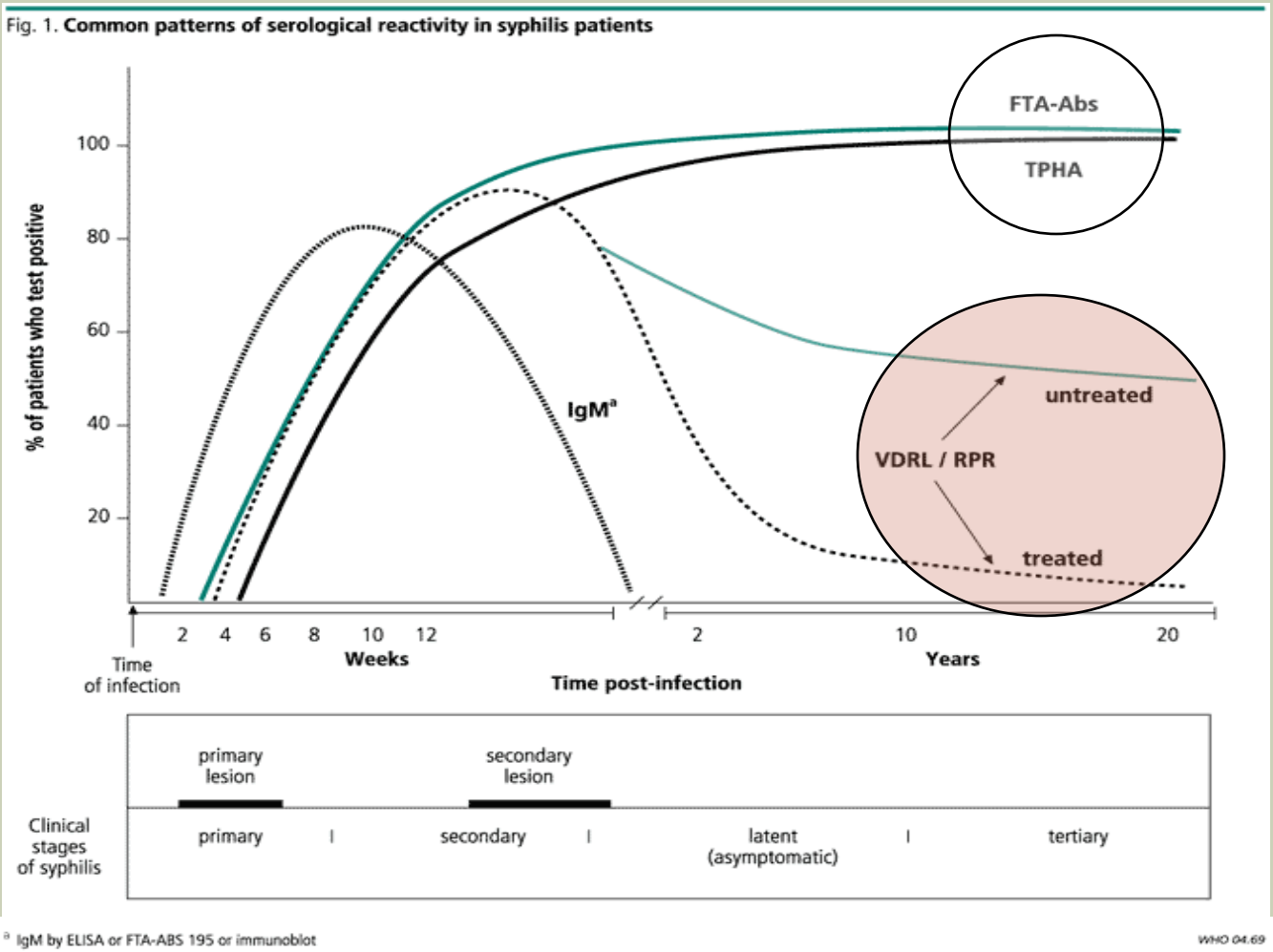
Test Name	Result	Date Approved
Final Syphilis Interpretation	The results suggest either recent or remote Treponemal infection.	2013/06/20
Treponema pallidum antibody (CMIA)	**Reactive**	2013/06/20
Reagin antibody (RPR)	Non-Reactive	2013/06/20
Treponema pallidum antibody (Aggl)	**4+/Reactive**	2013/06/20

ADVANTAGES OF REVERSE ALGORITHM

- Lower cost
- Faster Turn-Around-Time
- Tech time
- No more “Biological False positives”
- More sensitive
- More specific

CHALLENGES OF REVERSE ALGORITHM

- False "positive" in history of syphilis



ORDERING SEROLOGY

Cadham Provincial Laboratory
General Requisition

Manitoba Health

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

SEROLOGY

Serology Test Panels (see #1 over)

- ☐ STI Panel
- ☐ Post Exposure: Source Panel (1, 3)
- ☐ Post Exposure: Exposed Panel (1)
- ☐ Prenatal Panel
- ☐ Prenatal HIV OPT OUT (2)
- ☐ Blood-borne Pathogen

HIV (4) ☐ HIV1/2Ab ☐ Syphilis Screen

Hepatitis

- ☐ HAV IgG (Immunity)
- ☐ HAV IgM (acute HAV)
- ☐ HBcAb (Total)
- ☐ HBsAb (Immunity)
- ☐ HBsAg
- ☐ HCV Ab

Nucleic Acid (Plasma Only) (5)

- ☐ HBV PCR/Quant
- ☐ HCV PCR/Qual
- ☐ HCV PCR/Quant
- ☐ HCV Genotyping
- ☐ WNV PCR

Miscellaneous Serology

	Acute	Immune Status		Acute	Immune Status
CMV	☐ IgM	☐ IgG	Parvo B19	☐ IgM	☐ IgG
EBV	☐ IgM	☐ IgG	Rubella	☐ IgM	☐ IgG
HSV	☐ IgM	☐ IgG	Toxoplasma	☐ IgM	☐ IgG
Measles	☐ IgM	☐ IgG	Varicella	☐ IgM	☐ IgG
Mumps	☐ IgM	☐ IgG	WNV	☐ IgM	

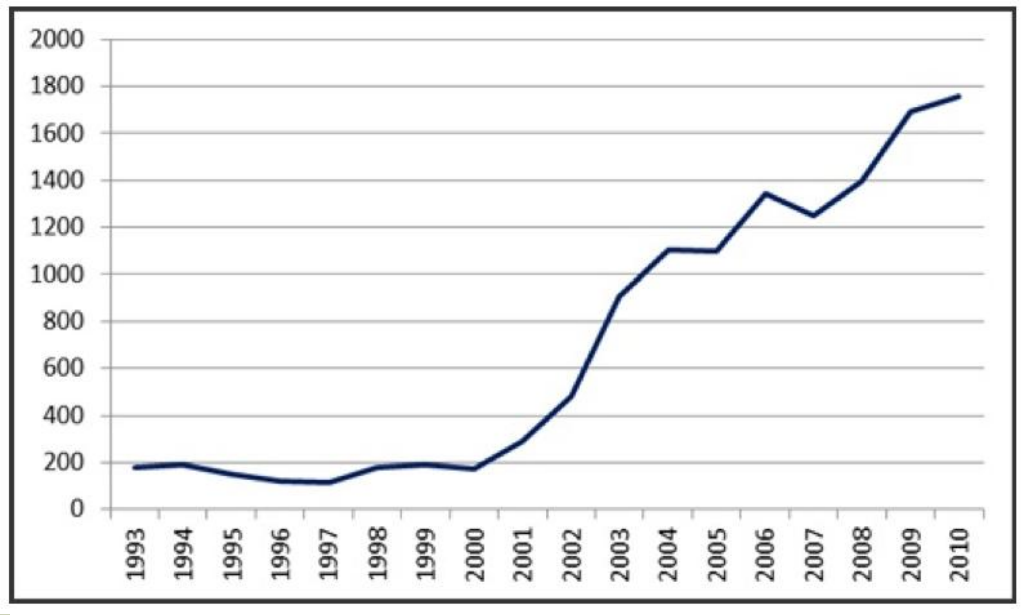
☐ Lyme Ab ☐ H. pylori Ab ☐ Mycoplasma pneumoniae IgM

TREATMENT

	First	Second	Allergy
SYPHILIS (Primary, Secondary, Early latent)	Benz Pen G 2.4 M units IM X1	Ceftriaxone 1g IM daily x10 d	Doxycycline 100mg PO BID x14 d
SYPHILIS (Late latent)	Benz Pen G 2.4 M units IM wkly X3	Ceftriaxone 1g IM daily x10 d	Doxycycline 100mg PO BID x28 d
Neurosyphilis	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	

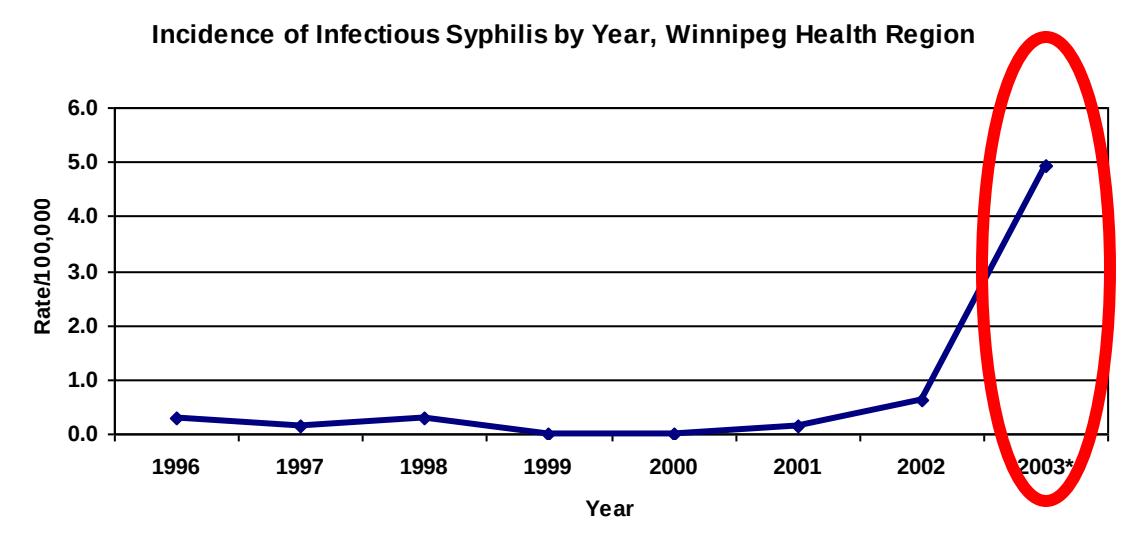
Background - Canada

- **Since 1999, outbreaks reported in Vancouver, Calgary, Edmonton, Toronto, Ottawa, Montreal, Halifax …**



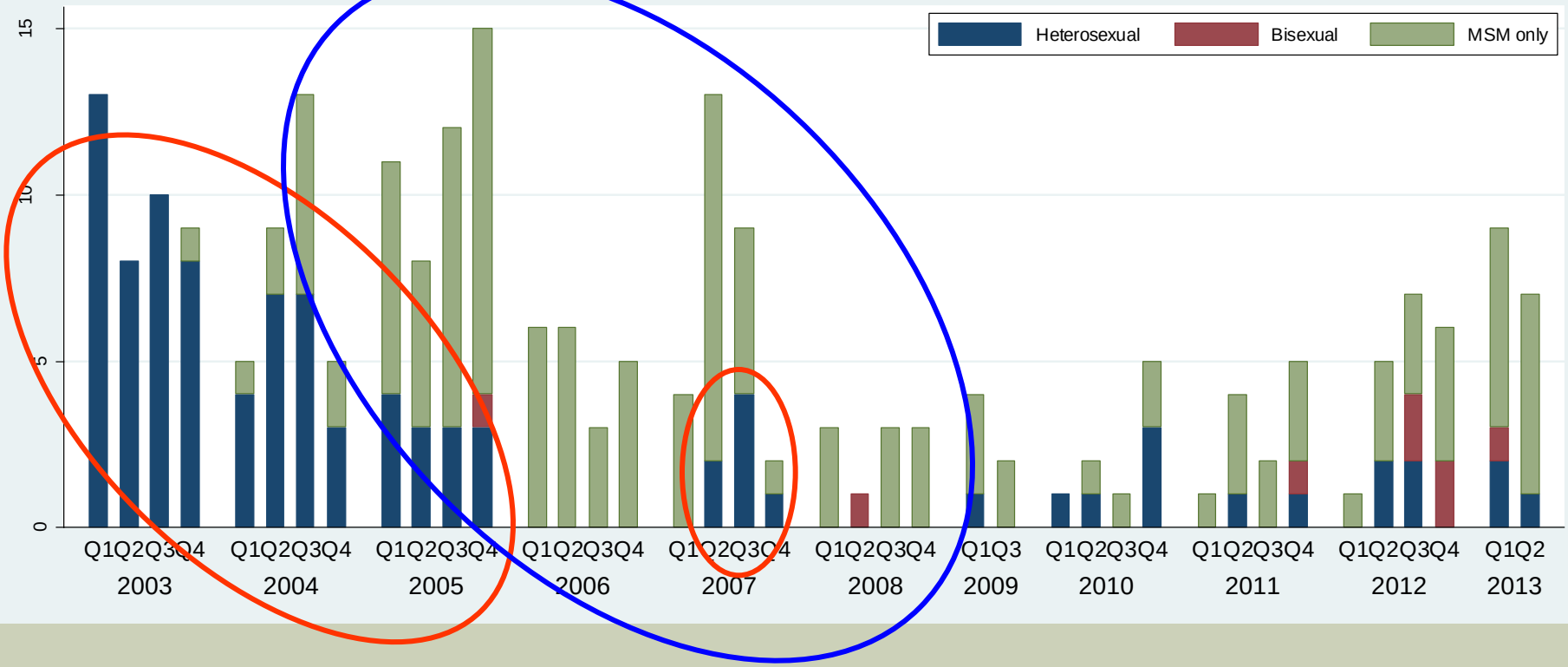
BACKGROUND - WINNIPEG

- **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



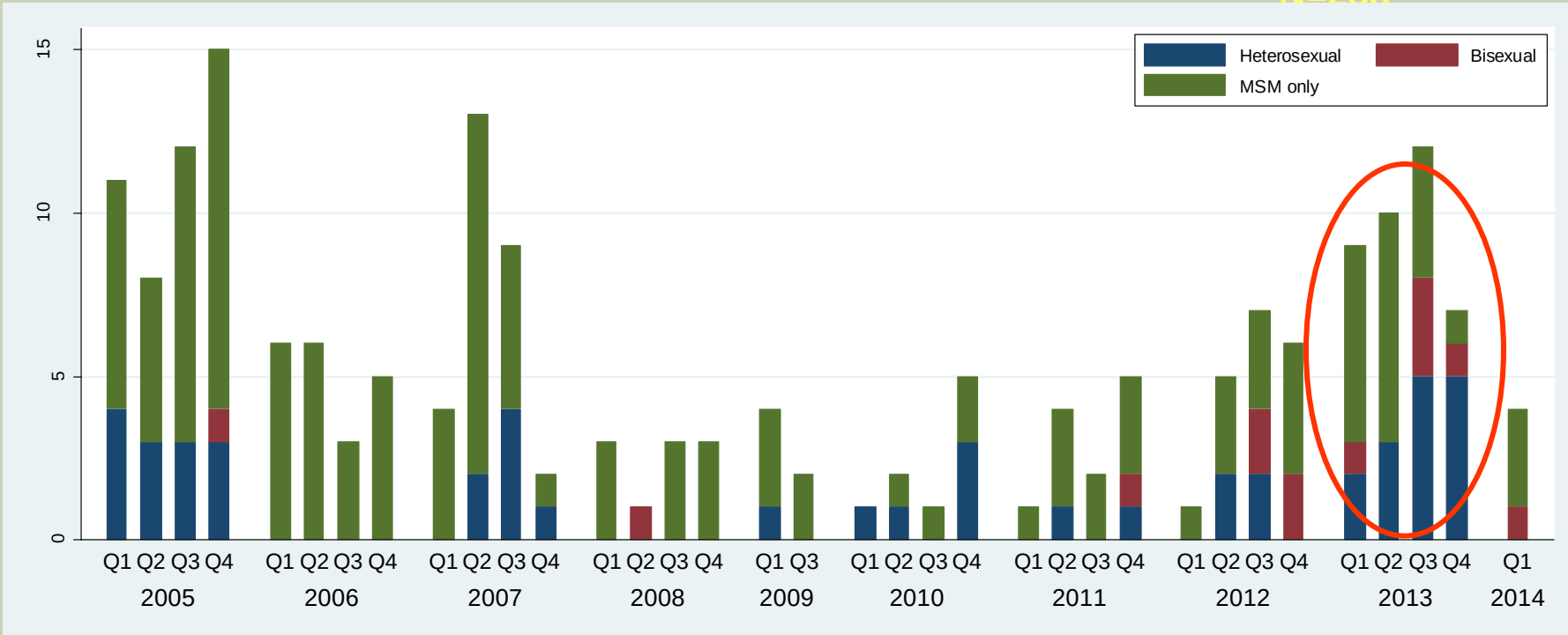
Source: Syphilis Surveillance Database, Population and Public Health Program, Winnipeg Regional Health Authority, March 2014

OUTBREAK DEMOGRAPHICS

- **2003 – 2005**
  - **place of meeting at inner city bars**
  - **casual unprotected sex (male-female)**
- **2005 – 2007**
  - **frequenting MSM-specific meeting places**
  - **anonymous unprotected sex (male-male)**
    - **40-50% HIV +**

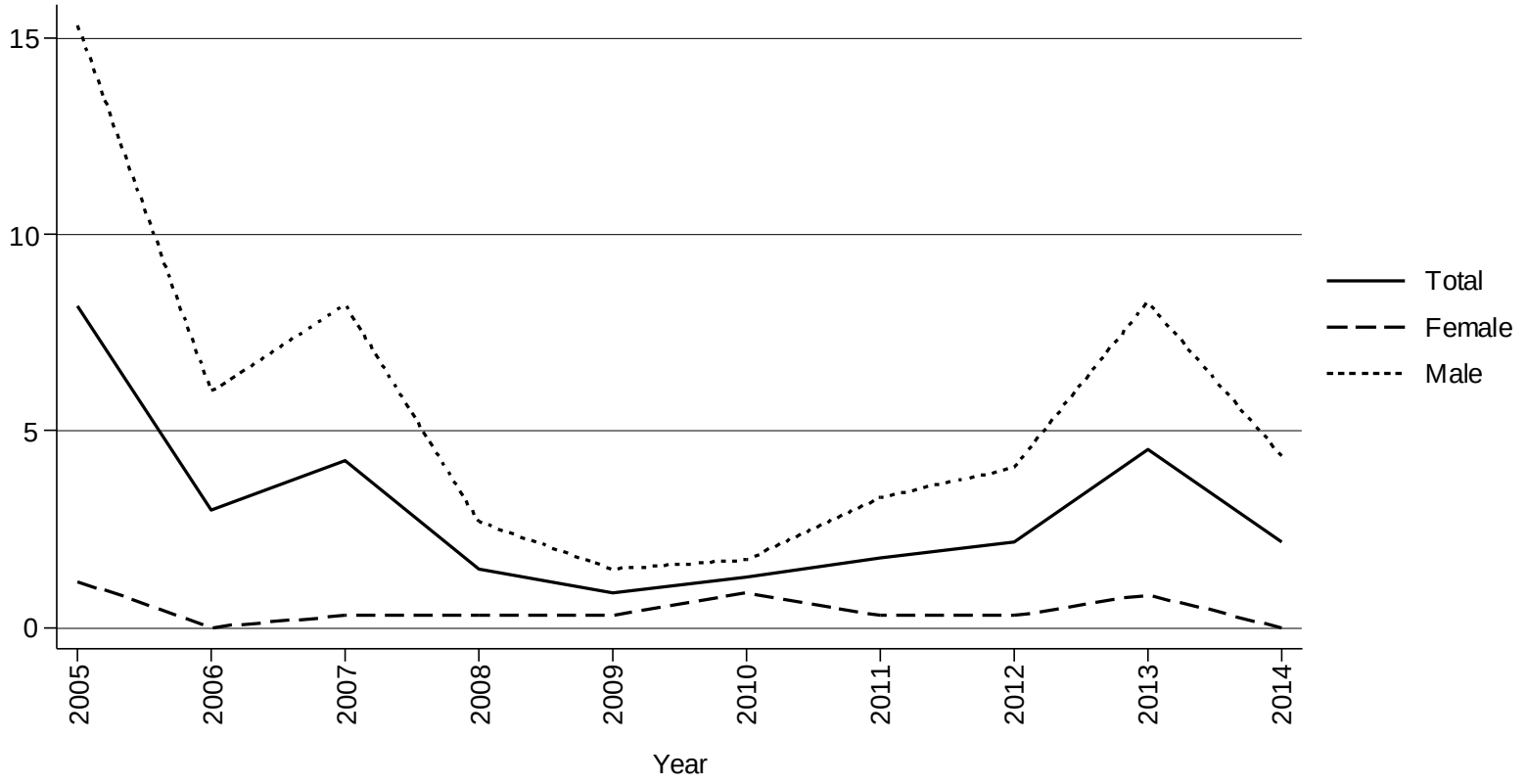
INFECTIOUS SYPHILIS CASES - WHR

N=238



Source: Syphilis Surveillance Database, Population and Public Health Program, Winnipeg Regional Health Authority, March 2014

Age-adjusted incidence rate of infectious syphilis by sex and year, WHR up to March 10, 2014



*Standardized to the 2006 Canadian population. All rates per 100,000

DEMOGRAPHICS (2013-14)

- **49 Infectious Cases**
- **92% male (51% MSM + 14% bisexual)**
- **Downtown, St Boniface, River Heights**
- **67% “locally acquired”**
- **39% social media**
- **29% HIV (highly resistant)**
- **65% primary/secondary stage (29% asympt)**
- **76% 20-49 yo**

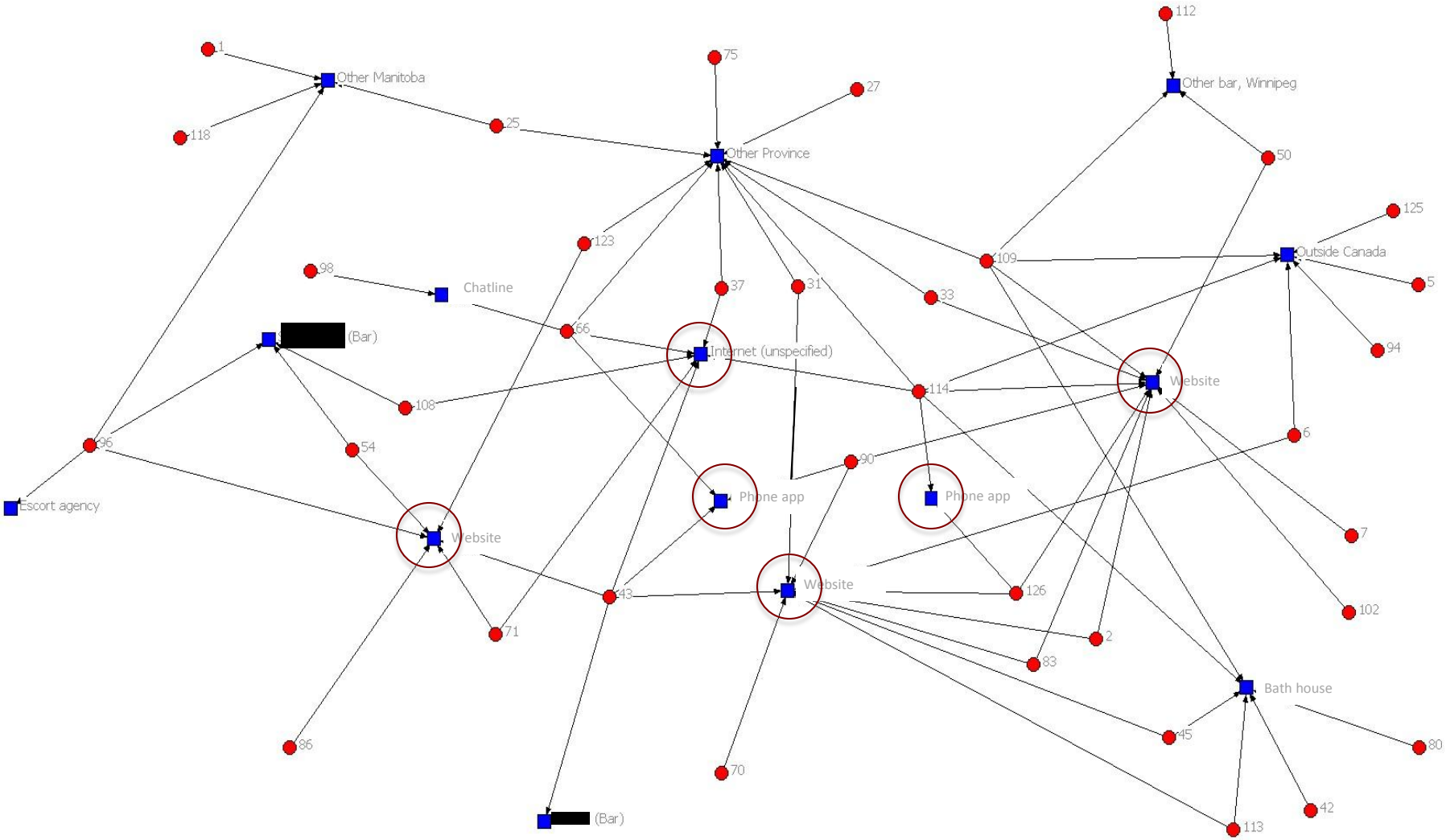
OUTBREAK SUMMARY

Predominant risk factors

- mostly MSM/Bisexual
- meeting online or using phone apps
- anonymous unprotected sex (male-male)

- One-third are HIV +

NETWORK DIAGRAM: WHERE CASES MET CONTACTS



Specific names have been redacted.

OUTBREAK INTERVENTIONS

- **Bathhouse Outreach**
- **Case Management**
- **Social media advertising**
- **MSM Survey**
- **Health Care Provider Information**
- **Street Connections**
- **Mapping**
- **Contact Notification**