



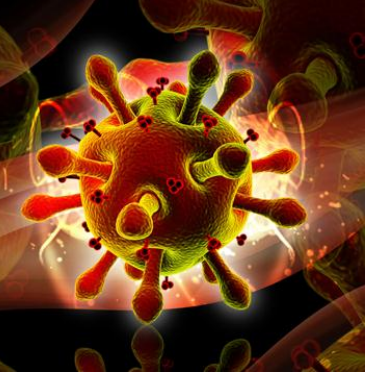
OCS  
OHTN COHORT STUDY

## Co-infection with *Chlamydia trachomatis* and *Neisseria gonorrhoea* among persons in HIV care in Ontario: Trends in testing and diagnosis, 2008-11

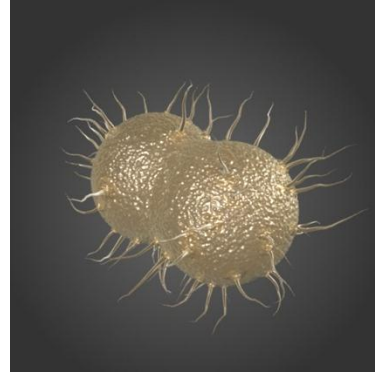
Ann N Burchell<sup>1,2</sup>, Ramandip Grewal<sup>1,2</sup>, Vanessa Allen<sup>3</sup>, Sandra Gardner<sup>1,2</sup>,  
Ahmed Bayoumi<sup>2,4</sup>, Rupert Kaul<sup>2</sup>, Tony Mazzulli<sup>3</sup>, Frank McGee<sup>5</sup>, Peggy  
Millson<sup>2</sup>, Veronika Moravan<sup>1</sup>, Janet Raboud<sup>2,6</sup>, Robert S Remis<sup>2</sup>,  
Sean B Rourke<sup>1,2,4</sup> on behalf of the OHTN Cohort Study Team

1) Ontario HIV Treatment Network; 2) University of Toronto; 3) Public Health Ontario;  
4) St. Michael's Hospital, Toronto; 5) Ontario Ministry of Health and Long Term Care;  
6) University Health Network

Ontario HIV Treatment Network Research Conference, November 11-13, 2012



# Chlamydia & Gonorrhea



- ▶ Increases in sexually-transmitted bacterial infections ***Chlamydia trachomatis (CT)*** & ***Neisseria gonorrhoea (NG)*** in Canada over past decade
- ▶ Untreated infections may lead to infertility, pelvic inflammatory disease in women, and Reiter's Syndrome (inflammatory arthritis, eye inflammation, and urethritis/cervicitis)
- ▶ CT/NG co-infection among people with HIV → ↑ HIV infectiousness
- ▶ Testing typically performed for both CT & NG pathogens simultaneously
- ▶ Canadian & US guidelines recommend CT & NG testing at least annually for sexually active men who have sex with men (MSM)



# Objectives

To estimate among persons in HIV care in Ontario

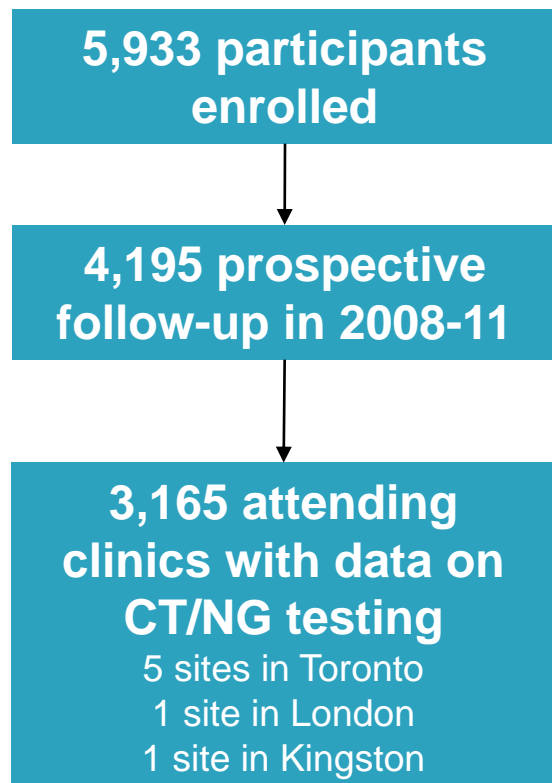
- proportion tested at least annually for chlamydia & gonorrhea
- annual prevalence of chlamydia & gonorrhea

# OHTN Cohort Study (OCS) Design

- ▶ Ongoing observational, open dynamic cohort of HIV-positive persons in care in Ontario
  - HIV Ontario Observational Database (1994-1999)
  - HIV Infrastructure Information Program (2000-2006)
  - Renamed OCS in 2007
- ▶ Over 5,900 participants recruited from specialized HIV clinics & primary care practices throughout Ontario
- ▶ Data from medical charts (manual abstraction or clinical management systems) & face-to-face interviews
- ▶ Data linkage with **Public Health Laboratories, Public Health Ontario**

Rourke et al. Cohort profile. *Int J Epidemiol*, 2012

# Analysis of chlamydia & gonorrhoea



- ▶ OCS Data Release December 2011
- ▶ Computerized CT/NG tests available 2008+
- ▶ **Proportion who tested at least annually** (1+ times/year)
- ▶ **Positivity rate** among those tested
- ▶ **Annual prevalence** among all under observation
- ▶ Risk factors for testing and positivity identified using multiple logistic regression with GEE

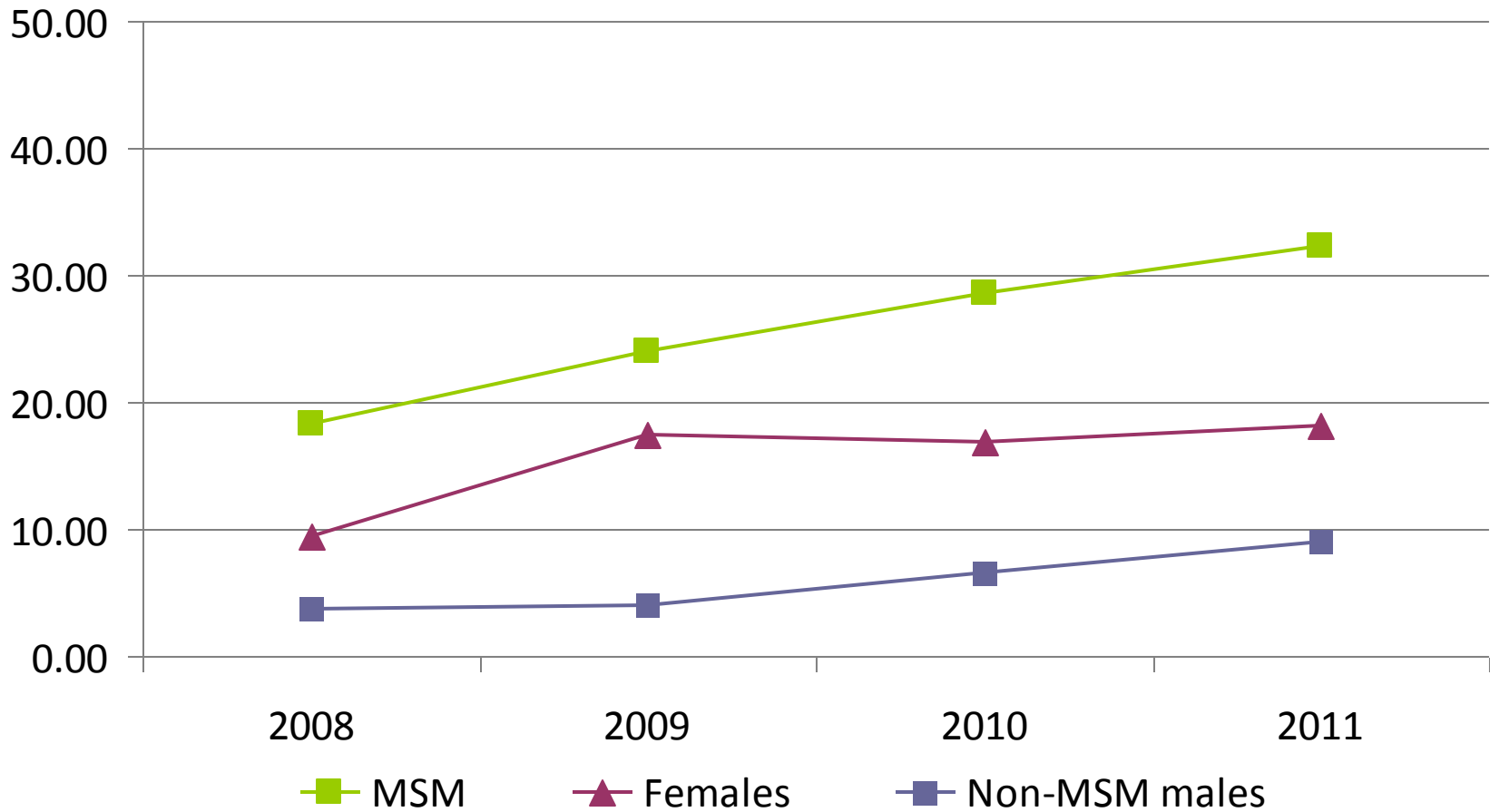
# Characteristics of participants (n=3,165)

Mean age at baseline* (SD)	45.5 (10.0)
Median year of HIV diagnosis (IQR)	1998 (1992-2004)
STI risk category	
MSM	68.9%
Non-MSM male	12.1%
Female	16.9%
Unknown	2.2%
Ethnicity	
White	61.7%
Black/African	14.2%
Multiple	9.1%
Aboriginal	4.5%
Other	7.8%
Unknown	3.0%

Median # months of prospective follow-up (IQR)	36 (26-42)
Sum person-years	8,442
Median CD4 cell count/mm <sup>3</sup> at baseline* (IQR)	470 (330-640)
Median log <sub>10</sub> viral load at baseline* (IQR)	1.7 (1.7-2.3)
Any ART during follow-up	92.8%

\* Baseline = later of January 1, 2008 or enrolment date

# Annual proportion (%) tested for chlamydia and/or gonorrhea





## Correlates of annual testing for chlamydia/gonorrhoea, logistic regression (GEE\*)

	Adjusted odds ratio (95%CI)
STI risk category	
MSM	Referent
Non-MSM male	<b>0.51 (0.37, 0.68)</b>
Female	1.19 (0.90, 1.38)
Each additional calendar year	<b>1.25 (1.15, 1.36)</b>
Age <30 cf 30+ years	<b>1.6 (1.1, 2.2)</b>
Toronto cf other Ontario	<b>2.1 (1.5, 3.0)</b>
Number of viral load tests in calendar year	
1 test	Referent
2-3 tests	<b>1.5 (1.2, 2.0)</b>
4 or more tests	<b>2.5 (1.9, 3.2)</b>
Primary versus tertiary care site	<b>3.9 (3.3, 4.5)</b>
Tested for CT/NG in previous year	
No	Referent
Yes: non-reactive	<b>8.3 (7.0, 9.8)</b>
Yes: reactive	<b>20.2 (11.6, 35.2)</b>

\*Each person-year considered a unique observation





# Test results

## Chlamydia

86 participants had 1+ reactive CT test

- ▶ 93% MSM
- ▶ 1% non-MSM male
- ▶ 6% female

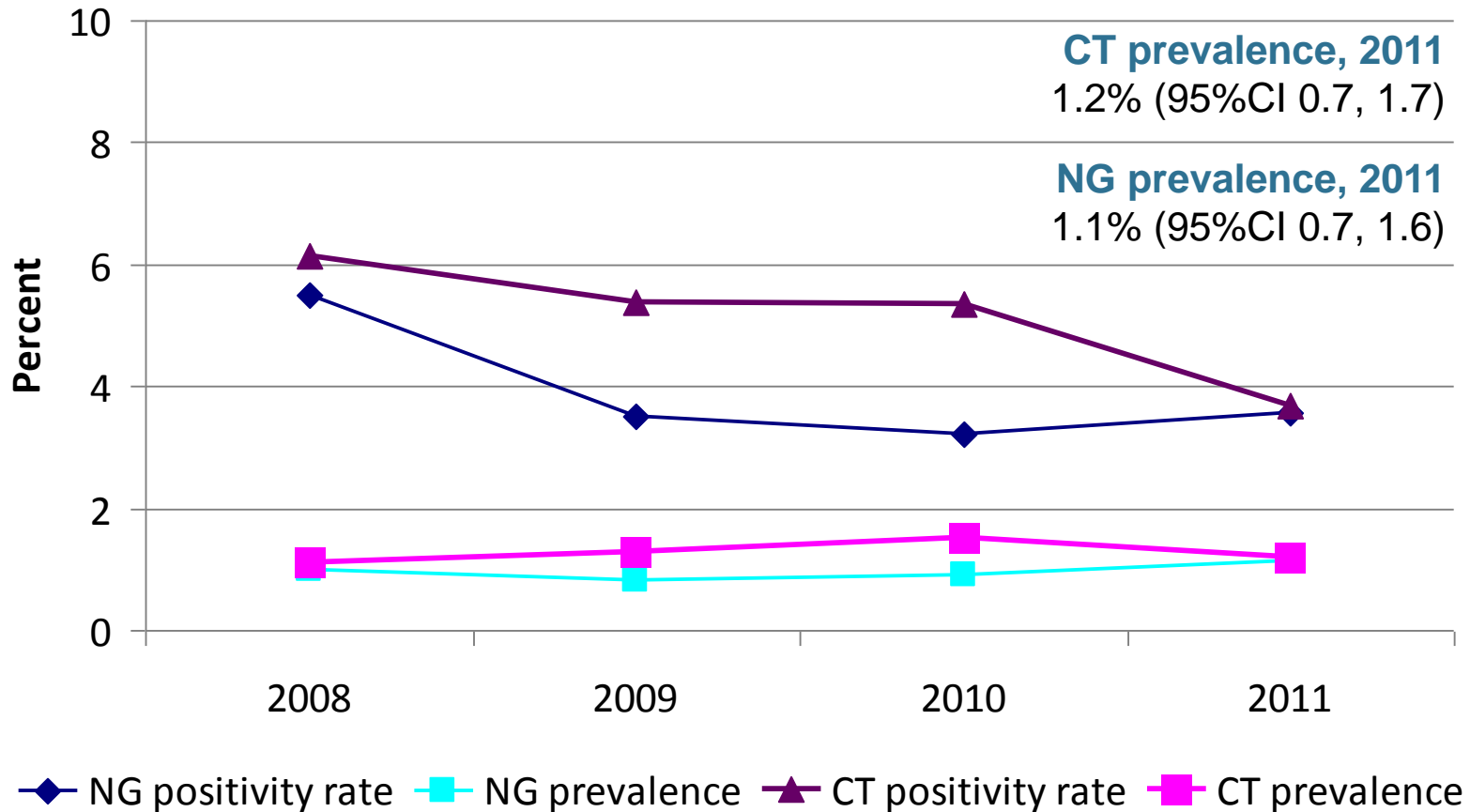
## Gonorrhea

64 participants had 1+ reactive NG test

- ▶ 97% MSM
- ▶ 1.5% non-MSM male
- ▶ 1.5% female

*Virtually all cases among MSM*

# Chlamydia (CT) & gonorrhea (NG) positivity rates and prevalence among HIV+ MSM, 2008-11



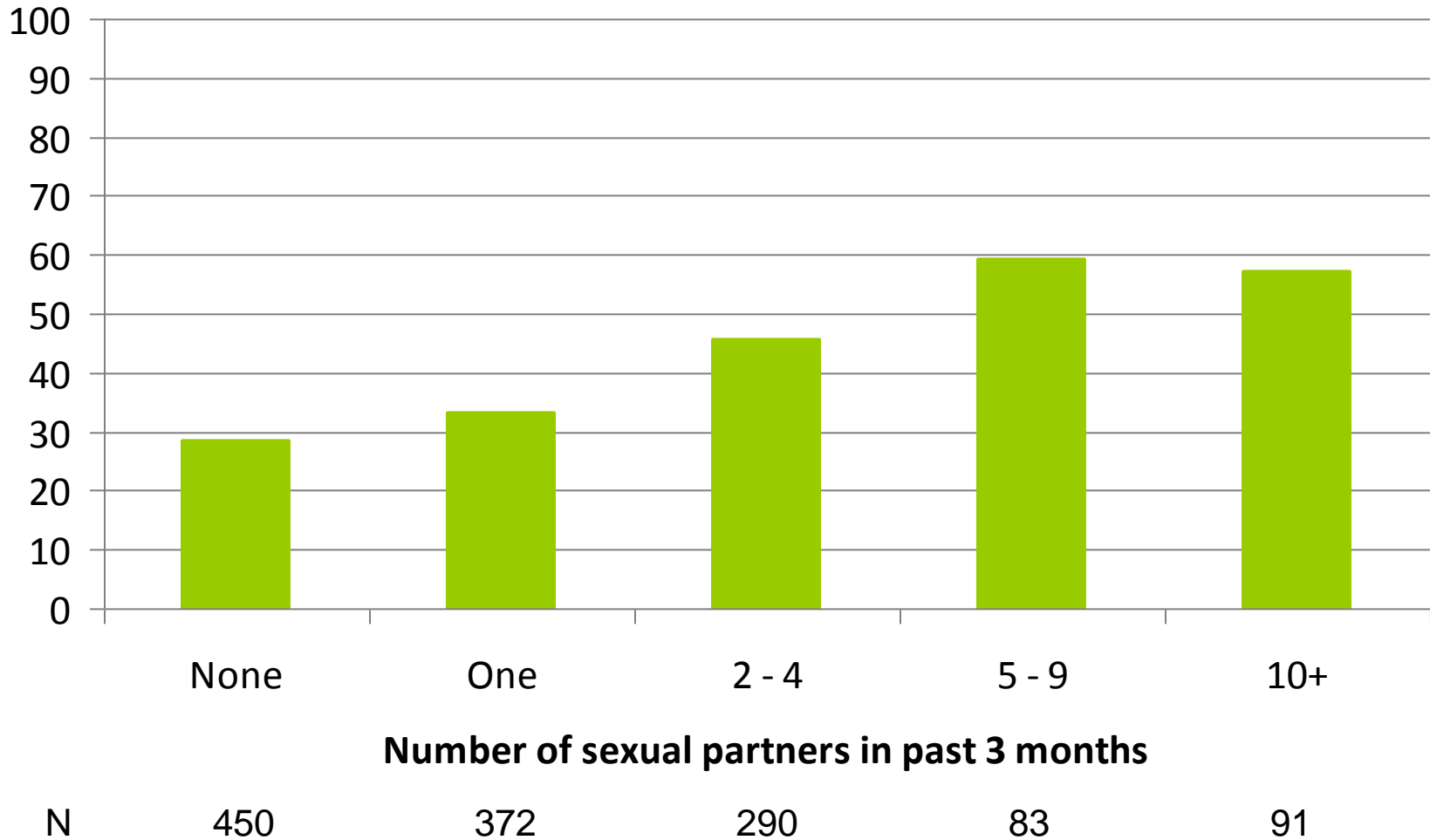
N obs	1517	1942	1964	1938
N tested	277	465	561	625

# Risk factors for co-infection among HIV+ MSM, 2008-11, logistic regression (GEE\*)

	CHLAMYDIA OR adj (95%CI)	GONORRHEA OR adj (95%CI)
Each additional calendar year	1.02 (0.85, 1.22)	1.11 (0.87, 1.41)
Initiated antiretroviral therapy (cf no)	0.92 (0.44, 1.92)	0.71 (0.34, 1.49)
Age <30 cf 30+ years	<b>4.8 (2.6, 8.7)</b>	<b>2.27 (1.01, 5.07)</b>
Maximum viral load in calendar year		
Undetectable/suppressed (<200 copies/mL)	Referent	Referent
Unsuppressed (200 copies/mL or greater)	1.31 (0.76, 2.24)	<b>2.4 (1.3, 4.3)</b>
Primary versus tertiary care site	<b>2.3 (1.4, 3.8)</b>	1.8 (1.0, 3.2)

\*Each person-year considered a unique observation

## Percent of HIV+ MSM tested for chlamydia/gonorrhea in 2011, by number of sex partners



# Interpretation

- ▶ Rise in percent tested annually for chlamydia & gonorrhea among persons in HIV care in Ontario
  - MSM most likely to be tested but ~40% of men with multiple partners had not tested in 2011
- ▶ Virtually all cases among MSM
  - Chlamydia prevalence (1.2%) comparable to general population (1.8%)
  - Gonorrhea prevalence (1.1%) >> general population (0.3%)
- ▶ Stable prevalence of CT/NG in 2008-11 suggests ↑ testing did not identify more cases
- ▶ Findings may inform recommendations to improve CT/NG test uptake among men at highest risk

# Acknowledgements

## OCS Research Team

Sean B Rourke (PI)	Ann N Burchell (Co-PI)
Ahmed M Bayoumi	John Cairney
Jeffrey Cohen	Curtis Cooper
Fred Crouzat	Sandra Gardner
Kevin Gough	Don Kilby
Mona Loutfy	Nicole Mittmann
Janet Raboud	Anita Rachlis
Edward Ralph	Sergio Rueda
Irving E Salit	Roger Sandre
Marek Smieja	Wendy Wobeser

## OCS/OHTN Staff

Kevin Challacombe	Mark Fisher
Robert Hudder	Lucia Light
Michael Manno	Veronika Moravan
Nahid Quereshi	Samantha Robinson

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## OCS Governance Committee

Tony Di Pede (Chair)	Evan Collins
Adrian Betts	Patrick Cupido
Tracey Conway	Michael Hamilton
Brian Finch	Troy Grennan
Clemon George	Rick Kennedy
Claire Kendall	John MacTavish
Ken King	Shari Margolese
Carol Major	Lori Stoltz
Colleen Price	Brian Huskins
Anita Benoit	Hla Hla (Rosie) Thein
Leslie Bowman	

## Data Linkage

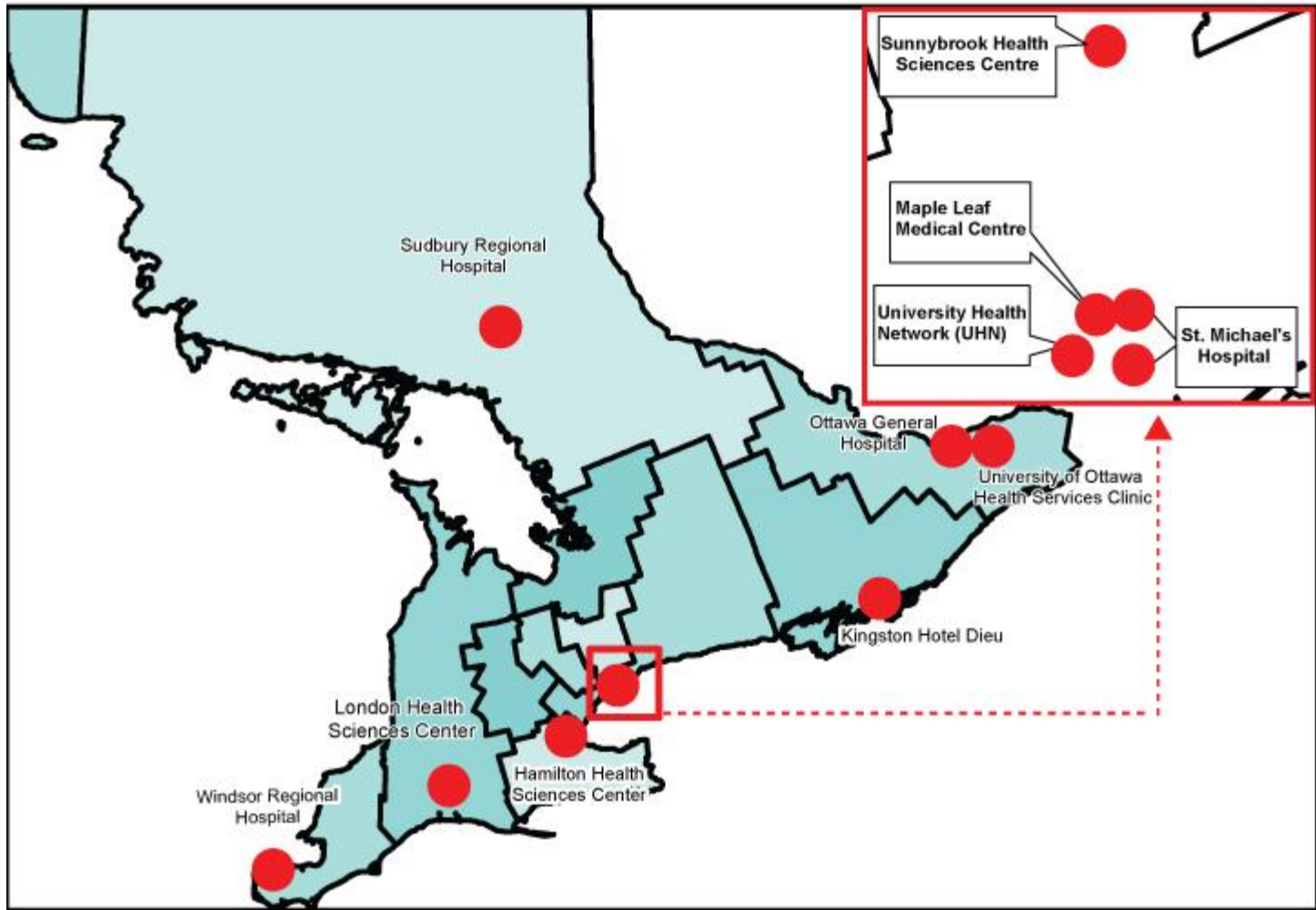
Public Health Laboratories, Public Health Ontario

## Funding

AIDS Bureau, Ontario Ministry of Health and Long Term Care

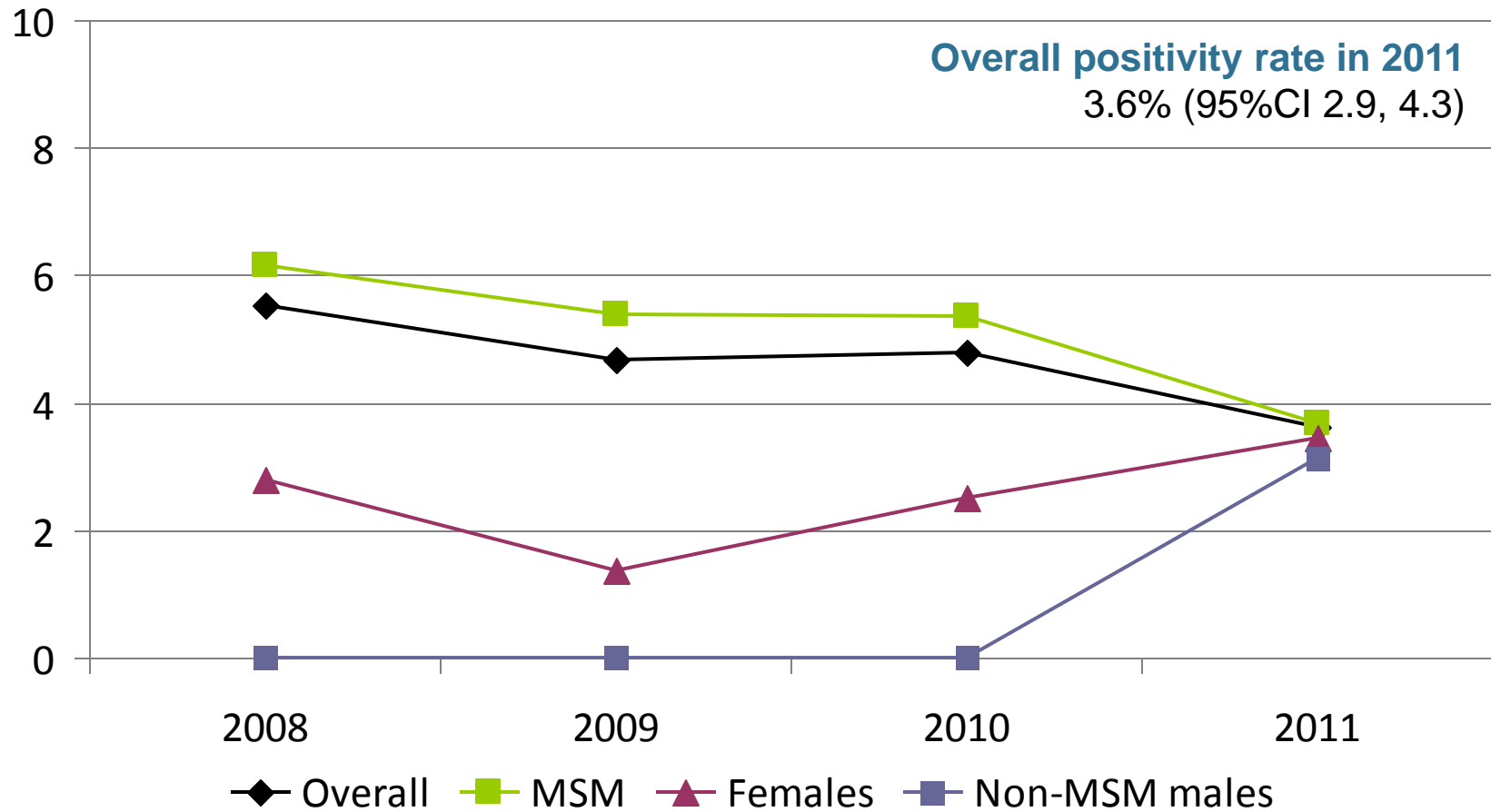
CIHR operating grant 111146 and New Investigator salary award to ANB

# OCS Clinic Sites



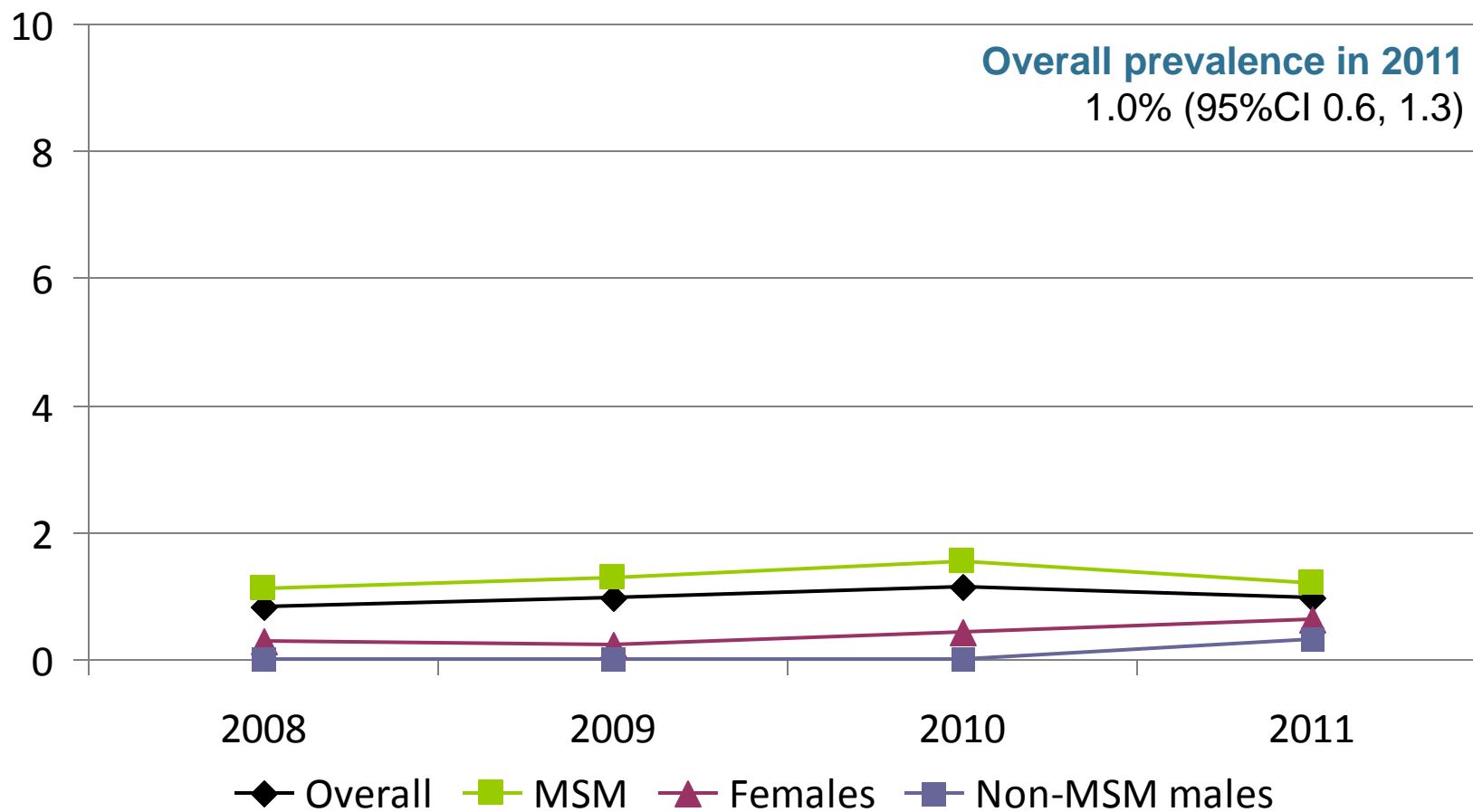


# *Chlamydia trachomatis* positivity rate (%) among those tested, by year

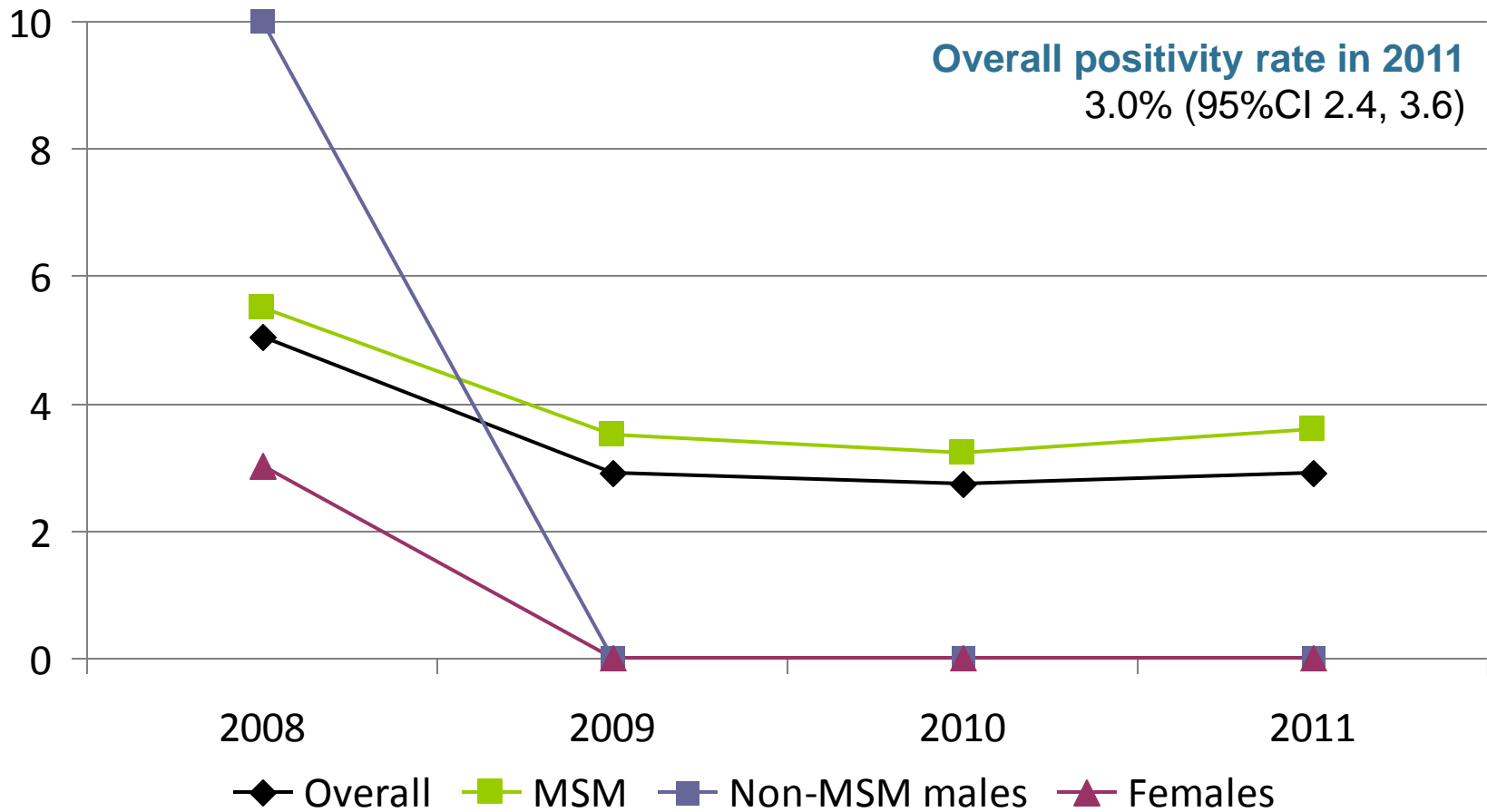


# Annual prevalence of *Chlamydia trachomatis* (%)

(Untested participants included in denominator)



# *Neisseria gonorrhoea* positivity rate (%) among those tested, by year



# Annual prevalence of *Neisseria gonorrhoea* (%)

(Untested participants included in denominator)

