

**Methods** Analyses of positivity trends were conducted using available data for opportunistic asymptomatic tests (screens) from the NCSP national dataset for 2005 to 2010 from areas that implemented screening throughout this time period. Age, sex, ethnicity, sexual behaviour, regional and venue of screen weights for the English population of 15–24-year-olds were derived (from national sources where available) and applied to the dataset.

**Results** From 2005 to 2010 there was an increase in screens among men. There were no major changes in characteristics known to be associated with infection (year of age, sexual behavioural variables). Available data on sexual behavioural variables and ethnicity decreased over time. There were some changes in venue use over time. Weighting for 5-year age group, sex, <2 sexual partners in past 12 months, ethnicity and region lowered positivity in each year but slightly increased the decline in positivity from an average decline of 13% per year (from 11% in 2005 to 6% in 2010) to an average of 14% per year (from 10% to 4%). Additional standardisation by screening venue did not reduce the overall observed decline in positivity during this period. Differences in positivity between venues remained, but were slightly reduced, after weighting for differences in known characteristics of screened clients.

**Conclusions** The observed decline in positivity over time among screens was not accounted for by weighting for known characteristics of those screened or changes in testing venues. Together with the consistency of declining positivity in all sub-categories this suggests that a true decline in population prevalence may have occurred. Further analyses of the potential effects of data limitations and using regression techniques with additional variables (eg, deprivation) are in progress to better understand the relationship between screen positivity and population prevalence at different levels of screening uptake in England.

## Epidemiology poster session 1: STI trends: *Neisseria gonorrhoeae*

### P1-S1.36 PREVALENCE OF *NEISSERIA GONORRHOAE* INFECTIONS AMONG MEN AND WOMEN ENTERING THE NATIONAL JOB TRAINING PROGRAM-USA, 2004–2009

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H Bradley, C Satterwhite. *Centers for Disease Control and Prevention, Atlanta, USA*

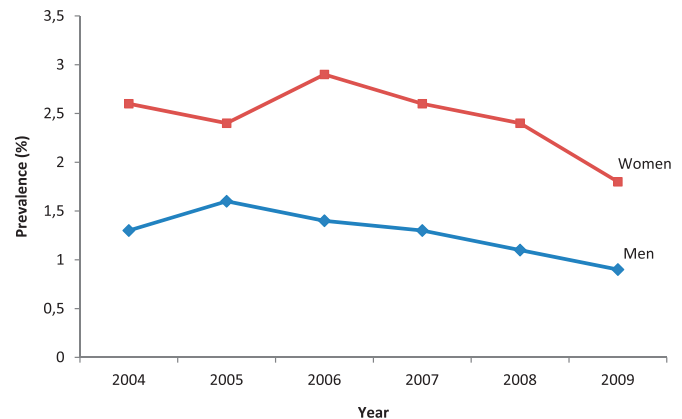
**Background** National notifiable disease data indicate that 99 of every 100 000 persons in the USA were infected with gonorrhoea in 2009, the lowest recorded gonorrhoea rate in US history. However, the extent to which declining case reports signify a reduction in prevalence is unknown. In order to better understand national gonorrhoea trends, we examined prevalence over time among men and women entering the National Job Training Program (NJTP).

**Methods** Gonorrhoea prevalence was estimated among 16–24-year-old men and women entering the NJTP in 48 states and the District of Columbia from 2004–2009. To approximate gonorrhoea screening, only data from the 105 (85% of all 123) centers that performed gonorrhoea testing on at least 50% of the population were included. Conditional logistic regression was used to assess the probability of testing positive for gonorrhoea over time, adjusted for variables associated with gonorrhoea risk.

**Results** 95 184 men and 91 697 women were screened for gonorrhoea upon entry to the NJTP from 2004 to 2009. For women, gonorrhoea prevalence increased from 2004 (2.6%) to 2006 (2.9%), then decreased steadily through 2009 (1.8%). For men, prevalence increased from 2004 (1.3%) to 2005 (1.6%), then decreased through 2009 (0.9%). Gonorrhoea prevalence among black women decreased from 3.6% in 2004 to 2.5% in 2009 and was 2–4 times higher than prevalence

among white women during the study period. Likewise, prevalence among black men decreased from 2.0% to 1.5% and was 8–22 times higher than prevalence among white men. After adjusting for age, race, region, and test technology, the odds of a woman testing positive for gonorrhoea decreased by 50% from 2004 to 2009. Similarly, the odds of a man testing positive for gonorrhoea decreased by 40% during the study period see Abstract P1-S1.36 Figure 1.

**Conclusions** Declining trends in gonorrhoea infection among NJTP entrants are similar to those observed in gonorrhoea case report data, suggesting that the decrease in case reports is due to a decrease in prevalence. Both data sources also demonstrate continuing racial disparities in gonorrhoea infection between blacks and whites. Interventions to reduce gonorrhoea infections should be developed to reach populations with a disproportionate risk.



Abstract P1-S1.36 Figure 1 Gonorrhoea prevalence among men and women screened for gonorrhoea at entry to the National Job Training Program—USA, 2004–2009.

### P1-S1.37 PREVALENCE OF AND RISK BEHAVIOURS FOR *NEISSERIA GONORRHOAE* IN PARTURIENT WOMEN AGED 15–24 IN BRAZIL

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<sup>1</sup>A Miranda, <sup>2</sup>V Pinto, <sup>3</sup>C Szwarcwald, <sup>1</sup>C Baroni, <sup>1</sup>L Stringari, <sup>3</sup>L Inocencio. <sup>1</sup>Universidade Federal do Espírito Santo, Vitória, Brazil; <sup>2</sup>Ministerio da Saúde, Brasília, Brazil; <sup>3</sup>Ministério da Saúde, Rio de Janeiro, Brazil

**Background** *Neisseria gonorrhoeae* (NG) is a sexually transmitted infection having repercussions on reproductive health and impact on the fetus. Our goal was to estimate the prevalence of and risk factors for NG in young parturient women in Brazil.

**Methods** A national cross-sectional study among parturient women, aged 15–24, attending Brazilian public hospitals was performed in 2009. Participants answered a questionnaire including demographic, behavioural and clinical data. A sample of urine was collected and screened for NG and *Chlamydia trachomatis* (CT), using PCR.

**Results** A total of 2400 women were selected and 2071 (86.3%) participated in the study. Mean age was 20.2 years (SD 2.7). A total of 59.1% had up to 8 years of schooling and 93.3% reported an income under US\$ 500. Ninety-five per cent attended antenatal care. Prevalence of NG was 1.0% (95% CI 0.6% to 1.4%) and 4% of women infected with NG also had CT infection. First sexual intercourse was reported under 15-years old by 32.8%; 5% reported previous STI; 0.8% were commercial sex workers and 6.0% used illicit drugs. NG associated factors in the final logistic model were—being single [OR=3.2 (95% CI 1.27 to 8.01)]; having more than one sexual partner in lifetime [OR=1.6(95% CI 1.13 to 2.26)]; and CT infection [OR=7.7(95% CI 2.99 to 19.91)].

**Conclusions** Although this study shows a low prevalence of NG infection among young pregnant women in Brazil, they presented STI risk factors that justify include STI counselling for this population.

## Epidemiology poster session 1: STI trends: *Neisseria gonorrhoeae*: resistance

### P1-S1.38 EMERGENCE OF *NEISSERIA GONORRHOEA*E ISOLATES WITH DECREASED SUSCEPTIBILITIES TO CEFTRIAXONE AND CEFIXIME IN CANADA - 2001–2010

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<sup>1</sup>I Martin, <sup>1</sup>P Sawatzky, <sup>2</sup>V Allen, <sup>3</sup>L Hoang, <sup>4</sup>B Lefebvre, <sup>5</sup>N Mina, <sup>1</sup>M Gilmour. <sup>1</sup>Public Health Agency of Canada, Winnipeg, Canada; <sup>2</sup>Ontario Agency for Health Protection and Promotion, Public Health Laboratory, Toronto, Canada; <sup>3</sup>British Columbia Centres for Disease Control Public Health Microbiology & Reference Laboratory, Vancouver, Canada; <sup>4</sup>Laboratoire de santé publique du Québec, Ste-Anne-de-Bellevue, Canada; <sup>5</sup>Department of Medical Microbiology, University of Alberta, Edmonton, Canada

**Background** In Canada, the susceptibilities for ceftriaxone and cefixime in *Neisseria gonorrhoeae* are gradually decreasing and there has been a shift in the modal minimum inhibitory concentrations (MICs) from 0.016 µg/ml in 2000 to 0.032 µg/ml in 2008. We examined the phenotypic and genetic characteristics of *N gonorrhoeae* with decreased susceptibilities to 3rd generation cephalosporins isolated in Canada between 2001 and 2010.

**Methods** *N gonorrhoeae* isolates were collected by Canadian provincial public health laboratories. MICs were determined by agar dilution at the National Microbiology Laboratory (NML) and isolates displaying decreased susceptibilities to cefixime (MIC=0.25 mg/l and 0.5 mg/l) and ceftriaxone (MIC=0.125 mg/l and 0.25 mg/l) were examined using multi-antigen sequence typing (NG-MAST) and sequencing of resistance determinants associated with decreased cephalosporin susceptibilities (penA, mtrR, ponA, porB).

**Results** A total of 155 *N gonorrhoeae* isolates with decreased susceptibility MICs to ceftriaxone and cefixime were identified from the following provinces - Ontario (53.5%, N=83); British Columbia (34.2%, N=53); Québec (12.3%, N=19). Of the 155 isolates observed with reduced susceptibility, 23 were observed between 2001 and 2007 (14.8%), whereas in 2008, 2009 and 2010 there were 84 isolates (54.2%), 23 isolates (14.8%) and 25 isolates (16.1%) observed, respectively. Thirty-eight different NG-MAST sequence types were identified among the isolates; ST-3158, ST-225 and ST-1407 were the most prevalent at 25.9%, 19.4% and 14.8%, respectively. The mtrR resistance determinants were present in 95.5% of the isolates. The penA mosaic was present in 60% of the isolates, with the most common penA mosaic types XXXII and X identified at 51.0% and 7.7%, respectively, while the non-mosaic penA type XII was identified in 36.8% of the isolates. The G101K alteration in porB was present in 97.4% of the isolates and the A102N and A102D alterations in porB were found in 49.7% and 45.8% of the isolates, respectively. L421P alterations in ponA were present in all the isolates.

**Conclusions** In Canada, *N gonorrhoeae* isolates with decreased susceptibilities to 3rd generation cephalosporins, including cefixime and ceftriaxone have increased over the years. The alterations in penA, mtrR and porB are important determinants identified in these isolates. The most common ST types identified among these Canadian isolates have also been reported worldwide.

### P1-S1.39 AZITHROMYCIN SUSCEPTIBILITIES IN CANADIAN *NEISSERIA GONORRHOEA*E ISOLATES (2006–2010)

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<sup>1</sup>P Sawatzky, <sup>1</sup>I Martin, <sup>2</sup>V Allen, <sup>3</sup>L Hoang, <sup>4</sup>B Lefebvre, <sup>5</sup>M Lovgren, <sup>1</sup>M Gilmour. <sup>1</sup>Public Health Agency of Canada, Winnipeg, Canada; <sup>2</sup>Ontario Agency for Health

Protection and Promotion, Public Health Laboratory, Toronto, Canada; <sup>3</sup>British Columbia Centres for Disease Control, Public Health Microbiology & Reference Laboratory, Vancouver, Canada; <sup>4</sup>Laboratoire de santé publique du Québec, Ste-Anne-de-Bellevue, Canada; <sup>5</sup>Alberta Health Services, Edmonton, Canada

**Background** Canada conducts surveillance of antimicrobial susceptibilities in *Neisseria gonorrhoeae* strains to support development of treatment guidelines.

**Methods** *N gonorrhoeae* strains were isolated or collected by Canadian provincial public health and reference laboratories. Minimum inhibitory concentrations (MICs) were determined by agar dilution for penicillin, spectinomycin, tetracycline, erythromycin (ery), ceftriaxone, ciprofloxacin (cip), cefixime, and azithromycin (az) at the provincial laboratories or the National Microbiology Laboratory (NML). Sequence types (ST), auxotypes, and plasmid profiles were also determined at the NML.

**Results** Thirty-nine strains from British Columbia (n=18), Alberta (n=2), Ontario (n=9) and Quebec (n=10) were found to be az resistant (R) (MIC≥2 µg/ml) by either a provincial laboratory or NML between 2006 and 2010. Ten different resistance profiles were represented by the 39 strains. Twenty or 51.3% were Chromosomally-Mediated Resistant *N gonorrhoeae*/azR/cipR (CMRNG/azR/cipR), 4 (10.3%) were Probable CMRNG/azR/cipR and 3 (7.7%) were Penicillinase-Producing *N gonorrhoeae*/Tetracycline-Resistant *N gonorrhoeae*/azR/cipR/eryR (PPNG/TRNG/azR/cipR/eryR). One strain was CMRNG/azR/cipR with reduced susceptibility to cefixime. Twenty-one different sequence types were determined, the most common being ST-1407 with 20.5% (8/39), ST-225 and ST-4815 with 10.3% (4/39) each. Although the estimated rate of azithromycin resistance between 2006 and 2009 is very low at 0.2% of all isolates tested across Canada (31/15487), the MICs for azithromycin are gradually increasing. In 2001, the majority of strains (27.8%) had an azithromycin MIC=0.25 µg/ml which increased to 51.5% by 2006. In 2007, the majority of strains (55.9%) had azithromycin MIC=0.5 µg/ml. The highest azithromycin MIC found was ≥64 µg/ml (n=2).

**Conclusions** A shift in azithromycin MICs has definitely occurred and may continue to increase. Although azithromycin is not recommended as the primary treatment for gonorrhoea, it is listed as an alternative treatment. With the increasing reduced susceptibility of our primary treatments for gonorrhoea (cefixime and ceftriaxone), azithromycin may be required to treat gonorrhoea either on its own or in combination with third generation cephalosporins. Therefore, it is imperative that azithromycin susceptibilities in *N gonorrhoeae* continue to be monitored.

### P1-S1.40 EMERGING MOLECULAR MUTATIONS OF REDUCED SUSCEPTIBILITY TO THIRD-GENERATION CEPHALOSPORINS IN *NEISSERIA GONORRHOEA*E ISOLATES FROM SASKATCHEWAN, CANADA

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<sup>1</sup>S D Thakur, <sup>2</sup>E Nagle, <sup>2</sup>P N Levett, <sup>2</sup>G B Horsman, <sup>1</sup>Mingmin Liao, <sup>1</sup>J R Dillon. <sup>1</sup>Vaccine and Infectious Disease Organization, Saskatoon, Canada; <sup>2</sup>Saskatchewan Disease Control Laboratory, Regina, SK, Canada

**Background** Third-generation cephalosporins (eg, ceftriaxone, Cro) are the antimicrobials of choice for the treatment of gonorrhoea. The molecular mechanisms causing reduced susceptibility to these antibiotics in *Neisseria gonorrhoeae* (Ng) isolates differ between isolates from different geographic regions. The objective of this research was to characterise mutations in penA, mtrR, porB and ponA associated with Cro reduced susceptibility (CroRed) in Ng isolates from Saskatchewan (SK), Canada.

**Methods** A total of 320 of Ng isolates (2003 to 2008) from SK were tested for their antimicrobial susceptibility to Cro using the CLSI agar dilution method. 7% of the isolates (n=23) had Cro MICs of 0.03–0.06 mg/l and were defined as having CroRed phenotypes and