

Trends in Chlamydia and Gonorrhoea Testing and Positivity in Western Australian Women, 1998-2013

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Introduction

- Chlamydia trachomatis (CT) and Neisseria gonorrhoea (NG) are recognised as major public health problems in women of reproductive age
- There has been a rise in annual notifications of both CT and NG in Australia
- One reason for this increase is thought to be due to an increase in concurrent testing for CT and NG
- In the mid-2000s duplex nucleic acid amplification tests (NAAT), allowing both CT and NG organisms to be tested for on the same specimen at the same time, became available

Aim

To investigate changes in the patterns of CT and NG NAAT testing and positivity among women of reproductive age in Western Australia

Method

Study design: Population-based cohort study

Study population: A cohort of all women of reproductive age (born between 1970 to 1995) residing in WA was determined by the WA Data Linkage Branch (DLB) from birth registrations (available from 1974) and the current electoral roll (2014)

Data Linkage

- Pathology records from two large laboratories providing services in Perth and parts of regional WA (1998-2013) were examined
- The WA DLB used personal identifiers including names, date of birth, address and sex to probabilistically link the pathology records to the cohort
- A highly specialised linkage program was used to run comparisons between different datasets using probability weights to identify 'probable' and 'improbable' matches
- An extensive clerical review process was also conducted for more complex matches
- These data linkage techniques have been developed to ensure the best possible matching while at the same time protect personal privacy
- All CT and NG NAAT conducted at either laboratory that linked to the cohort were extracted

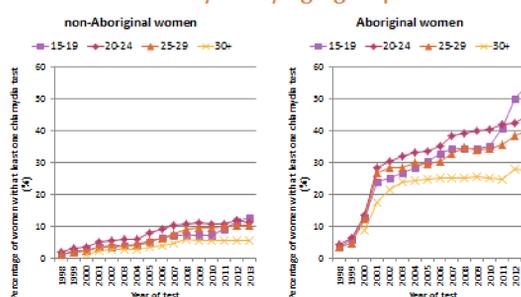
Statistical analysis

- Multiple tests for the same infection on the same referral date were only counted as one test and recorded as positive if any of the results were positive
- Positivity was defined as the number of positive tests divided by the total number of tests excluding equivocal results.
- Poisson regression was used to investigate trends over time, stratified by age group and Aboriginality

Results

- 377,505 women were included in the cohort, 4.4% were Aboriginal

Figure 1: Percentage of women in cohort tested at either pathology laboratory for chlamydia each year by age group



CT and NG testing trends from two laboratories

Between 1998-2013:

- 158,168 (42%) women had at least one CT NAAT
 - 40% of non-Aboriginal women
 - 80% of Aboriginal women
- 144,754 (38%) women had at least one NG NAAT
 - 36% of non-Aboriginal women
 - 79% of Aboriginal women

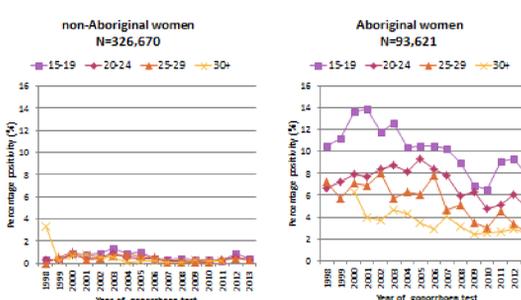
Among women tested for CT and NG the median number of tests per women was 2 (IQR 1-3) in non-Aboriginal women and 5 (IQR 2-9) in Aboriginal women

There was a significant increase in the number of women tested at least once for CT each year (Figure 1)

The proportion of concurrent NG NAAT increased among non-Aboriginal women from 58% in 1998, to 83% in 2001, and 89% in 2013

Among Aboriginal women the proportion of concurrent NG NAAT increased from 86% in 1998 to 99% in 2001 where it remained in 2013

Figure 2: Gonorrhoea positivity by age group



NG Positivity (Figure 2)

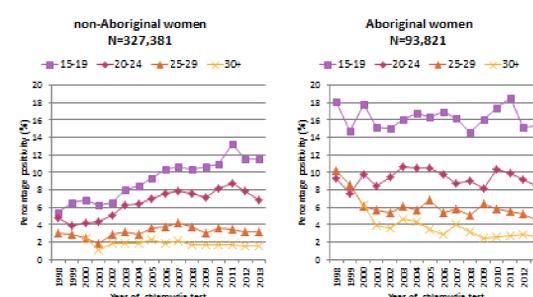
- NG positivity was 0.6% among non-Aboriginal women aged 15-19 years compared to 0.4%, 0.3% and 0.2% in those aged 20-24, 25-29 and >30 years respectively
- NG positivity was higher among Aboriginal women; 9.8%, 6.8%, 4.9%, and 3.1% among Aboriginal women aged 15-19, 20-24, 25-29 and >30 years respectively
- NG positivity rate decreased significantly over time in all age groups in both non-Aboriginal and Aboriginal women (all $p < 0.01$)

Results

CT Positivity (Figure 3)

- CT positivity was 10.0% among non-Aboriginal women aged 15-19 compared to 7.1%, 3.3% and 1.7% in those aged 20-24, 25-29 and ≥ 30 years respectively
- CT positivity was higher among Aboriginal women; 16.2% 9.4%, 5.6% and 3.0% among Aboriginal women aged 15-19, 20-24, 25-29 and ≥ 30 years respectively
- Among non-Aboriginal women CT positivity increased significantly overtime in 15-19 year olds ($p < .0001$) and in 20-24 year olds ($p < .0001$), although a decrease was observed in 2012 and 2013. CT positivity was fairly stable in 25-29 year olds ($p = 0.04$), and decreased slightly in non-Aboriginal women aged > 30 years ($p = 0.0002$) between 2000 and 2013
- Among Aboriginal women CT positivity remained stable in 15-19 years olds ($p = 0.81$), and 20-24 year olds ($p = 0.06$) between 1998 and 2013. CT positivity decreased significantly in Aboriginal women aged 25-29 ($p = 0.03$) and aged ≥ 30 years ($p < .0001$) between 2000 and 2013

Figure 3: Chlamydia positivity by age group



Limitations

- Some women in our cohort may have been tested for CT or NG at another lab for which the data was unavailable
- These results only consider trends in NAAT testing, no culture tests were included in this analysis

Conclusion

- Chlamydia and gonorrhoea NAAT testing among women of reproductive age in WA increased over time
- Higher testing rates in Aboriginal women are likely attributable to increased screening in endemic areas and greater testing in Aboriginal Community Controlled Health Services (ACCHS)
- There was an increase in chlamydia positivity among younger non-Aboriginal women over time. This increase was not observed among older non-Aboriginal women or Aboriginal women.
- Gonorrhoea positivity decreased over time among all age-groups in both Aboriginal women and non-Aboriginal women. Further research is needed to determine whether this decrease is a true decrease in gonorrhoea prevalence or an artefact of changes in testing patterns.

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