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Opportunistic screening for chlamydia in young men

Background
Information on prevalence of genital *Chlamydia trachomatis* in young men attending Australian general practices is scarce.

Objective
We aimed to estimate the prevalence of chlamydia in this group; establish behaviours associated with infection, and evaluate general practitioner follow up of positive cases.

Methods
Sexually active men (aged 15–29 years) attending 10 general practices in Perth, Western Australia, were tested for chlamydia and completed a self report questionnaire concerning sexual practices and symptoms.

Results
Prevalence of chlamydia was 3.7% (95% CI: 2–6%, n=14/383). High rates of risky sexual practices were observed in both chlamydia positive and negative participants. The association between chlamydia status and risky sexual practices however, was not statistically significant. Treatment and notification of positive cases were usually undertaken, but GPs did not always check that patients had contacted sexual partners.

Conclusion
We found little relationship between reported sexual behaviour and chlamydia infection in young men. It may be appropriate to offer screening to all at risk individuals.

Genital *Chlamydia trachomatis* notification rates in Australia have almost trebled from 88.5 to 249.3 per 100 000 between 2000–2007, with approximately 40% of notifications in 2007 for men.[1] Australian notification rates for the disease are highest in the young adult population (males and females aged 20–29 years)[1,2] with males generally slightly older than females supporting United Kingdom data of a peak for females aged 16–19 years and males 20–24 years.[3] Screening for chlamydia in Australia has predominantly targeted young women, and the failure to detect and treat infection in men may counteract any gains in attempts to control the disease.[4]

Urethritis, epididymo-orchitis, prostatitis, Reiter syndrome and infertility are some of the male complications from untreated genital chlamydia,[5,6] with urethral symptoms the most frequent presentation.[5] While men are more likely than women to be symptomatic when infected[5] (up to 40–50% of men compared with 70–85% of women remain asymptomatic when infected), the possibility of a reservoir of asymptomatic infection persisting among men cannot be dismissed. Young adult males are not regular attendees of general practice, comprising only 3.4% of general practitioner encounters reported by BEACH for the period April 2007 to March 2008 for those aged 15–24 years.[7] Yet it is the 18–24 years age group that are likely to be more experimental sexually or to have more than one sexual partner.[8] Chlamydia infections are likely to remain undetected and untreated, and may get periodically recycled because this male cohort are not opportunistically targeted for sexually transmissible infections (STIs).

Information regarding the prevalence of chlamydia in Australian men is scarce, with studies tending to be more representative of the symptomatic population rather than reflecting the true rate of infection among the general population.[2] An 8.5% (95% CI: 2.8–21.3%) prevalence has been reported in young men opportunistically screened through sporting clubs but the number of participants in that study was small (n=47).[9] Chlamydia prevalence in

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young men attending general practice has been estimated at 5.5%,[10] although including a youth health clinic as a recruitment location may have inflated that estimate.

General practitioners play an important role in chlamydia clinical management[11] but studies show their knowledge and practice relating to the disease is suboptimal.[12,13] Several factors hinder successful screening in general practice, including gaps in knowledge of the epidemiology of the disease, failure to use opportunities to discuss STIs as part of routine consultations, and not consistently initiating health department notification of infection and/or contact tracing.[12,13] After disease notification, many GPs in Western Australia erroneously rely on state health department population health units to undertake contact tracing with potentially infected partners.[12]

We sought to:

- estimate chlamydia prevalence in young men (aged 15–29 years) presenting to GPs for any reason
- assess their sexual behaviour, and
- determine GP management of positive chlamydia cases.

Methods

Recruitment

Participants were recruited from 10 general practices across diverse socioeconomic areas in metropolitan Perth, Western Australia. Sexually active men aged 15–29 years were eligible to participate. Recruitment occurred between January 2007 and January 2008.

Procedure

General practitioners were provided with waiting room promotional material (flyers and posters) about chlamydia to encourage uptake of testing. General practitioners were requested to invite all eligible men presenting for any reason to take part in the study. Participants provided:

- written consent
- a first void urine sample, and
- completed a one page questionnaire concerning their STI history, sexual and risk taking behaviour (gender/number of partners, whether they always use condoms, have ever used sex workers/ intravenous drugs) and STI related symptoms (ever having testicular pain and/or penile discharge).

The questionnaire was collected by the GP. Disease management was conducted according to the GP's usual practice. Practices were reimbursed to help cover cost of time spent in recruiting.

Urine samples were polymerase chain reaction (PCR) tested for chlamydia by a clinical pathology provider (Pathwest, Western Australia). If a positive result was returned, the GP was contacted approximately 3 weeks after sample collection and asked questions about treatment offered, whether contact tracing had been undertaken and by whom (patient, GP, population health unit), whether notification had been made to the health department, and whether testing for other STIs and blood borne viruses had been undertaken.

The study was approved by the University of Notre Dame Human Research Ethics Committee.

Data analysis

All analyses were conducted using SPSS V.16.0. Data are reported as percentages with 95% confidence intervals when appropriate. Associations between binomial variables were tested using χ^2 analyses; $p<.05$ was considered significant.

Results

A total of 401 men agreed to participate with 383 (mean age 23.5 + 3.8 years) included in the analyses. Of these, 21% were aged 15.0–19.9 years, 43% 20.0–24.9 years, and 35% were aged 25–29 years. Thirteen participants were excluded as they were not sexually active, and a further five were excluded because they were over 30 years of age or age unknown. Three hundred and fifty-seven (93%) participants reported having only females partners, 23 (6%) reported having only male partners, and three (0.8%) reported having both male and female partners.

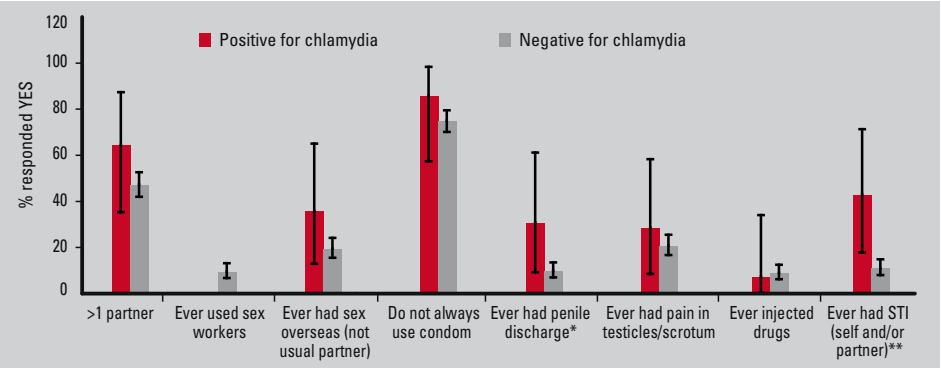
Urine test results were available for 371/383 (97%) participants. Nine participants did not provide a urine sample, one participant's sample yielded an indeterminate result, one sample was insufficient, and the pathology form for one was incomplete. Questionnaire data were available for 376/383 (98%) participants. The missing questionnaires were the result of administrative loss or failure of participant to return the questionnaire.

Information about the number of men eligible to participate and the proportion of men invited to, and consenting to, participate was not available for each practice. The proportion of eligible men asked to participate could be calculated for two practices with 18% (33/180) and 98% (102/104) being invited to take part in the study. Four practices provided information on the proportion of men asked who consented to take part in the study, with 63 (42/67), 82 (27/33), 89 (79/89) and 100% (102/102) consenting to participate.

Prevalence of chlamydia, sexual and risk taking behaviours and STI related symptoms

Fourteen participants (3.7%, 95% CI: 2–6%, mean age = 25 years, SD=3.1) returned positive test results for chlamydia. *Figure 1*

Figure 1. Proportion (%) of participants responding 'yes' to sexual behaviour, genital symptom and risk taking questions by the result of their chlamydia test. Error bars represent the 95% CI for the proportion



* $p<.05$, ** $p<.001$

Table 1. GP management of positive chlamydia

Question	Yes	Comments
Treated with azithromycin?	10/11	One treated with doxycycline
Contact tracing/partner notification undertaken by:		
– GP	1	
– health department	3	
– patient?	5	
Total	9/11	
GP checked patient contacted partners?	2/5	
Health department notified?	10/11	
Testing offered for hepatitis B/HIV?	6/11	One patient tested for hepatitis B/HIV concurrently with chlamydia investigation

displays the percentage of participants ever engaging in 'risky' sexual behaviour, ever experiencing STI related symptoms, ever having injected drugs, and self/partner ever having a STI. A greater proportion of chlamydia positive individuals engaged in 'risky' behaviours, although no significant association was found between testing positive for chlamydia and the 'risky' behaviours. Self and/or a partner having had a STI previously ($\chi^2(1)=12.9$, $p<.001$) and ever having had penile discharge ($\chi^2(1)=5.9$, $p<.05$), however were associated with a current positive test result.

GP management of chlamydia cases

Thirteen out of 14 (93%) positive patients had been contacted by their GP at the time the researcher called (median 3.6 weeks post-test, interquartile range = 6.7). One GP had not received the results and 2/13 patients had not responded to the letter sent by their GP. *Table 1* displays the GP question responses for the 11 patients who had seen their GP following positive result.

Discussion

The 3.7% prevalence of chlamydia we report here is comparable with findings from Australia[10] and overseas.[14] Only a slightly higher prevalence (4.6%) was estimated from a meta-analysis of more than 40 prevalence studies (including men and women) conducted in Australia, despite suggestions that this figure reflected over representation of treatment seeking or at risk individuals.[2] Our prevalence estimate is unlikely to reflect over involvement of treatment seekers because:

- participants were invited to participate irrespective of their presenting complaint, and
- only two presented with symptoms while another was an asymptomatic contact of an infected partner.

It is also unlikely that the prevalence is indicative of a particularly low risk sample despite nonconsecutive recruitment. Only 25% of men in our study said they always used a condom, compared with estimates of condom use from a representative sample of the Australian population (8.2% for a live-in partner, 28.5% for a regular, non-live-in partner and 44.6% for a casual partner).[15]

Limitations of this study

Limitations of this study include the small sample size, despite 10 practices being involved, which is partially explained by lower attendance rates for young adult males at general practices.[7] Interpretation of the results is also hampered as not all practices kept complete records of men approached and accepting or rejecting the offer to participate. As discussed however, it appears unlikely that this has resulted in a sample biased toward either a high risk or low risk group, although this cannot be entirely ruled out.

We did not observe an association between being positive for chlamydia and 'risky' sexual behaviour. Although we cannot rule out the possibility of type 2 error given the small number of positive cases, at least one other group failed to find a suitable selective screening algorithm for chlamydia in a community based sample of men.[16] The fact that chlamydia can spontaneously resolve[17] may explain the lack of relationship between infection and risk behaviour in these studies.

The majority of cases in our study were treated and the health department notified following a positive test result. The only complete lack of follow up noted was a 'system error' at one practice where the results from the test had not been seen by the treating GP. Responsibility for contact tracing and partner notification was delegated to the health department and the patient, respectively, in all but one case. However, few GPs checked whether partner notification had been undertaken by patients. This is consistent with a previous study which reported 97% of GPs in Victoria believed partner notification was up to the patient.[18] Testing for other STIs and blood

borne viruses (hepatitis B and C and HIV in particular) was offered in about 50% of cases and is comparable to that previously reported.[12]

Conclusion

Given the known morbidity associated with chlamydia infection in both men and women,[5,6,19] and the fact that investigation is straightforward, painless and effective, the prevalence of chlamydia in this group of young men provides an opportunity for early detection and management. The high proportion of positive, asymptomatic chlamydia presentations suggests that offering screening to all young adult males attending GP practices may be justifiable.

Implications for general practice

- Chlamydia notification rates have trebled in Australia in recent years.
- 40% of notifications are for men.
- Chlamydia is easy to treat but often asymptomatic.
- Asymptomatic men are a potential reservoir of undetected chlamydia in the community.
- Opportunistic screening for chlamydia should be offered to young men if the cost effectiveness of such a strategy in Australia is demonstrated.

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