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Genital *Chlamydia trachomatis* infection

A study of general practice management in northern Queensland

Background

Most diagnoses of genital *Chlamydia trachomatis* infection in Queensland are made by general practitioners. This study aimed to describe GP knowledge of recommended guidelines for chlamydia management and ascertain GPs' preferred model for contact tracing.

Method

A questionnaire completed by 35 GPs in northern Queensland in January 2011.

Results

Although the majority of GPs reported treating uncomplicated chlamydia infection correctly with azithromycin, very few (26%) used empirical treatment. Most reported testing for re-infection within 6 weeks of initial positive results, earlier than recommended. The GPs preferred the notifiable disease register to refer the patient directly to a specialist contact tracer.

Conclusion

General practitioners in this regional location – and probably elsewhere – would benefit from education around the timing of re-testing. Public health units and sexual health services should consider ways of providing a contact tracing service for patients with positive chlamydia results in general practice.

Keywords

chlamydia infections; contact tracing; general practice

Genital Chlamydia trachomatis infection is the most common curable sexually transmissible infection in Australia and the most prevalent sexually transmissible bacterial infection in the Western world.¹ Notification rates are rising, due to a real increase in prevalence and incidence as well as improved surveillance.² Infection causes significant morbidity, particularly from the complications of pelvic inflammatory disease and tubal infertility.^{3,4}

Although general practitioners screen only a small proportion of the eligible population,⁵ the majority of diagnoses of genital chlamydia infection are still made in general practice. The Queensland notifiable disease database⁶ for 2006 showed that 89% of all chlamydia notifications in urban areas and 78% in regional/remote areas were made by GPs, rather than clinicians in hospitals or sexual health clinics. More recent data is not available, but similar figures have been found from notification data in other Australian states.⁷ A previous study found a chlamydia infection prevalence of 5% in patients aged 18–25 years presenting to GPs in Mackay (northern Queensland),⁸ similar to rates in other Australian regions.^{9–11}

Uncomplicated genital chlamydia infection is treated with a single 1 g dose of azithromycin. This treatment is very effective, hence proof of cure is not recommended.¹² However, re-infection rates are high.¹³ An Australian study found 22% of women aged less than 25 years were re-infected by 12 months, with most re-infections occurring in the first 4–5 months.¹⁴ In order to identify and manage re-infection, guidelines for Australian GPs advise re-testing 3–12 months after a positive chlamydia diagnosis.¹² Other guidelines also recommend re-testing at 3 months.^{15,16}

Contact tracing is 'the process of identifying relevant contacts of a person with an infectious disease and ensuring that they are aware of the exposure'.¹⁷ There is level 1 evidence that contact tracing for chlamydia is effective in preventing transmission to partners and preventing re-infection in the index case.¹⁸

Australian states and territories address contact tracing in a range of ways. In Tasmania, GPs are contacted by the public health unit and offered the services of sexual health clinic nurses. In Victoria, contact tracing officers are employed within public health services, and may be utilised by GPs to help with contact tracing. In Queensland, no formalised process for contact tracing exists. There is some evidence that Australian GPs do not always deal with contact tracing adequately.^{19–21} A study in northern Queensland indicated that many GPs erroneously believe that their patients are followed up by local public health staff,¹⁹ and there were similar findings in a Western Australian study.²⁰

This article reports on one component of a mixed methods study undertaken in northern Queensland, aiming to describe how sexually acquired chlamydia infections are managed and followed up in general practice compared with recommended guidelines, including those for re-testing and contact tracing. A secondary aim was to ascertain GPs' preferred model for a contact tracing service. This article reports on the GP questionnaire component of the study.

Method

Population and sample

General practices were recruited via the North Queensland Practice Based Research Network (NQPBRN) to participate in a mixed methods descriptive study. Individual GPs provided written consent to participate in the study. All 18 practices

who had previously been involved in NQPBRN were approached to participate. Of these, nine practices and 52 GPs participated in the Mackay and Townsville region. The 52 GPs comprised all of the doctors working in these nine practices. We did not enquire why practices chose not to participate, but it is likely that participating practices had more interest in the management of chlamydia infection.

Procedure

This cross sectional survey was part of a larger survey of three parts. First, each practice audited positive chlamydia cases in the previous 12 months, then a 3 month prospective audit was conducted of the management of all patients referred by GPs for chlamydia testing. Participating GPs were then asked to complete questionnaires about their usual management of chlamydia infection and their opinions about contact tracing (*Table 1*). The brief semistructured questionnaire was completed before they received their results from the clinical audits. The questionnaire was developed by a small expert group using current guidelines and literature to ensure content validity. Practice nurses ensured a questionnaire was delivered to each participating GP. The de-identified questionnaires were analysed using SPSS for the quantitative questions and thematic analysis of comments.

Statistics

SPSS for Windows (release 17) was used to analyse data and generate descriptive statistics.

Ethics approval for this study was granted by the James Cook University Human Research Ethics Committee (approval number H3577).

Results

Of 52 GPs who were provided the questionnaire, 35 completed it (response rate 35/52, 67%) Participating GPs were younger (median age 40–49 years) and more predominantly female (21/35, 60%) than average for Australian GPs (median age 45–54 years; 32% women).²² We have no data on the GPs who did not complete the questionnaire.

Almost all (32/34, 94%) respondents prescribed azithromycin to patients diagnosed with genital chlamydia infection, with one respondent reporting prescribing doxycycline and one respondent reporting prescribing azithromycin or doxycycline. However, only 9/35 (26%) always treated patients before receiving test results. A total of 51% (18/35) saw the patient the same or the next day after a positive test result. The majority of GPs (30/35, 86%) reported reviewing patients for a 'proof of cure' (or test of re-infection). However, 19/35 (54%) reported performing this within the first 6 weeks after infection, with only 10/35 (29%) of GPs reporting re-testing at 7–13 weeks. In the majority of cases (28/35, 80%), GPs reported discussing contact tracing with patients, five reported that both the GP and the practice nurse do this. In one case it was done by the practice nurse and in one case it was not usually done at all.

The desirability of different resources aiming to improve contact tracing are presented in *Table 1*.

Discussion

A number of limitations should be acknowledged in analysing and generalising our findings. The participating GPs were not representative of Australian GPs in age or gender. The sample was a small number of GPs in one regional area (northern Queensland). The practices involved were part of a practice based research network and therefore may be more knowledgeable of current guidelines than the general practice population.

Management

Close to all (32/34, 94%) respondents reported prescribing azithromycin for uncomplicated chlamydia infection, in keeping with Australian guidelines.¹⁶ Single dose treatments are thought to be best for treatment of chlamydia infection because of compliance and public health issues.¹⁶ However, guidelines recommend empirically treating patients with symptoms and any confirmed contacts of positive cases.¹⁶ In our study, only 26% of GPs reported doing this. Despite this, positive infections were reported to be treated promptly, with 51% (18/35) seeing the patient the same or the next day after a positive test result.

Re-testing

Re-testing within 3–4 weeks post-treatment is not recommended as false positive results may occur.^{23,24} Guidelines recommend delaying re-testing until at least 6 weeks after treatment.¹²

Table 1. Opinions of 35 GPs from northern Queensland with respect to statements relating to contact tracing resources

	Strongly agree N=35 (%)	Agree N=35 (%)	Neutral N=35 (%)	Disagree N=35 (%)	Strongly disagree N=35 (%)
I would find a hardcopy/print resources designed for patient contacts useful (eg. leaflet)	23 (65.7)	6 (17.1)	4 (11.4)	1 (2.9)	1 (2.9)
I would find printable electronic resources designed for patient contacts useful	19 (54.3)	12 (34.3)	4 (11.4)	0	0
I would like access to a specialist contact tracer	8 (22.9)	14 (40)	13 (37.1)	0	0
I would like to refer all cases of chlamydia directly to a specialist contact tracer from the notifiable disease register	6 (17.1)	7 (20)	14 (40)	7 (20)	1 (2.9)
I would like the notifiable disease register to refer the patient directly to a specialist contact tracer	11 (31.4)	9 (25.7)	8 (22.9)	4 (11.4)	3 (8.6)
I am happy to continue contact tracing for chlamydia infection and I do not need extra resources	Nil	3 (8.6)	18 (51.4)	12 (34.3)	2 (5.7)

In our study, although 30/35 GPs reported reviewing patients for a 'proof of cure' (or test of re-infection), 19 of these reported that they did this in the first 6 weeks. Overall, GPs are re-testing patients too early, and it may be helpful to familiarise GPs with current guidelines. We did not explore the reasons for this timing – it is possible that this early re-testing is opportunistic or triggered by prepresentation related to symptoms or concerns about partner compliance.

Contact tracing

In our questionnaire we attempted to explore what resources GPs would find useful for contact tracing. Most respondents reported they would find both hardcopy and electronic resources for patient contacts useful, consistent with findings of another study.²⁰ The majority of respondents indicated that they would like the notifiable disease register to refer the patient directly to a specialist contact tracer. In our previous research around half of GP respondents erroneously believed that the local public health unit staff were automatically conducting contact tracing for chlamydia infection.¹⁹ It seems that most GPs would be happy for this process to take place.

Conclusion

Although the majority of GPs reported treating uncomplicated chlamydia infection correctly with azithromycin, very few (26%) reported using empirical treatment. Most GPs reported testing for re-infection earlier than guidelines suggest. Most GPs would like hard copy and electronic resources to help with contact tracing. Automatic contact tracing by the notifiable disease registers and specialist contact tracers would be welcomed by this group of GPs. General practitioners in this region – and probably elsewhere – would likely benefit from education clarifying current re-testing procedures, methods and resources. Public health units and sexual health services should consider ways of providing such education to GPs.

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References

1. Department of Health and Ageing. Number of notifications of chlamydial infections, Australia, 2010 by age group and sex. National Notifiable Diseases Surveillance System: Department of Health and Ageing, 2011.
2. Donovan B. Rising prevalence of genital Chlamydia trachomatis infection in heterosexual patients at the Sydney Sexual Health Centre, 1994 to 2000. *Commun Dis Intell* 2002;26:51–5.
3. Hillis SD, Owens LM, Marchbanks PA, Amsterdam LF, Mac Kenzie WR. Recurrent chlamydial infections increase the risks of hospitalization for ectopic pregnancy and pelvic inflammatory disease. *Am J Obstet Gynecol* 1997;176(1 Pt 1):103–7.
4. Haggerty CL, Gottlieb SL, Taylor BD, Low N, Xu F, Ness RB. Risk of sequelae after Chlamydia trachomatis genital infection in women. *J Infect Dis* 2010;201(Suppl 2):S134–55.
5. Kong FY, Guy RJ, Hocking JS, et al. Australian general practitioner chlamydia testing rates among young people. *Med J Aust* 2011;194:249–52.
6. Queensland Health. Contact tracing review report, 2007. Available at www.health.qld.gov.au/ph/documents/cdb/notif_dis_reportg.pdf#page=3 [Accessed 13 June 2012].
7. England DO, Currie MJ, Bowden FJ. An audit of contact tracing for cases of chlamydia in the Australian Capital Territory. *Sex Health* 2005;2:255–8.
8. Heal C, Jones B, Veitch C, et al. Screening for chlamydia in general practice. *Aust Fam Physician* 2002;31:779–82.
9. Hocking JS, Willis J, Tabrizi S, Fairley CK, Garland SM, Hellard M. A chlamydia prevalence survey of young women living in Melbourne, Victoria. *Sex Health* 2006;3:235–40.
10. Vajdic CM, Middleton M, Bowden FJ, Fairley CK, Kaldor JM. The prevalence of genital Chlamydia

11. Hince D, Brett T, Mak D, Bulsara M, Moorhead R, Arnold-Reed D. Opportunistic screening for chlamydia in young men. *Aust Fam Physician* 2009;38:734–7.
12. Harris M, Bennett J, Del Mar C, et al. Guidelines for preventive activities in general practice (the 'red book') 7th edn. South Melbourne: The Royal Australian College of General Practitioners, 2009.
13. Fung M, Scott KC, Kent CK, Klausner JD. Chlamydial and gonococcal reinfection among men: a systematic review of data to evaluate the need for retesting. *Sex Transm Infect* 2007;83:304–9.
14. Walker J, Fairley CK, Bradshaw CS, et al. The Incidence of genital Chlamydia trachomatis in a Cohort of Young Australian Women. Abstracts of the 19th Biennial Conference of the International Society for Sexually Transmitted Diseases Research. *Sex Transm Infect* 2011;87:A21.
15. Australasian Chapter of Sexual Health Medicine. Clinical guidelines for the management of sexually transmitted infections among priority populations. Sydney: The Royal Australasian College of Physicians, Australasian Chapter of Sexual Health Medicine, 2004.
16. Bourke S. National management guidelines for sexually transmissible infections, 7th edn. Melbourne: Sexual Health Society of Victoria, 2008.
17. Australian Society for HIV Medicine. Australasian contact tracing manual. 2nd edn rev. Sydney (AUST): Australasian Society for HIV Medicine, 2002.
18. Low N, Broutet N, Adu-Sarkodie Y, Barton P, Hossain M, Hawkes S. Global control of sexually transmitted infections. *Lancet* 2006;368:2001–16.
19. Heal C, Muller R. General practitioners' knowledge and attitudes to contact tracing for genital Chlamydia trachomatis infection in north Queensland. *Aust N Z J Public Health* 2008;32:364–6.
20. Bangor-Jones R, McCloskey J, Crooks LA, et al. Attitudes of WA GPs to chlamydia partner notification: a survey. *Aust Fam Physician* 2009;38:447.
21. Temple-Smith MJ, Mak D, Watson J, Bastian L, Smith A, Pitts M. Conversant or clueless? Chlamydia-related knowledge and practice of general practitioners in Western Australia. *BMC Fam Pract* 2008;9:17.
22. Britt H, Miller G, Knox S, et al. General practice activity in Australia 2004–5 Canberra (AUST). General Practice series No:18. Australian Institute of Health and Welfare, 2005.
23. Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2006. *MMWR* 2006;55:RR–11.
24. Workowski KA, Lampe MF, Wong KG, Watts MB, Stamm WE. Long-term eradication of Chlamydia trachomatis genital infection after antimicrobial therapy. *JAMA* 1993;270:2071–5.
25. Hillis SD, Coles FB, Litchfield B, et al. Doxycycline and azithromycin for prevention of chlamydial persistence or recurrence one month after treatment in women: a use-effectiveness study in public health settings. *Sex Transm Dis* 1998;25:5–11.
26. Lau C-Y, Qureshi AK. Azithromycin versus doxycycline for genital chlamydial infections: a meta-analysis of randomized clinical trials. *Sex Transm Dis* 2002;29:497–502.

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