

Overcoming challenges associated with partner notification following chlamydia and gonorrhoea diagnosis in primary care: a postal survey of doctors and nurses

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ABSTRACT

INTRODUCTION: Sexual health guidelines recommend that partner notification and testing for reinfection are undertaken when individuals are diagnosed with bacterial sexually transmitted infections (STIs).

AIM: To understand factors influencing the effective delivery of partner notification and follow up after diagnosis of STIs in primary care, and to identify strategies that might facilitate these processes.

METHODS: A postal survey was sent to 216 primary care doctors and nurses working in 72 Wellington primary care settings. Eligible clinicians were identified from laboratory testing data, and included clinicians who had diagnosed relatively high numbers of chlamydia and/or gonorrhoea cases during a 12-month period. Response frequencies were tabulated and chi-squared testing was used to test for significant differences between doctor and nurse responses for selected items.

RESULTS: In total, 121 surveys were completed (56% response rate) by 78 doctors and 43 nurses, from 55 primary care settings (76% of sites surveyed). Responding health professionals thought that patients were open to partner notification discussion, but appreciated that this sometimes raised difficult issues for patients. Lack of time or resources to follow up, and difficulty getting hold of patients, were cited as key factors that limit assessment of partner notification success. Factors deemed likely to facilitate partner notification included readily available patient resources, training to upskill practice team members, guidance on what to say and record, and access to external advice and assistance.

DISCUSSION: This study provides insight into provider- and patient-level factors perceived to be hindering successful partner notification. Strategies that could facilitate partner notification were identified, and suggestions made as to how these could be integrated into practice.

KEYWORDS: Sexually transmitted infections; contact tracing; partner notification; primary health care; patient care management; chlamydia

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Introduction

Sexual health management guidelines recommend that partner notification (also known as ‘contact tracing’) be carried out when patients are diagnosed with bacterial sexually

transmitted infections (STIs) such as *Chlamydia trachomatis* and *Neisseria gonorrhoea*.^{1,2} Partner notification is an effective case-finding process that has been shown to reduce onward transmission, reinfection and the health

consequences associated with new and repeat infections.^{3–5} Untreated partners are a known source of reinfection, with an estimated 20% of females becoming reinfected with chlamydia within 6-months of treatment.⁶

While test of cure (within 4–6 weeks of treatment) is not routinely recommended, international and local STI management guidelines recommend routine testing for reinfection at 3 months post-treatment.^{1,2,7} Timely detection and treatment of reinfection reduces the more serious reproductive health consequences that can result from repeated infections.⁶ Follow up by phone or text 1 week post-treatment is also recommended to check on treatment compliance and provides an opportune time to check on partner notification progress and offer further advice if needed.^{1,2}

Limited New Zealand research suggests that most primary care clinicians discuss partner notification, relying on patients to inform their partner(s) about possible infection with no further follow up on outcomes.⁸ A range of barriers to effective partner notification have been identified in research elsewhere.^{9–12} This survey of primary care doctors and nurses was conducted to gain an understanding of factors influencing partner notification processes, and to identify strategies that might facilitate more effective partner notification. Views were also sought on new approaches to partner notification that could be trialled in future research.

Methods

This study was reviewed and approved by the Southern Health and Disability Ethics Committee on 16 July 2015 (Ref 15/STH/109).

Participants and setting

Participants were identified from a laboratory data extract pertaining to chlamydia and gonorrhoea test requests in the Wellington region for the 3-year period 1 July 2012 to 31 June 2015. The dataset included date of test, specimen type, diagnosis, name and location of the requester. Clinicians were eligible for inclusion if they had diagnosed at least four cases of chlamydia or

WHAT GAP THIS FILLS

What is already known: Current guidelines recommend that partner notification and testing for reinfection are routinely undertaken for patients diagnosed with bacterial STIs. Limited evidence suggests that partner notification is not generally well managed in New Zealand.

What this study adds: Primary care provider perspectives on the barriers and facilitators to effective partner notification are identified together with practical strategies to improve these processes. The apparent confusion between recommended subsequent 3-month testing for reinfection and the less commonly required test of cure is highlighted.

gonorrhoea in 12-months or at least 12 cases in the past 3 years in a primary care setting (general practice, family planning, youth and student health settings). Test requesters from locations not considered primary care (eg tertiary and specialist services including the Sexual Health Service) were excluded. Of the 578 clinicians who had diagnosed at least one case of chlamydia or gonorrhoea in the 12 months to June 2015, 249 met the inclusion criteria. Postal addresses were sought via clinic websites and by phoning clinics, at which point we also checked whether staff still worked at that location. Thirty-three eligible staff were removed at this point (left the practice, retired, maternity leave), reducing our sample to 216 eligible clinicians (147 doctors and 69 nurses).

Survey development and data collection

Survey items were developed following discussion among the research team and review of previously published research,^{10–12} and included questions about partner notification practices and experience, and views on suggested barriers and enablers to effective partner notification processes. Survey items were formatted as multi-response, closed-ended questions, with most using Likert scale responses to assess behavioural frequency or levels of agreement with given statements, and free-text comments were invited. The questionnaire was reviewed by four members of the wider research team, piloted with five primary care colleagues, then modified to improve clarity, question relevance and length.

The survey and a cover letter were posted to 216 clinicians in March 2016. We aimed to maximise response rates by checking postal addresses before the mail-out; placing a notice about the research in the main local Primary Health Organisation's newsletter; offering Continuous Professional Development points for completion, including a personalised cover letter identifying the recipient as part of a group who frequently diagnosed STIs; limiting the survey to one page (two sides) with tick boxes for all questions; including a self-addressed prepaid envelope and

a fax number for survey returns, and sending a reminder to non-responders at 4 weeks.

Data analysis

Survey data were entered into Qualtrics software (Qualtrics, Provo, UT, USA) and exported into Excel for collation and analysis. Survey response data were matched using study identifiers (allocated to eligible participants) to our original database of invited participants containing information on clinic type, test and diagnosis volumes. Response frequencies were tabulated for all survey items. Items inviting level of agreement were analysed by combining the responses for 'agree' with 'strongly agree', and 'disagree' with 'strongly disagree'. Similarly, items asking for estimated frequency of a given behaviour were analysed by combining the responses 'almost always' with 'often/usually', and 'rarely' with 'never'. For selected items, Chi-square tests compared responses from doctors and nurses.

Results

Completed surveys were returned by 78/147 doctors (mostly general practitioners (GPs)) and 43/69 nurses (mostly practice nurses), giving a total of 121 participants and a 56% response rate. Table 1 depicts the characteristics of the 216 eligible study participants and the 121 who completed a survey.

Self-reported management of partner notification

Most respondents felt confident initiating discussion about partner notification (97% agreement, 117/121). Overall, 38% had received training in partner notification (46/121), which was more common among nurses than doctors (49% vs. 32%, $P = 0.03$). Most thought partner notification should be discussed when results are available or when treatment is given (88.4%, 107/121); 33% (40/121) thought partner notification discussion should occur both at the time of testing and treatment. Of participating doctors, 27% (21/78) reported partner notification discussion was (only) the role of doctors in their practice (4% indicated it was a nurse-only activity). No nurse respondents reported partner notification

Table 1. Characteristics of invited study participants and responders

	Invited sample (n)	Respondents (n)	(%)
Total	216	121	56.0
Role in practice			
Doctor	147	78	53.1
Nurse	69	43	62.3
Clinic type			
General Practice	155	79	51.0
Family Planning	14	8	57.1
Youth Health	24	20	83.3
Student Health	23	14	60.9
Total test requests (chlamydia/gonorrhoea)			
In past 12 months [†]	16,651	9911	59.5
In past 3 years	44,396	27,043	60.9
Cases diagnosed in past 12 months			
Chlamydia	1552	879	56.6
Gonorrhoea	94	53	56.4
Total no. of individuals diagnosed [†]	1607	944	58.7
Testing frequency past 12 months[‡]			
Low (≤ 31 tests)	53	24	45.3
Medium (32–99 tests)	102	56	54.9
High (100–457 tests, average = 172)	55	35	63.6
Diagnosis frequency past 12 months[‡]			
Low (≤ 4 cases)	84	39	46.4
Medium (5–6 cases)	60	35	58.3
High (7–48 cases, average = 15)	66	41	62.1

[†] Of the 9911 test requests by 121 participants over a 12-month period, 9.5% (944) returned a positive result.

[‡] Test and diagnosis frequency categories were calculated from percentile ranges where 'low' equates to the ≤ 25 th percentile, 'medium' the 25–50th percentile and 'high' above the 75th percentile.

discussion as solely a nurse's role, and 16% (7/43) reported it was a doctor-only activity. Seventy-nine percent (34/43) of nurses and 65% (51/78) of doctors indicated it was a shared role ($P > 0.05$).

In the previous 12 months, 77% (93/121) reported initiating discussion about partner notification with all relevant patients, and 16.5% (20/121) with only some patients. One-quarter of participants (24%, 29/121) agreed that patients in their practice are routinely followed up to check partner(s) have been notified, tested and treated. Approximately, half (52%, 63/121) reported they had followed up with some patients to check on partner notification outcomes, but only 6.6% (8/121) had followed up with all patients.

Factors affecting partner notification

Figure 1 presents participants' perceptions of how patients usually respond to discussion about partner notification, with most indicating favourable patient responses. Figure 2 presents responses to statements describing factors that might influence partner notification management. Free-text comments were made by 25 participants at the end of the survey. Selected quotes are presented here with study identifier, clinic type and diagnosis frequency in the past 12 months (ie low, medium or high) included in brackets.

One nurse commented:

'Significant barriers to contact tracing are: transient sexual contacts, sexual partner not having GP service, or simply does not follow up with SHS.' [NU009, General Practice, Low].

A doctor noted:

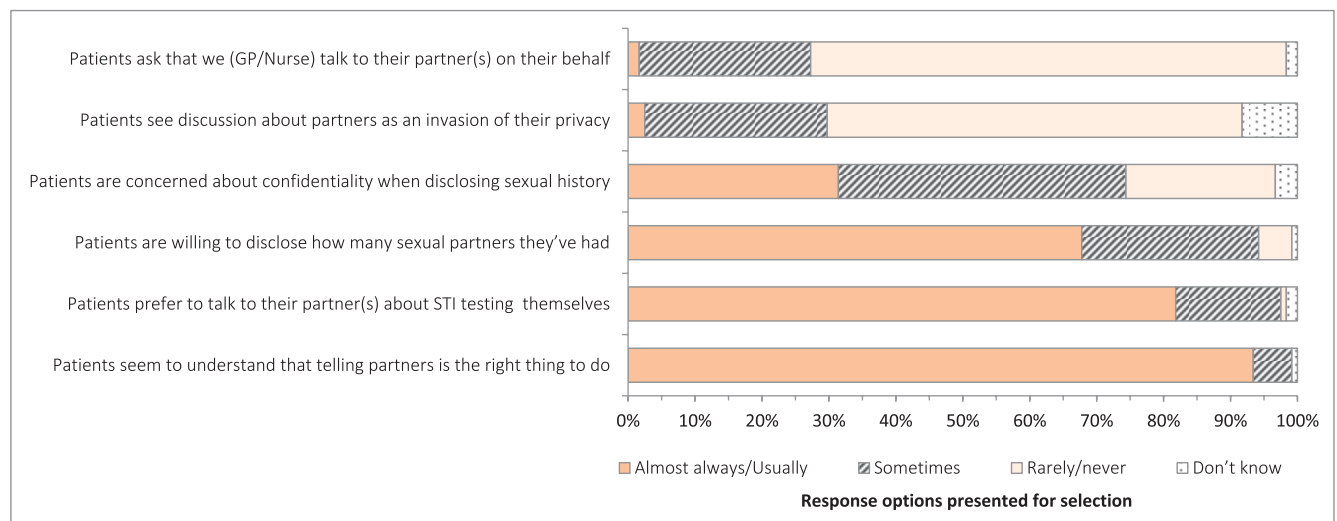
'There are 3 problems. 1. Patients seldom return for follow up due to cost; 2. general practice is becoming overwhelmed by increasing 'packets' of unfunded workload and 3. Patients attitudes (and NZ Privacy Act) mitigate against easy discussion of STIs compared with other countries I have worked in.' [DR047, General Practice, Medium].

Regarding follow up to check on partner notification outcomes, one nurse commented:

'Young people in our practice are often either a) deliberately vague about their partners or b) don't know how to contact their partners. It is also difficult to follow them up as they have no credit on their phones, change phones, ignore phones and have requested no contact at home.' [NU019, Youth Clinic, High]

Two participants said that there had to be an element of personal responsibility on the patients'

Figure 1. Perceptions of how patients usually respond to discussion about partner notification



part to take control of their own health. For example, one doctor commented:

'We don't follow up on partner notification - we offer to contact partners, but if the patient says they'll do it themselves we trust them to do so.'
[DR040, General Practice, Medium]

Suggested measures to assist with partner notification

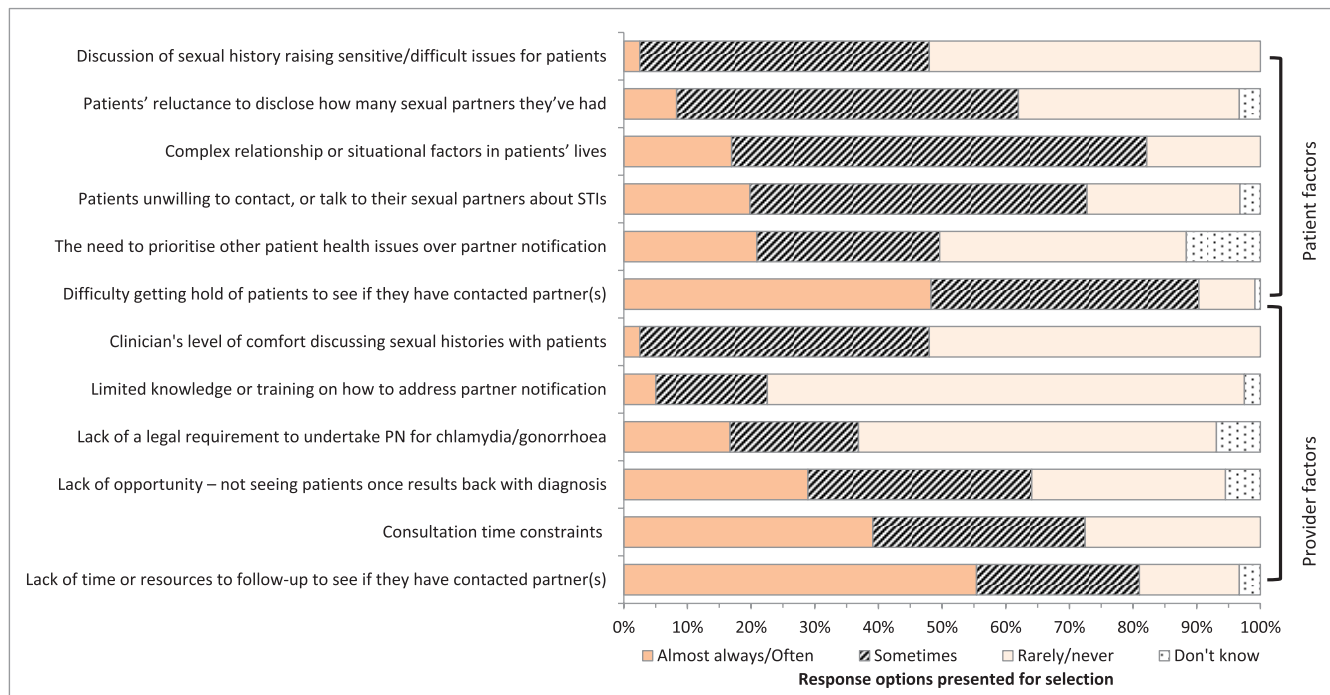
Figure 3 presents participants' level of agreement with suggested measures that might improve partner notification and follow up in their practice. We also described a scenario in which a specialist sexual Health Advisor could work with the practice team, taking responsibility for contacting patients to further discuss and counsel patients about partner notification, with phone follow up to check on notification outcomes. Most (82%, 99/121) agreed this assistance would be helpful for *some* and 45% (55/121) agreed that it would be helpful for *all* of their patients. A small number – 12% (15/121) – reported that partner notification was currently well managed

in their practice, so assistance from a Health Advisor would not be helpful. When asked which of two new approaches they would prefer if involved in future research, one-third (32%, 39/121) indicated they would prefer upskilling their own team to better manage partner notification, 13% (16/121) would prefer working with a Health Advisor and half (49%, 59/121) would be willing to try either approach.

Testing for reinfection

Active recall of patients to test for reinfection (eg via letter or SMS reminder) was uncommon, with only 17.4% (21/121) of participants reporting this almost always or usually occurred, and a further 24% (29/121) reporting that it sometimes occurred. Opportunistic retesting within the next 12-months was reported by 47% (57/121) as almost always/usually occurring, and a further 31.4% (38/121) as sometimes occurring. Participants working in general practice settings were less likely to report this as usual practice (34%, 27/79) than participants working in other settings (71%, 30/42, $P < 0.001$). Comments made by

Figure 2. Frequency with which suggested factors were perceived to influence partner notification management (provider- and patient-related factors grouped)



several respondents highlighted apparent confusion between the recommended 3-month test of reinfection and the less commonly required 'test of cure.' For example, alongside questions regarding testing for reinfection, doctors commented:

'Not recommended in GP land!' [DR067, General Practice, High];

'Understood not required unless pregnant.'
[DR010, General Practice, High]

Similarly, a nurse commented:

'Contradictory advice re. necessity for test of cure, labs not enthusiastic - significant cost also to health service (\$85 for chlamydia).' [NU009, General Practice, Low]

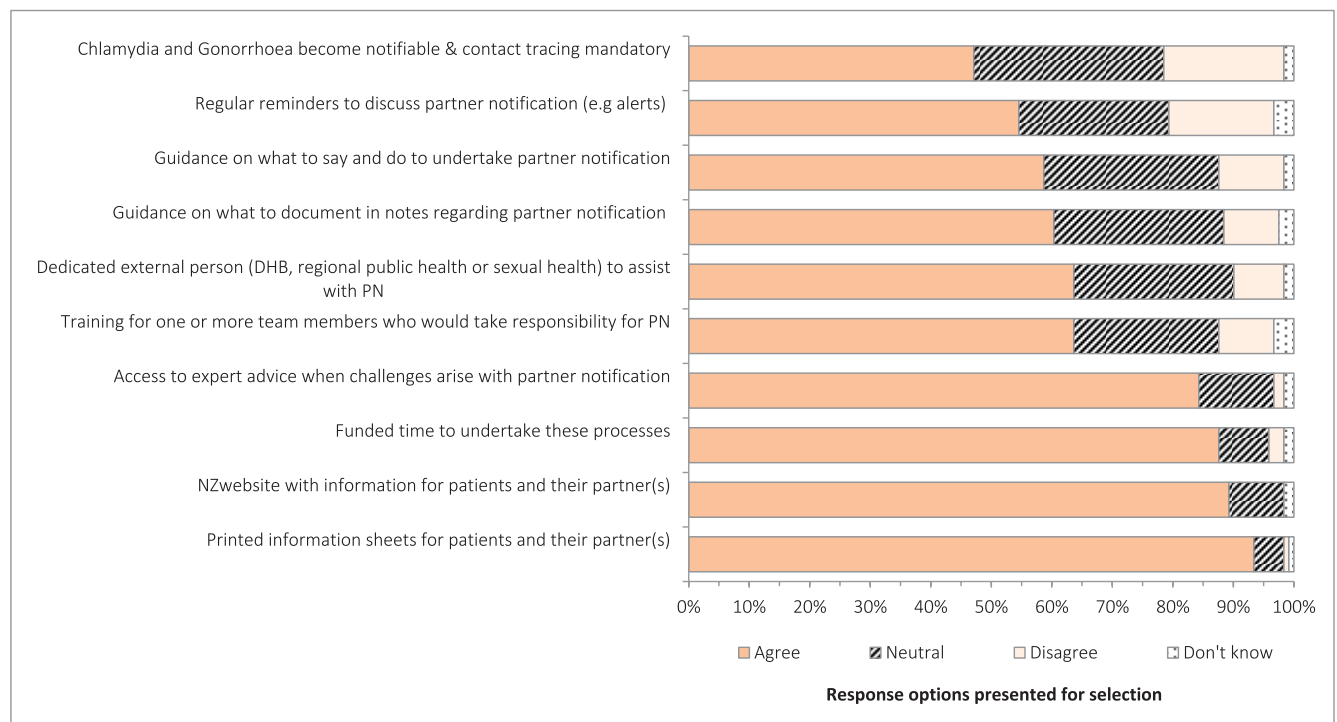
Discussion

This survey identified challenges in following the recommended best practice for the management of partner notification in primary care. Respondents reported variable levels of

discussion with index patients (including absence of discussion), as well as low levels of follow up on partner notification outcomes. Provider- and patient-related factors that most frequently impacted on the management of partner notification in primary care were identified, together with strategies that could facilitate more effective management. Findings also highlighted apparent confusion for some between guideline recommendations to test for reinfection as opposed to 'tests of cure'.

Participants thought that patients were generally open to partner notification discussion, but appreciated that this sometimes raised difficult issues for their patients. Time constraints were frequently cited as a factor limiting the initial discussion of partner notification, as well as the ability to follow up on outcomes (commensurate with past research).^{9,10,12} Investing time in effective partner notification strategies at a community level has real potential to permanently reduce the prevalence of chlamydia and gonorrhoea, and thus provider workload, as well as subsequent patient distress and health consequences.^{13,14}

Figure 3. Level of agreement by participating health professionals with suggested measures to facilitate partner notification management



Consistent with a survey of Australian GPs,¹¹ factors deemed likely to facilitate partner notification discussion included readily available credible patient resources, training to upskill team members, guidance on what to say and record, as well as access to external advice and assistance when needed. Recognising that discussion with partners about an STI may be challenging for some patients, provision of clear guidance on what partners need to know, together with resources for patients and their partner(s), is likely to assist with this process.

Nearly half of the respondents agreed that if chlamydia and gonorrhoea were notifiable and contact tracing was mandatory, it would be easier to carry out partner notification; and nearly two-thirds agreed it would be helpful having a dedicated external person to assist and have access to expert advice when challenges arise. Gonorrhoea is an infectious disease notifiable

to a Medical Officer of Health in the *Health (Protection) Amendment Act 2016* pertaining to STIs (effective early 2017), but chlamydia is a non-notifiable disease. While the Act strengthens the legislative provisions for contact tracing, which may be a positive step towards gonorrhoea control, details about how contact tracing would be approached and by whom are yet to emerge.

The volume of opportunistic testing for bacterial STIs and rate of positive diagnoses was considerable for the period reviewed in the process of identifying potential survey participants, reflecting the high rates of STIs in New Zealand.¹⁵ Reinfection rates are known to be high among index patients, and can have more serious reproductive health consequences if undetected,⁶ yet testing for reinfection was not routine practice for most surveyed. Together with comments made by some respondents, this finding suggested a general lack of awareness of retesting guidelines

Table 2. Recommendations for clinical practice

Recommendation	Comment
Set up a sexual health template in the electronic patient management system to serve as a prompt and ensure details relevant to PN are discussed and recorded.	A good example of such a template was depicted in a popular CPD article about sexual history taking. ¹⁸
Be familiar with evidence-based guidelines relating to STI management and partner notification.	The www.nzshs.org provides readily available, evidence-based guidelines on the management of chlamydia, gonorrhoea (and other STIs) as well as a guide to partner notification.
Identify one or more members of a practice team to take responsibility for PN and follow up.	Ensure team members are familiar with local Sexual Health Society guidelines ¹⁹ or the more detailed guidelines published by the Australasian Sexual (ASHM) ²⁰ or British Association for Sexual Health and HIV (BASHH). ²¹ A follow-up call at 1-week post-treatment is a good opportunity to check on treatment compliance and progress with PN. ^{1,2}
Routinely offer patients access to patient resources that further highlight the importance of partner notification and provide advice and tips on how to go about this process.	Printable patient information is available at www.nzshs.org . The consumer-focused sexual health website, www.justthefacts.co.nz , was developed with involvement by Māori and Pasifika youth and is intended to provide support and education about STIs. It also includes local clinic details that would be a particularly useful reference for partners.
Advise on ways to reduce reinfection risk and offer a test for reinfection at 3-months post-treatment (or whenever the patient next presents for health care in the next 12 months).	Local and international guidelines recommend a 3-month test for reinfection. ^{1,2,7} Reinfection is less likely if patients: finish taking all tablets/treatment given; avoid sex for 7 days following own and partner(s) treatment; tell sexual partners from the past 2–3 months so they can seek testing/treatment; and always use condoms. Advising patients to return for a test of reinfection together with an SMS/text reminder can facilitate return rates. ^{22–24}
A test of cure is <i>only</i> needed in pregnancy, if symptoms persist, treatment compliance is in question or a second-line treatment has been used. ^{1,2,7}	Test of cure should be performed no sooner than 5 weeks after treatment to avoid false-positive results from detection of non-viable organisms. ^{1,2,7}

PN (partner notification); STI (sexually transmitted infection); CPD (continuing professional development).

relating to 'test of reinfection' (see Table 2 for clarification).

Strengths and limitations

We surveyed a relatively small number of primary care clinicians from the large number who diagnose STIs annually, but our sample represented just over half of the clinicians diagnosing the greatest proportion of infections in the Wellington region. We adopted strategies known to maximise response rates,¹⁶ and achieved a 56% participation rate, reaching clinicians from 76% of settings surveyed. Our response rate was lower than hoped for, but exceeded rates reported in similar survey research.^{11,17} We selected participants from laboratory test requests, so nurses requesting tests under the name of GP colleagues will have been missed (nurses trained and working within the scope of sexual health practice in New Zealand are able to, and encouraged to register as providers). Views shared by this group of participants might not be representative of the wider group of diagnosing clinicians, with the possibility that our respondents were more likely to more actively engage in partner notification or face the most challenges with this activity. We did not ask about the nature or extent of advice given about partner notification, but presume there would be a range of approaches from brief advice to more intensive motivational interviewing with education and follow up.

Implications for clinical practice

Partner notification is an essential part of patient care and STI control. This survey confirms that while partner notification is typically on the agenda following an STI diagnosis in primary care, health professionals (and their patients) need further support to more effectively manage this process. While some of the recognised challenges are outside the control of primary health-care professionals, several strategies could be readily adopted to ensure partner notification is more efficiently discussed (and recorded) within the time constraints of consultations. Table 2 presents a summary of our key recommendations for clinical practice based on these survey findings. These practical but realistic changes to the way partner notification is managed within practice

teams could help to ensure that this first step in the process is delivered in a way that maximises the likelihood that patients feel motivated and able to notify their sexual partner(s), and reduce their risk of reinfection. Further research to identify patient perspectives and factors influencing the likelihood that they talk to their partner(s) could help to further improve the effectiveness of this process.

References

1. New Zealand Sexual Health Society. Best practice guidelines - Chlamydia guideline. 2015. [cited 2016 April 4]. Available from: <http://www.nzshs.org/docman/guidelines/management-of-sexual-health-conditions/205-chlamydia-guideline-2015-summary/file>
2. New Zealand Sexual Health Society. Best practice guidelines - Gonorrhoea guideline. 2015. [cited 2016 April 4]. Available from: <http://www.nzshs.org/docman/guidelines/management-of-sexual-health-conditions/165-gonorrhoea-guideline/file>
3. Centers for Disease Control and Prevention (CDC). Chlamydia - CDC fact sheet. Facts and brochures. 2014. [cited 2016 September 2]. Available from: <http://www.cdc.gov/std/chlamydia/STDFact-chlamydia-detailed.htm>
4. Centers for Disease Control and Prevention (CDC). Gonorrhoea - CDC fact sheet. Facts and brochures. 2014. [cited 2016 September 2]. Available from: <http://www.cdc.gov/std/gonorrhea/STDFact-gonorrhea-detailed.htm>
5. Ward H, Bell G. Partner notification. *Medicine*. 2014;42(6):314–7. doi:10.1016/j.mpmed.2014.03.013
6. California Department of Public Health (CDPH). Sexually transmitted diseases (STD) control branch. Best practices for the prevention and early detection of repeat chlamydial and gonococcal infections: effective partner treatment and patient retesting strategies for implementation in California health care settings. 2011. [cited 2016 June 24]. Available from: <http://www.cdph.ca.gov/programs/std/Documents/Best-Practices-for-Prevention-and-Early-Detection-of-Repeat-CT-and-GC.pdf>
7. Ministry of Health. Chlamydia management guidelines. 2008. [cited 2016 May 16]. Available from: [http://www.moh.govt.nz/notebook/nbbooks.nsf/0/edfd56877f16125cc2574b600749353/\\$FILE/chlamydia-management-guidelines.pdf](http://www.moh.govt.nz/notebook/nbbooks.nsf/0/edfd56877f16125cc2574b600749353/$FILE/chlamydia-management-guidelines.pdf)
8. Morgan J, Donnell A, Bell A. Is everyone treated equally? Management of genital *Chlamydia trachomatis* infection in New Zealand. *Int J STD AIDS*. 2010;21:595–600. doi:10.1258/ijsa.2010.010213
9. Hocking JS, Parker RM, Pavlin N, et al. What needs to change to increase chlamydia screening in general practice in Australia? The views of general practitioners. *BMC Public Health*. 2008;8(1):425. doi:10.1186/1471-2458-8-425
10. Cassell JA, Brook MG, Slack R, et al. Partner notification in primary care. *Sex Transm Infect*. 2003;79(3):264–5. doi:10.1136/sti.79.3.264-a
11. Bangor-Jones RD, McCloskey J, Crooks L, et al. Attitudes of WA GPs to chlamydia partner notification – A survey. *Aust Fam Physician*. 2009;38:448–52.
12. European Centre for Disease Prevention and Control (ECDC). Public health benefits of partner notification

- for sexually transmitted infections and HIV. Technical report. Stockholm: ECDC; 2013. [cited 2016 December 10]. Available from: <http://www.ecdc.europa.eu/en/publications/Publications/Partner-notification-for-HIV-STI-June-2013.pdf>
13. Duncan B, Hart G, Scoular A, et al. Qualitative analysis of psychosocial impact of diagnosis of *Chlamydia trachomatis*: implications for screening. *BMJ*. 2001;322(7280):195–9. doi:10.1136/bmj.322.7280.195
 14. Reed JL, Huppert JS, Gillespie GL, et al. Adolescent patient preferences surrounding partner notification and treatment for sexually transmitted infections. *Acad Emerg Med*. 2015;22(1):61–6. doi:10.1111/acem.12557
 15. The Institute of Environmental Science and Research Ltd. Sexually transmitted infections in New Zealand: annual surveillance report 2014. Porirua: New Zealand; 2015. [cited 2016 January 1]. Available from: https://surv.esr.cri.nz/PDF_surveillance/STISurvRpt/2014/FINAL2014Annual-STIReport.pdf
 16. Edwards P, Roberts I, Clarke M, et al. Increasing response rates to postal questionnaires: systematic review. *BMJ*. 2002;324(7347):1183. doi:10.1136/bmj.324.7347.1183
 17. Bonevski B, Magin P, Horton G, et al. Response rates in GP surveys - trialling two recruitment strategies. *Aust Fam Physician*. 2011;40(6):427–30.
 18. Claydon L. Taking sexual histories in the techno-sexual era. *New Zealand Doctor* 2014; (5 Nov.): <http://www.nz-doctor.co.nz/in-print/2014/november-14/5-november-14/taking-sexual-histories-in-the-techno-sexual-era.aspx>
 19. New Zealand Sexual Health Society. Best practice guidelines - Partner notification. 2012. [cited 2016 April 4]. Available from: <http://www.nzshs.org/docman/guidelines/principles-of-sexual-health-care/144-partner-notification-guideline/file>
 20. Australasian Society for HIV. Viral Hepatitis and Sexual Health Medicine (ASHM). Australasian contact tracing guidelines. [cited 2016 November 30]. Available from: <http://contacttracing.ashm.org.au/>
 21. McClean H, Radcliffe K, Sullivan A, et al. BASHH statement on partner notification for sexually transmissible infections. 2012. [cited 2016 August 25]. Available from: <http://www.bashh.org/documents/4445.pdf>
 22. Downing SG, Cashman C, McNamee H, et al. Increasing chlamydia test of re-infection rates using SMS reminders and incentives. *Sex Transm Infect*. 2013;89(1):16–9. doi:10.1136/sextrans-2011-050454
 23. Guy R, Wand H, Knight V, et al. SMS reminders improve re-screening in women and heterosexual men with chlamydia infection at Sydney Sexual Health Centre: a before-and-after study. *Sex Transm Infect*. 2013;89(1):11–5. doi:10.1136/sextrans-2011-050370
 24. Kampman C, Koedijk F, Driessen-Hulshof H, et al. Retesting young STI clinic visitors with urogenital *Chlamydia trachomatis* infection in the Netherlands; response to a text message reminder and reinfection rates: a prospective study with historical controls. *Sex Transm Infect*. 2016;92(2):124–9. doi:10.1136/sextrans-2015-052115

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COMPETING INTERESTS

None.