Short Communication

Self-obtained vaginal swabs for PCR chlamydia testing: A practical alternative

Sally B. ROSE,1 Beverley A. LAWTON,1 Collette BROMHEAD,2 E. Jane MACDONALD3 and Kim A. LUND4

1Department of Primary Health Care and General Practice, Wellington School of Medicine and Health Sciences, Women's Health Research Centre, PO Box 7343, 2Molecular Biology Department, Aotea Pathology, Wellington Sexual Health Service, Newtown, and 3Wellington Sexual Health Service, Newtown, and 4Capital and Coast Health District Health Board, Wellington Hospital, Wellington, New Zealand

Abstract

This study shows that given a choice, New Zealand women at high risk for sexually transmitted infections (STI) opt to provide a self-taken vaginal swab over a clinician-taken sample for STI testing. Self-obtained vaginal swabs have previously been shown to have equal sensitivity and specificity to endocervical swabs and greater sensitivity than urine for the detection of Chlamydia trachomatis by polymerase chain reaction (PCR). We suggest that self-obtained vaginal swabs should be a readily available option offered to women for chlamydia testing by PCR in New Zealand.

Key words: chlamydia, PCR, self-obtained sample, STI, vaginal swabs.

Chlamydia trachomatis is the most common bacterial sexually transmitted infection (STI) in New Zealand1 and Australia.2 The need for practical ways to combat the rising rates of chlamydia has been recognised internationally, but the ideal approach has not yet been found.3 Rates of infection are highest among under 25-year olds, and people of Maori and Pacific ethnicity in New Zealand.1,4,5 A large proportion of infected individuals are asymptomatic, therefore high-risk groups need to be tested and treated to prevent transmission and the serious clinical consequences of undetected infection.6 The proportion of young people tested for chlamydia each year is not known in New Zealand, however, laboratory data show that only 15% of women and 5% of men aged 15–24 years attending Wellington general practices were tested for chlamydia in 2004 (C. Bromhead, unpubl. data). In Australia, an estimated 7–8% of under 25-year olds are tested each year.7 Although many factors contribute to low rates of testing, having to undergo a pelvic examination by a clinician has been identified as one of the barriers to testing for women.8,9

Nucleic acid amplification techniques (NAAT) such as polymerase chain reaction (PCR) are considered optimal for the detection of genital chlamydia infection. Using PCR testing, STIs can be diagnosed from a variety of specimens including clinician-obtained endocervical swabs and self-obtained samples such as first-catch urine (FCU) and vaginal specimens. Studies using different NAAT have shown that detection of chlamydia from self-obtained vaginal swabs is equal or greater than from FCU or clinician-obtained endocervical or vaginal swabs.10–14 A large multicentre study using PCR for the diagnosis of chlamydia demonstrated that the sensitivity with self-obtained vaginal swabs (93%) was as high or higher than clinician-obtained endocervical samples (91%) and greater than FCU (80.6%).14

Research into the acceptability by women of different specimen collection methods for STI testing has demonstrated that self-sampling is acceptable to patients in a range of clinical and cultural settings internationally.8,9,12,15,16 To date, no data have been published relating to use of this collection method in New Zealand's unique population.

Methods

The objective of this study was to determine what proportion of women younger than 25 years attending a termination of pregnancy (TOP) clinic would opt to provide a self-obtained rather than a clinician-taken vaginal sample. Recruitment took place between August 2005 and January 2006. This was a sub-study of a trial designed to test a newly developed and
How to Collect a Self-Taken Vaginal Swab

1. Stand with one foot on a chair or sit down with your knees spread apart. You could also lie with your back on the table, with your legs separated. If present, remove tampon and place in bin.

2. Open the paper swab envelope and take out one of the large swabs (ignore the smaller swab).
   - Hold it at the end without the soft tip.
   - Try not to touch the tip.

3. Place the soft swab tip into the vagina about 5 cm (like inserting a tampon but not as far in), rotate the swab all the way around the vagina and then remove.
   - DO NOT put the swab down – continue holding it.

4. Take the cap off the clear tube.
   - Place the swab all the way into the tube and then firmly bend until it breaks off at the top of the tube.
   - Replace the tube cap and screw on tightly.

5. Place the tube containing the swab in the plastic specimen bag provided and hand back to the nurse or doctor. The unused swabs can be put in the bin.

PCR chlamydia swab collection kits were used by patients or clinicians to collect intravaginal samples. Written instructions were provided to women who chose to take their own sample. Figure 1 depicts the instruction leaflet that was developed from two previously published papers.11,14 The specimens were placed in a sterile capped tube (did not contain a fluid transport medium) and were transported to the Medical Laboratory on the same day as samples were collected.

Results

During the seven-month study period, 555 women under the age of 25 years presented for a TOP. Of those, 461 women were invited to participate in the study, of whom 307 (66.6%) consented to participate. Data are presented here for 300 women from whom a specimen was obtained. Seven women who consented to take part did not provide a specimen, because of staff omission rather than non-compliance.

The mean (SD) age of participants was 21.2 years (2.8). Table 1 shows the characteristics of all study participants and the
proportion of women who opted for self and clinician-taken samples. Choice of collection method was not recorded for 5.7% of participants (17 of 300). Of those for whom data were recorded, 66% of women (186 of 283) chose to provide a self-obtained swab sample. When analysed by age-band and ethnicity, the proportion of women who opted for a self-taken sample was significantly higher than the proportion opting for a clinician-taken sample for all ages, New Zealand European and Maori women (\( P < 0.05 \)). Choice of collection method did not differ significantly for Pacific or Asian women.

The overall rate of chlamydia (detected from swabs done on referral by GPs) was 15.7% (47 of 300). When calculated by ethnicity, chlamydia infection rates were 8.9% for New Zealand European women (12 of 135), 20.4% for Maori (20 of 98), 17.9% for Pacific (five of 28), 33.3% for Asian (eight of 24), and 16.7% for ‘Other European’ women (two of 12).

**Discussion**

This study showed that women at high-risk for STIs (15.7% were positive for chlamydia) were significantly more likely to choose a self-taken over a clinician-taken swab for STI testing. This finding is consistent with preference studies conducted in other countries.\(^9,15,16\) Participants were not asked their reasons for opting for one method over the other, but women in previous studies have cited uncertainty over whether self-swabs are a reliable method of detection, fear of ‘doing it wrong’, or wanting to discuss other health concerns (such as a urinary tract infection) as reasons for choosing a clinician-taken sample.\(^8,15\) Authors of those studies recommended the provision of clear and simple instructions along with assurance that nothing can go wrong. We would recommend a clinical examination for any women presenting with, or concerned about possible symptoms of infection.

In light of the rising rates of chlamydia among women younger than 25 years in New Zealand,\(^1\) offering a self-obtained vaginal swab may be a practical way to increase testing, particularly in asymptomatic women. Self-obtained specimens limit the need for trained clinicians and facilities required for pelvic examinations,\(^12\) and afford some practical advantages over FCU. They are more easily processed at the laboratory than urine,\(^10\) are stable at room temperature for a longer period of time (they do not require immediate cold storage);\(^10\) and are easily transported by post so are appropriate for use in remote areas\(^17\) or programs involving home testing. Furthermore,

**Table 1** Characteristics of study participants by collection method

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Totals (n = 300)</th>
<th>Patient (n = 186)</th>
<th>Clinician (n = 97)</th>
<th>Adjusted totals* (n = 283)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-band (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14–19</td>
<td>114</td>
<td>70</td>
<td>38</td>
<td>108</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>20–24</td>
<td>186</td>
<td>116</td>
<td>59</td>
<td>175</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Zealand European</td>
<td>135</td>
<td>90</td>
<td>38</td>
<td>128</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>Maori</td>
<td>98</td>
<td>63</td>
<td>30</td>
<td>93</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>Pacific</td>
<td>28</td>
<td>15</td>
<td>12</td>
<td>27</td>
<td>ns</td>
</tr>
<tr>
<td>Asian</td>
<td>24</td>
<td>8</td>
<td>12</td>
<td>20</td>
<td>ns</td>
</tr>
<tr>
<td>Other European</td>
<td>12</td>
<td>8</td>
<td>4</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Other†</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pregnancy history</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous TOP</td>
<td>96</td>
<td>59</td>
<td>33</td>
<td>92</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>Nulliparous</td>
<td>214</td>
<td>121</td>
<td>73</td>
<td>194</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>TOP procedure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical</td>
<td>268</td>
<td>167</td>
<td>85</td>
<td>252</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>Medical</td>
<td>27</td>
<td>14</td>
<td>12</td>
<td>26</td>
<td>ns</td>
</tr>
<tr>
<td>None‡</td>
<td>5</td>
<td>5</td>
<td>–</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Gestational age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6–8 week</td>
<td>129</td>
<td>81</td>
<td>40</td>
<td>121</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>9–12 week</td>
<td>139</td>
<td>87</td>
<td>45</td>
<td>132</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>13–15 week</td>
<td>23</td>
<td>16</td>
<td>6</td>
<td>22</td>
<td>( P &lt; 0.05 )</td>
</tr>
<tr>
<td>16–19 week</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Not recorded</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*Choice of sample collection method was not recorded for 17 women. Proportions in this table were calculated using adjusted totals. Tests for significance were not performed for subgroups with less than 20 observations.
†’Other’ ethnicity includes one Middle Eastern and two African women.
‡Five women did not proceed with a termination of pregnancy (TOP).
vaginal swabs may be more suitable than FCU for the detection of chlamydia in pregnancy, where urinary frequency may result in a lower organism load. Recently published guidelines for the best practice management of chlamydia endorse the use of self-obtained vaginal swabs.

Conclusions

The results of this study show that New Zealand women at high-risk for STIs readily opt for a self-taken vaginal swab given the choice. We believe that clinicians can feel confident offering this practical alternative to women: the literature shows self-taken vaginal samples are easily obtained, acceptable to women and accurate for the detection of chlamydia by PCR.

Acknowledgements

This study was funded by a University of Otago Research Grant, and ISTAR (a not-for-profit organisation that imports and distributes mifepristone in New Zealand). The authors wish to thank the women who participated in the study, the staff at the TOP unit and Aotea Pathology for their assistance with this study, and Roche Diagnostics New Zealand for supplying PCR reagents.

References

9 Hoebv CF, Rademaker CW, Brouwers EE, ter Waarbeek HL, van Bergen JE. Acceptability of self-taken vaginal swabs and first-catch urine samples for the diagnosis of urogenital Chlamydia trachomatis and Neisseria gonorrhoea with an amplified DNA assay in young women attending a public health sexually transmitted disease clinic. Sex Trans Dis 2006; 33: 000–000.
13 Schachter J, Chernesky MA, Willis DE et al. Vaginal swabs are the specimens of choice when screening for Chlamydia trachomatis and Neisseria gonorrhoeae: Results from a multicenter evaluation of the APTIMA assays for both infections. Sex Trans Dis 2005; 32: 725–728.
16 Chernesky MA, Hook EW, Martin DH et al. Women find it easy and prefer to collect their own vaginal swabs to diagnose Chlamydia trachomatis or Neisseria gonorrhoeae infections. Sex Trans Dis 2005; 32: 729–733.