

ORIGINAL RESEARCH ARTICLE

# 'You can't tell by looking': pilot study of a community-based intervention to detect asymptomatic sexually transmitted infections

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**Summary:** Innovative and non-stigmatizing interventions are required to reduce ethnic inequalities in rates of sexually transmitted infections among young people. We therefore designed an intervention, 'You can't tell by looking,' which combined health promotion with testing for gonorrhoea and chlamydia using nucleic acid amplification technology and treatment and partner notification delivered in the non-clinical settings.

One hundred and eighty-one participants were seen in 13 sessions in local further education colleges. Forty-three percent of participants were from Black Caribbean or Black Other ethnic groups and 39% were Black African: 125 of 181 participants were sexually active and 109 of these (87%) provided a urine specimen. 10/109 (9.2%, 95% confidence interval 4.5–16.2%) samples were confirmed positive for *Chlamydia trachomatis* and two were also positive for *Neisseria gonorrhoeae*. Only 7% of those tested found it embarrassing. The intervention was both feasible and acceptable to young people. It could be tested in a wider variety of non-clinical settings and evaluated in a cluster randomized trial.

**Keywords:** health promotion, sexually transmitted diseases, ethnic groups, community-based studies

## Introduction

Period prevalence rates of diagnosed gonorrhoea and chlamydia in Black Caribbean teenagers in some inner city areas in England are around 2–5% per year, eight to 14 times higher than amongst White teenagers<sup>1–3</sup>. Since many gonococcal and chlamydial infections are asymptomatic and therefore undiagnosed, particularly in women, the true prevalence may be many times higher. The reasons underlying ethnic inequalities in sexually transmitted infections are complex but include socio-economic inequalities<sup>3–6</sup>, earlier sexual debut<sup>7</sup> and higher rates of partner change in young Black people<sup>8</sup>. Assortative sexual mixing patterns then appear to encourage the persistence of ethnic differentials in rates of infection through selection

of partners from the same ethnic group who have a higher probability of having a sexually transmitted infection<sup>9,10</sup>.

Reducing ethnic inequalities in health is a public health priority<sup>11</sup>. Tackling inequalities in sexual health requires innovative approaches that do not stigmatize minority ethnic groups who already suffer disproportionately from social exclusion and marginalization<sup>12</sup>. Encouraging otherwise healthy young people to attend sexually transmitted diseases clinics for check ups has previously been unsuccessful, even when financial incentives were offered<sup>13</sup>. This may be because waiting times are long and services are not perceived to be geared towards young people's needs<sup>14</sup>. We investigated the feasibility of a community-based intervention, geographically targeted to areas of inner London where gonorrhoea rates are more than ten times the national average, using nucleic acid amplification technology on non-invasively collected samples<sup>13,15</sup>.

## Methods

### Developing the intervention

We designed an intervention that could be delivered in one session lasting approximately one hour, with advice from a sexual health promotion specialist (JJ). The messages and content of the intervention, entitled 'You can't tell by looking', were informed by our earlier qualitative research with local key informants<sup>14</sup> and focus group discussions with young people from White and Black ethnic groups. These studies suggested that sexually transmitted infections did not rank highly in young people's hierarchies of sexual health concerns, that young people from all ethnic groups thought there would be obvious symptoms or other visual cues if they or a partner had a sexually transmitted infection (Connell *et al.*, unpublished focus group observations), and that genitourinary clinics are not 'young person friendly'<sup>14</sup>. The key message was that chlamydia and gonorrhoea can often be asymptomatic and the only way to find out if one has an infection is to have a test. Secondary messages aimed to raise awareness about the importance of bacterial sexually transmitted infections and their reproductive sequelae and promote condom use. We targeted the intervention geographically in further education colleges in Clapham, Brixton and Lewisham, in areas where more than 30% of the population was from Black minority ethnic groups. The study was approved by King's College Hospital Research Ethics Committee.

The intervention comprised an interactive game followed by factual information about gonorrhoea and chlamydia and an opportunity to provide a urine sample to be tested for *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. We used the 'water game', developed by one of us (MH), to convey the key message that infections can spread between oneself and one's partners without anyone knowing (Figure 1). Participants were given a 25 mL pot of clear fluid, which they were encouraged to 'share' (representing sexual intercourse) by tipping a little into their friends' bottles. One in 10 bottles contained an odourless colourless alkali (represent-

ing an asymptomatic sexually transmitted infection). At the end of the game all bottles were 'tested' with phenolphthalein (representing diagnosis of infection), an indicator that turns pink in the presence of alkali. Participants, none of whom knew they were 'infected' at the start of the game, could see how an infection could be transmitted or acquired without either sexual partner realizing. They also saw that one could only find out if one was infected by having a specific diagnostic test.

### Delivering the intervention

The intervention was delivered over a six-week period in January–February 2001 to students aged 16 years or over at two further education colleges in Lambeth and Lewisham, where rates of bacterial sexually transmitted infections are known to be high<sup>4</sup>. Heads at the colleges gave consent for the intervention to take place and for students to be approached during timetabled sessions for personal and social education tutorials. At one site we also delivered two sessions to students attending events a Health Week, which had a sexual health theme. We used posters and cards printed with the intervention message, 'You can't tell by looking' (Figure 2) to advertise the health promotion sessions.

A sexual health adviser, who was a qualified nurse, conducted the sessions, with assistance from the project manager to administer the game and complete study documentation. Single sex groups of five to 10 participants played the 'water game' and then received a factual talk about gonorrhoea and chlamydia. Participants were then invited to provide a urine specimen to test for gonorrhoea and chlamydia even if they had never had sex. This was to avoid embarrassment of people who did not want others to know about their sexual activity. Men and women provided a first catch urine specimen of about 25 mL and completed brief questionnaires about personal details, recent sexual partners and the acceptability of the intervention.

Samples were kept at room temperature for up to four hours before transport to the laboratory where they were stored at 4°C until testing by ligase chain

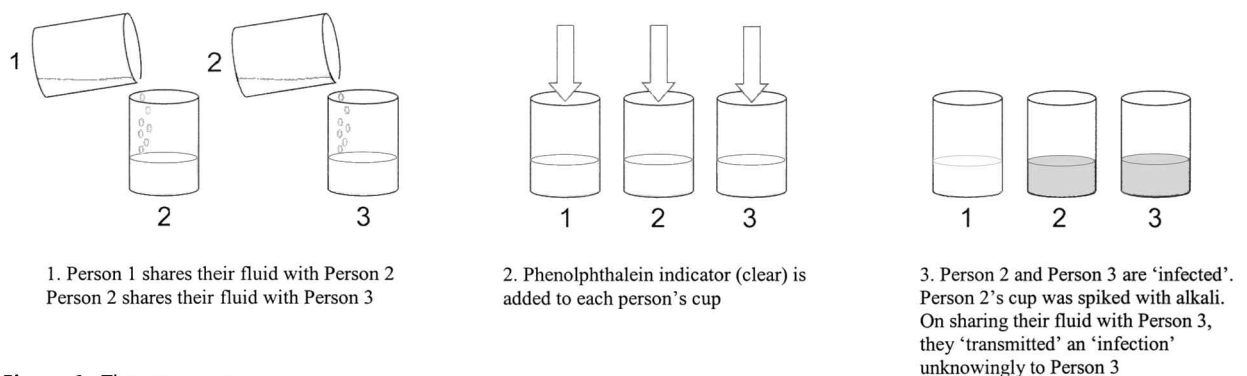


Figure 1. The water game

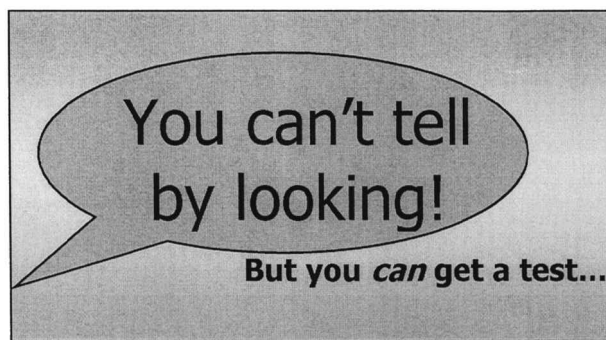


Figure 2. Card advertising the intervention

reaction (LCx, Abbott Diagnostics, Chicago, IL) for *C. trachomatis* and *N. gonorrhoeae*. The health adviser telephoned or wrote to participants, according to their wishes, and arranged treatment and partner notification for those with positive results. Treatment for both gonorrhoea and chlamydia was with single dose azithromycin, directly observed, and was administered at follow up sessions in the colleges where an initial partner notification interview was also conducted. If no room in the college was available participants came to the Caldecot Centre. Follow up was by telephone.

### Statistical analysis

Univariable analyses were carried out using  $\chi^2$  tests for comparisons between groups. Factors associated with uptake of testing were examined in a multivariable logistic regression model and the results presented as odds ratios (ORs) with 95% confidence intervals (CIs).

### Results

One hundred and eighty-one participants took part in 13 college-based sessions (Table 1). Forty-three percent of participants were from Black Caribbean or Black Other ethnic groups, 69% were female and 86% were under 20 years. Uptake of testing was 73% overall and 87% (109/125) amongst those who had ever had sex, with similar proportions in each ethnic group opting to have a test. Men were more likely than women to test because a higher proportion of men (82%) than women (64%) had ever had sex. Participants reporting more than one sexual partner in the past six months were more likely to test after controlling for age, ethnicity and sex (OR 7.4, 95% CIs 1.7–33.0). There were no positive results amongst 23 people reporting no sexual activity. All subsequent figures refer to participants who had had sex.

Ten of 109 (9.2%, 95% CI 4.5–16.2%) samples were confirmed positive for *C. trachomatis* and four were indeterminate. Two samples were positive for

Table 1. Characteristics of participants and those who had a urine test

Characteristic	Total number	Tested		P value
		Number	(%)	
Total	181	132	(72.9)	
Sex				
Female	124	84	(67.7)	0.02
Male	57	48	(84.2)	
Age				
16–20 years	155	110	(71.0)	0.07
21–25 years	12	8	(66.7)	
26+ years	13	13	(100.0)	
Ethnic group				
Black Caribbean	49	33	(67.4)	0.282
Black African	71	54	(76.1)	
Black Other	28	20	(71.4)	
White	22	19	(86.4)	
Other	11	6	(54.6)	
Ever had sex				
Yes	125	109	(87.2)	<0.001
No	54	23	(42.6)	
Condom at last sexual intercourse*				
Yes	63	52	(82.5)	0.152
No	58	53	(91.4)	
Ever attended a genitourinary clinic*				
Yes	26	22	(84.6)	0.111
No	87	82	(94.3)	
More than one partner in last six months*				
Yes	37	36	(97.3)	0.03
No	88	73	(83.0)	

\*Responses in participants who had ever had sexual intercourse  
Some respondents did not answer all questions so totals may not add up

both *C. trachomatis* and *N. gonorrhoeae* (both female). Most infections were in 16–20 year olds (9/88) and rates were similar in men (3/44) and women (7/65,  $P=0.734$ ). The proportion of positive tests differed by ethnic group ( $P=0.02$ ) being higher in those describing themselves as Black Other (5/16), Black Caribbean (3/28) or White (1/16) than Black African (1/44). Seventy-four percent (115/157) thought the game was an effective form of information about gonorrhoea and chlamydia and 68% (107/157) thought the information session was interesting, with females responding more positively than males. Only 7% of those tested felt embarrassed about providing a sample. All positive cases were contacted and all but one received treatment. Indeterminate cases were also treated, in line with clinic protocols, but none provided a specimen for repeat testing. Both women with gonorrhoea had a negative test of cure following treatment with azithromycin.

### Discussion

This intervention, combining health education with testing for gonorrhoea and chlamydia in non-clinical settings was feasible and acceptable and

identified a high prevalence of asymptomatic chlamydia but few gonococcal infections. Delivery of antibiotic treatment and partner notification in the community was also feasible.

### Methodological issues

The strengths of this study are that the intervention had a clear message, which was informed by evidence collected from the target population. We used non-invasive specimens tested with nucleic acid amplification methods, which were accepted by the majority of participants, including 97% of those with more than one recent sexual partner, and were not regarded as embarrassing. We also showed that community-based treatment and partner notification are feasible. Geographical targeting achieved a sample with 82% from all Black minority ethnic groups compared with about 30% from these groups in the local population as a whole. There were, however, more Black Africans and fewer Black Caribbeans in our sample than in the general population because a greater proportion of young people of African extraction stays on in education after 16 years. This strategy was therefore only partially successful in reaching those at highest risk of being infected. More young Black Caribbeans could be reached by delivering the intervention in housing estates, clubs and barber shops but these venues are more difficult to access. Another weakness of the study is that we identified a high proportion of samples with indeterminate results and we were unable to obtain a definitive result. This study was performed at a time when there were known to be problems with the Abbott Diagnostics LCx test and we may have suffered as a result of this. It is also possible that storage at room temperature for up to four hours caused problems with the test.

### Comparison with other studies

We diagnosed chlamydia in 6.8% of men, which is comparable to results obtained in schools and community-based opportunistic screening in the USA<sup>13,16</sup> and higher than the prevalence found in men of similar age screened in primary care and population-based screening studies in The Netherlands and England<sup>17-19</sup>. Despite the small sample size it suggests that asymptomatic chlamydial infections in young men are sufficiently common to warrant screening, from which the National Strategy for Sexual Health and HIV currently excludes them<sup>20</sup>. There was also evidence suggesting higher positivity rates in participants from Black Caribbean and particularly Black Other ethnic groups and low rates in Black Africans. This finding in a community setting confirms studies based in genitourinary clinics showing differences between different Black ethnic groups in the prevalence of bacterial sexually transmitted

infections<sup>1,21</sup> and reinforces the message that ethnic groups should not be combined in statistical analyses when there is no *a priori* reason to do so<sup>1</sup>.

Interventions to detect asymptomatic chlamydial infections have been undertaken in the USA in schools<sup>15</sup>, parking lots, shopping precincts and other informal settings<sup>13,15,22</sup> and prevalence has declined over time in school populations tested repeatedly<sup>15</sup>. Our intervention included an interactive health promotion session that provided explanations of the rationale for testing and safer sex messages. This could help reduce the prevalence of gonorrhoea and chlamydia by promoting uptake of safer sexual behaviours or by encouraging earlier diagnosis of infection to reduce the reproductive rate of infection. The intervention was designed to be delivered in only one session because, in practice, multiple sessions have high drop-out rates<sup>23</sup>, are more expensive, and are not necessarily more effective<sup>24</sup>. Brief counselling interventions based in sexually transmitted diseases clinics have, however, had conflicting results, with a study amongst heterosexuals in inner city Baltimore, USA showing a reduction in sexually transmitted infections<sup>24</sup> but a study in central London resulting in higher rates of subsequent sexually transmitted infections in the intervention group<sup>23</sup>.

In summary, this pilot study showed that a geographically targeted intervention to provide health promotion, testing and treatment for bacterial sexually transmitted infections was feasible and acceptable to young adults in further education colleges. The feasibility of this intervention should now be tested in a wider range of non-clinical settings and could be formally evaluated in a cluster randomized controlled trial using long-term biological outcomes to determine effectiveness in reducing the prevalence of bacterial sexually transmitted infections in young people at highest risk.

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