

SYPHILIS

Community based syphilis screening: feasibility, acceptability, and effectiveness in case finding

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Objectives: To investigate the feasibility and acceptability of implementing community based syphilis screening using different sample collection techniques, and its effectiveness in screening at-risk populations and identifying new syphilis cases.

Methods: Two phases of syphilis screening were conducted in venues frequented by men who have sex with men (MSM). Phase 1 used venepuncture and phase 2 a validated saliva test. Evaluation used quantitative data from testers, venues and the local genitourinary medicine (GUM) clinic, and qualitative data from venue and programme staff.

Results: 1090 MSM were tested over 7 weeks. 62% of testers had not attended a GUM clinic in the past year. 64% of testers reported ≥ 2 sexual contacts in the past 90 days and 11% reported ≥ 10 . Similar diagnosis rates were recorded for phase 1 (1.4%) and phase 2 (1.8%). There was greater uptake of testing with the saliva test in saunas during phase 2.

Conclusions: Syphilis screening in gay venues is feasible and acceptable to at-risk MSM, and reaches a group not routinely accessing GUM services. The low case detection for syphilis suggest this approach, while unlikely to contain outbreaks, may be more useful if combined with screening for other sexually transmitted infections and effective health promotion strategies.

As part of its response to increasing rates of sexually transmitted infections (STI), the UK National Strategy for Sexual Health and HIV outlines key service development needs. These include improved service delivery to at-risk populations.¹ One such approach has been the implementation, in commercial gay venues, of syphilis screening programmes for men who have sex with men (MSM). However, to date, the evidence supporting such innovative community interventions is largely anecdotal, with different programmes reporting varied success rates.^{2–4}

Brighton has had an ongoing syphilis outbreak since 1999.⁵ In keeping with similar outbreaks among MSM, it is characterised by high rates of HIV co-infection (40% of cases) and predominantly anonymous and/or untraceable sexual partners (86% of all reported contacts). In response to growing local concern and the outbreak characteristics, we implemented a community based syphilis screening programme and report the findings of our evaluation here.

METHODS

The screening programme was undertaken in two phases and involved a collaboration between a community based organisation (CBO), the local genitourinary medicine (GUM) clinic, the primary care trust (PCT), and research partners. Our overall approach was similar to screening programmes in Dublin and Manchester.^{2,3} During each session, one to four CBO workers circulated venues explaining the testing procedure. GUM clinic staff (one or two) collected a specimen from customers in a designated area of the venue and collected basic clinical and evaluative data. Staff also recorded the type of venue, estimated population, and numbers testing during each session. Those testing positive were contacted within 15 days and invited to attend the GUM clinic for confirmatory testing, treatment, and contact tracing.

Phase 1 "Only a little prick"

Phase 1 ran for 4 weeks in autumn 2002 and used conventional venepuncture. All local gay venues were invited to participate to provide as comprehensive a service as possible, and to identify any associations between type of venue and infection rates. Venues were excluded only where managers/owners declined.

Phase 2 "Suck it and see"

The second phase of the screening programme ran for 3 weeks during summer 2003. The shorter recruitment period was in response to customer saturation observed during the last stage of the first programme. The selection of venues in phase 2 was service driven rather than answering a specific research question. Screening was concentrated in a smaller number of venues where data from phase 1 demonstrated that men screened reported more casual and anonymous sexual partners and were therefore potentially at greater risk of syphilis.⁶ Testing in phase 2 involved a newly validated saliva assay rather than venepuncture.

The salivary test was devised and validated as part of a separate study organised by the Health Protection Agency (report in preparation). Tests on 167 subjects with serological evidence of infectious syphilis showed an overall sensitivity of 86%, comprising 71% for primary, 93% for secondary, and 90% for early latent syphilis. Tests on 139 controls revealed two reproducible false positives. All cases identified during the screening phases were confirmed using standard serological testing.

Evaluation design

Our evaluation incorporated four key outcomes: acceptability and feasibility to customers and venues, effectiveness in

Abbreviations: CBO, community based organisation; GUM, genitourinary medicine; MSM, men who have sex with men; PCT, primary care trust; STI, sexually transmitted infections

testing at-risk populations, effectiveness in identifying new syphilis cases, and the comparative acceptability and feasibility of using saliva samples versus conventional venepuncture. "At-risk" populations were defined as MSM similar to known syphilis cases in age and number of sexual partners, or MSM with no recent history of GUM attendance, despite multiple sexual partners. Qualitative interviews and focus groups were conducted with programme staff and venue managers and analysed to identify factors that impeded or facilitated "feasibility, acceptability, and effectiveness in screening at-risk populations".

RESULTS

Feasibility and acceptability to customers and venues

In phase 1, all 30 local gay venues were invited to participate and 23 (77%) agreed. In phase 2's more focused screening, 16 venues, including 13 from the previous phase and three newly opened ones, were approached and all agreed to participate. In total, 588 MSM were tested during phase 1 and 502 during phase 2. The proportion of the venue population tested varied between sessions, between venue types, and between phases of the screening programme. Lowest uptake rates were in cruising grounds and the highest in saunas (table 1).

Qualitative data identified the following facilitators of acceptability: the strong relation between the CBO and local venues, provision of a separate testing area, and involving venue staff in promoting the programme (wearing campaign T-shirts and testing themselves). Barriers to acceptability included testing during "happy hours" and sessions provided by all female clinic staff.

Effectiveness in testing at-risk populations

Overall, 62% (672/1090) of testers had not been to a GUM clinic in the past year. Qualitative findings suggested the screening programme acted as a valuable health promotion

tool, raising awareness and encouraging some groups—for example, some sauna users who did not access other areas of the gay scene, to attend GUM services. Of those who had not recently attended GUM services, 65% (434/672) reported ≥ 2 sexual partners in the past 90 days. In both phases testers were similar to early syphilis cases already diagnosed in the GUM clinic with respect to age and number of partners in the past 90 days (table 1). Comparison of testers recruited from different venue types showed that in both phases, public sex site testers were significantly older ($p < 0.001$), and reported significantly more partners in the past 90 days ($p < 0.001$).

Effectiveness in identifying new index cases of syphilis

From 1090 tests a total of 17 cases of previously undiagnosed syphilis were detected, giving an overall new diagnosis rate of 1.6%. Of these 17 cases, six were confirmed as early syphilis. The remaining 11 had either not attended GUM services in the past year, or not had previous syphilis serology and were therefore classified as late latent syphilis. Case identification rates were similar in phase 1 (1.4%) and phase 2 (1.8%) (table 1). In the GUM clinic during phase 1 and phase 2, nine and seven early infectious syphilis cases were diagnosed, respectively, giving a diagnosis rate of 4% (16/397) in the clinical setting.

Acceptability and feasibility of saliva samples versus venepuncture

Testing uptake was higher in phase 2 in saunas, but did not differ between phases with any of the other venue types (table 1). The lower specificity of the saliva test resulted in a higher rate of false positives than occurred in phase 1. Qualitatively, saliva testing was more acceptable and easier to administer, although outreach workers reported customer

Table 1 Feasibility and acceptability based on venue and tester uptake in phases 1 and 2 of community syphilis screening

	Phase 1 (4 weeks)	Phase 2 (3 weeks)			
Feasibility					
% of venues agreeing to participate	77% (23/30)	100% (16/16)			
Number of venue sessions	70	57			
Acceptability					
Total number of men testing	588	502			
Overall % of venue populations who tested	9.8%	11.4%			
% of non-public sex site bar/club populations testing	9.0%	9.3%			
% of sauna populations testing	23.1%	34.8%			
% of cruising ground populations testing	11.7%	11.4%			
% of sex on premises club populations testing	12.0%	19.5%			
Effectiveness in testing at-risk populations					
GUM non-attendance in last year	65% (n = 380)	58% (n = 292)			
No of sexual contacts in past 90 days among all testers:					
0–1	31% (n = 181)	29% (n = 144)			
2–19	55% (n = 325)	56% (n = 283)			
20+	14% (n = 82)	15% (n = 75)			
No of sexual contacts in last 90 days among non-attendees:					
0–1	37% (n = 139)	34% (n = 99)			
2–19	53% (n = 202)	53% (n = 154)			
20+	10% (n = 39)	13% (n = 39)			
Difference between community testers and known syphilis cases:					
	Phase 1 testers (n = 588)	Known cases (n = 93)	p Value*	Phase 2 testers (n = 502)	Known cases (n = 156)
Age (median)	33	33	0.545	36	34
Number of sexual contacts in last 90 days (median)	4	3	0.733	3	3
Effectiveness in identifying new index cases of syphilis					
No of EIA positive results		29			43
No of previously undiagnosed syphilis cases		8			9
No of previously undiagnosed syphilis cases that were early syphilis		4			2
Co-infection		1 × HIV+ (already diagnosed) 1 × rectal gonorrhoea (co-diagnosed) 1 × chlamydia (co-diagnosed)			1 × HIV+ (already diagnosed) 1 × rectal gonorrhoea (co-diagnosed)

*p values for categorical variables from the χ^2 test, p values for continuous variables from the Mann-Whitney test.

Key messages

- Screening for syphilis in gay venues is feasible and acceptable to at-risk MSM, and reaches a group not routinely accessing GUM services
- A strong collaborative relationship between local healthcare providers, venue owners, and community based organisations is key to the success of such programmes
- While saliva testing for syphilis has certain logistical advantages, these may be offset by reduced sensitivity/specificity and the inability to distinguish new from old infection
- Although this approach is unlikely to contain syphilis outbreaks, health promotion gains should not be underestimated. Further exploration linking outreach work to screening for other STIs is justified

misconceptions about whether the test could be performed after drinking alcohol.

DISCUSSION

The highly infectious and frequently asymptomatic nature of early syphilis, coupled with high rates of HIV co-morbidity and anonymous sexual contacts, demand innovative and proactive syphilis case finding strategies. However, these strategies need to be evaluated before widespread implementation is undertaken. Our findings show that community screening is feasible and acceptable to MSM, the majority of whom had not attended GUM services in the last year. Saliva testing increased uptake in saunas and an overall diagnosis rate of 1.6% was achieved. However the public health significance of this case finding activity is less clear as most new diagnoses were not categorised as “infectious syphilis.”

Diagnosis rates were similar to those in Manchester’s gay venues in 2000–1 (1.4%),³ and somewhat higher than in Los Angeles’ gay venues in 1999 (0.48%).⁴ By contrast, the diagnosis rate in Dublin gay venues in 2000–1 was considerably higher (7.5%).² The number of uncontrolled variables in a programme evaluation compared to an experimental study makes these differences hard to interpret and anonymous prevalence surveys may be the most useful way to investigate such variation.

Saliva testing was easier to administer, and demanded fewer clinical staff and health and safety requirements than venepuncture. Because the test does not differentiate between old and new infection, we would advise avoiding testing those with a previous history of syphilis. However, it does allow teams to go into a venue, screen large numbers, identify the small proportion of positive individuals, and fast track them for a clinic appointment and full laboratory investigation for all infections. Overall, saliva testing did not increase testing uptake, although it did increase uptake in saunas. It is also possible that saliva testing led to increased overall uptake among MSM at lower risk of syphilis, based on the higher proportion of testers in phase 2 that reported GUM attendance in the previous year compared to phase 1.

The value of undertaking a community based syphilis screening in outbreak management depends on the populations, the testing venues, and the rationale for its implementation. Our findings concur with reports from other community based screening programmes that this approach results in low case detection rates.^{4 7–10} It is unlikely therefore that such interventions will have a significant impact on

outbreak evolution. In comparison, testing for other STIs in community settings, particularly male only saunas, has proved more fruitful with prevalence rates of 10.7% for chlamydia and/or gonorrhoea,¹¹ and 11.5% for gonorrhoea alone.¹² As we have shown, focusing testing on such venues may identify individuals with higher numbers of partners, and therefore greater overall risk for STI acquisition.

In summary, we have shown it is possible to identify a large population of MSM, at risk of STIs, who are not routinely accessing GUM services, but who are willing to test in a community environment. We believe that such programmes in future should not restrict themselves to syphilis identification, but rather should be used to screen for multiple STIs and encourage further effective health promotion.

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CONTRIBUTORS

NL managed the screening programme and data collection and wrote the first draft of the paper; NL and JI designed the evaluation and data collection tools; CM, NL, and JI guided and performed the quantitative analysis; NL, JI, and RW performed qualitative data collection and analysis; AP and RW supervised the day to day running of the programme and staffing; RW coordinated community support and participation for the Brighton Syphilis Outbreak Project; JP led the saliva test validation and supervised laboratory testing of them; AI and NP provided programme advice; MF and GD were the principal investigators on the Brighton Syphilis Outbreak Project and contributed to all stages of the project and paper writing; all of the authors contributed to the design and development of the programme, paper review and comments on successive drafts.

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