



Re-emerging Syphilis

A case control study based on
the Manchester outbreak

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S u m m a r y

Increasing levels of syphilis across the UK, particularly in Manchester, are a cause for concern. Previously, we surveyed a sample of 23 gay men infected by syphilis in the Manchester outbreak and identified high levels of risk behaviour, particularly unprotected oral sex, and low awareness of syphilis risk. The previous study has already helped inform press releases on the topic of oral sex risks. The aim of the present study is to assess risk behaviour specifically associated with syphilis transmission by measuring behaviour of uninfected controls for comparison.

Three controls for each case were matched on sexuality (all homosexual), residence (first part postcode) and age. Risk behaviour during the previous 12 months and attitudes and awareness towards syphilis were ascertained. The entire sample was divided into four groups: those with syphilis ($n=16$), syphilis and HIV ($n=7$), HIV alone ($n=13$) and those with neither infection ($n=49$). Those with syphilis and/or HIV disclosed higher numbers of partners (on average 30 in 12 months), more anonymous partners (on average the names of 90% of partners were unknown), were more likely to find partners in cruising areas, and were more likely to use the drug gamma hydroxybutyrate during sex. Those with syphilis alone were characterised by having more oral sex partners, whereas those with HIV (with or without syphilis) had more anal sex partners. Levels of condom use were higher, but not significantly so, amongst those with neither infection.

Around 30% of those with neither infection and 40% of those with HIV alone exhibited behaviour patterns more representative of the syphilis infected group: that is, they had a high number of anonymous partners and used anonymous venues to meet partners. These individuals are at high risk of infection with syphilis and other sexually transmitted infections. Moreover, despite having been exposed to the syphilis campaign in Manchester's gay village, only around half of controls considered oral sex to be a high risk activity in terms of syphilis transmission. Work is urgently required to reach these high risk individuals, and to address the need for information around oral transmission of syphilis and other sexually transmitted infections.

A c k n o w l e d g e m e n t s

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I n t r o d u c t i o n

Compared to syphilis outbreaks in Brighton, Bristol and more recently in Peterborough and Cambridgeshire¹, Scotland, Ireland, France² and Norway³, the ongoing outbreak in Manchester remains the largest. When this unprecedented increase in the number of new syphilis cases in Manchester became apparent, a survey of the behaviour of infected patients was initiated⁴. Since the initial study, Greater Manchester genito-urinary medicine (GUM) departments have continued to identify new syphilis cases on a regular basis, bringing the total number of cases to over 180 cases between January 1999 (when the outbreak began) and July 2001. In addition there have been three reports of patients presenting to GUM clinics in Manchester with syphilis infection for the second time in 12 months.

Previously we identified high risk behaviour among the syphilis infected individuals⁴. The aim of this study was to compare this behaviour to that of a representative sample of uninfected gay men, to assess behaviour, attitudes and knowledge in the general gay population. Based on this, we aim to review recommendations for the sexual health of Greater Manchester residents. Moreover, since a significant number of gay men from outside the Manchester area choose Manchester as their first choice for socialising (e.g. 25% of gay men interviewed in Liverpool⁵), the health benefits of such recommendations potentially affect a much wider population.

M e t h o d s

In the previous survey of syphilis-infected patients, 27 individuals (23 of whom were homosexual) gave information on their sexual and social behaviour in the 12 months prior to their diagnosis (see previous report⁴ for full details). For the present study, three controls were recruited for each homosexual case (no heterosexual controls were recruited since there were too few cases for comparison). Most controls were recruited with the assistance of the Lesbian and Gay Foundation, Body Positive North West and George House Trust (compliance 44/85 contacts) with a further 18 recruited directly from known gay social areas. Controls were matched on sexual orientation (all gay men), area of residence (first part postcode), age and ethnicity (all white). Table 1 shows that controls were well matched for basic demographic characteristics. Information was gathered from participants using a semi-structured questionnaire that included open and closed questions, based on the questionnaire used previously⁴, and covered risk behaviour in the previous 12 months. Additional questions related to the subsequent syphilis awareness campaign that was prominently displayed in the gay village. The same researcher (PC) interviewed all the cases and controls.

Following the interview all respondents were offered the opportunity to attend a sexual health check (known as an MOT) comprising tests for gonorrhoea, syphilis, chlamydia and hepatitis B (as well as HIV if required) at one of the three Manchester GUM departments. A total of 36 appointments were made, of which 24 attended their appointment (including nine of the HIV positive controls). This did not attend (DNA) rate of a third is typical of the current DNA rate within these three GUM departments. All participants who completed the sexual health check gave written consent for the researcher to have access to their clinical notes at the GUM department. No clinical files were removed from the GUM department. One case of chlamydia and one case of hepatitis B (in an HIV positive man) were diagnosed at their MOT.

For the purpose of analysis cases and controls were separated into HIV positive and negative groups. Comparisons between groups utilised chi-square and Mann Whitney U tests using SPSS (version 9). Finally, behaviour profiles (including sexual and drug taking behaviours) for each individual (irrespective of infection status) were entered into a multivariate ordination analysis to identify similarities between groups of people in terms of their behaviour using PCORD (version 4.10, MjM Software, Oregon, USA).

Table 1. Characteristics of cases and controls



	Case (n=23)	Control (n=62)
Mean (range) age in years	32.4 (20-47)	33.1 (20-50)
Sexual orientation		
Homosexual	23 (100%)	58 (93.5%)
Bisexual	0	4 (6.5%)
Long term relationship	10 (43.5%)	37 (59.7%)
Exclusive long term relationship	2 (9%)	11 (17.7%)
Taken HIV test	22 (95.7%)	53 (85.5%)
HIV positive	7 (30.4%)	13 (21.0%)

Results

Sexual risk behaviour

Those with syphilis only and those with syphilis and HIV had the highest average total number of partners (each with a median of 30 partners), new partners (median = 30 and 24) and oral sex partners during 12 months (median = 30 for each: figure 1). By contrast, higher numbers of anal sex partners were more common among HIV positive individuals, regardless of syphilis status. Those with neither infection had significantly fewer partners (median = 5). Having one or both infections was associated with anonymity of sexual partners: while those with syphilis or both infections knew the names of 8% and 10% of their partners respectively, those with HIV knew on average 28% of their partners and those with neither infection knew 60% (figure 2). Knowledge of HIV status of partners was relatively low across all groups.

Of those with neither syphilis nor HIV, condoms were used for anal sex with 46% of their partners (figure 3). This figure decreases amongst those with HIV to 38%, and decreased further amongst those with syphilis & HIV to 29%. Participants with syphilis alone failed to use condoms for anal sex with 75% of their sexual partners (although these differences were not significantly different). None of the respondents always used condoms for oral sex, and even occasional condom use for oral sex was rare. Disturbingly, 62% of those with HIV alone had encountered a sexual partner who refused to use a condom for anal sex in the past 12 months.

fig. 1

Median number of sex partners reported over a 12 month period (P values from Kruskal-Wallis univariate analysis)

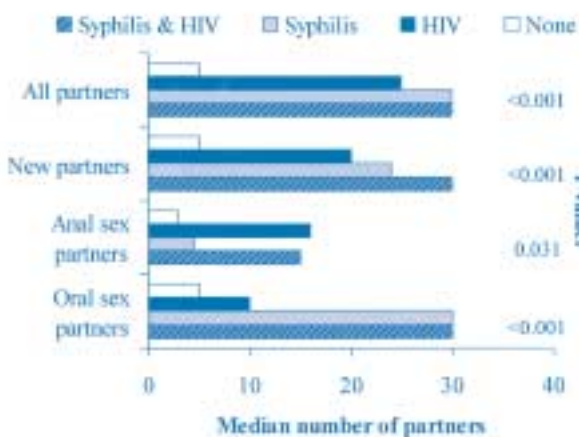
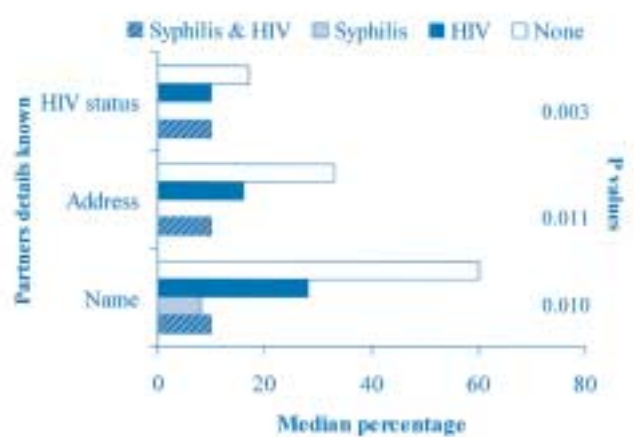


fig. 2

Median percentage of sex partners for whom name, address or HIV status was known (P values from Kruskal-Wallis univariate analysis)



Drug use

Previously, we highlighted the emergence of gamma hydroxybutyrate (GHB) on the gay scene as a recreational drug and an accompaniment to sex⁴. Here we show a significant relationship between sexually transmitted infections and GHB use. GHB had been used by 18% of respondents with no infection, 56% of those with syphilis, 62% of the HIV group, and amongst those with syphilis & HIV the percentage increased to 71% (P<0.001). In general the HIV positive participants exhibited considerably more drug use than the HIV negative group (figure 4), except for alcohol which was almost ubiquitous across all groups. Of all participants, those with an infection were more likely to claim drugs and alcohol affects their sexual judgements (71% of the syphilis & HIV group compared to 57% of those with no infection).

Meeting a sexual partner

The most popular venues to meet sexual partners, used by over 80% of respondents, were the pubs and clubs in Manchester's gay village. Outside these two venue types there were considerable differences between those participants with infection and those without in terms of the venues used to find sex partners. Anonymous sex venues such as cruising areas (outdoor areas used for sex⁶) cottages (public toilets) and darkrooms (room used specifically for sex⁶) were frequented significantly more often by those with HIV and/or syphilis than those with no infection (figure 5).

Behaviour Analysis

Behaviour profiles for each individual, regardless of infection status, were incorporated into an ordination analysis that calculates which behaviours vary the most across the group and plots people according to the similarity of their behaviours. This is shown in figure 6, with each point representing an individual and the axes representing variation in behaviour. The closer the points the more similar their behaviour. By dividing the area into quarters it is possible to identify common patterns of behaviour exhibited by the individuals in each part of the plot. Those in quadrant 1 (where most of the individuals with syphilis alone occur) are characterised by high numbers of anonymous partners (particularly oral sex partners) and use of dark rooms for sex. Individuals in quadrant 3 also tend to have high numbers of anonymous partners (with

whom they had both oral and anal sex) and comprise most of the people with both infections and half of the individuals with HIV alone. Low risk individuals, with fewer partners and fewer anonymous partners occur in quadrant 4. This is the quadrant where most (71%) of the people with neither infection occur. Despite a tendency for people in the different infection groups to occur in the same section of the plot, there is considerable spread of individuals across the plot. For example, 40% of individuals with HIV alone occur in the low risk area (quadrant 4), while 29% of the controls occur in the higher risk areas (quadrants 1 and 3). The implication of this is explored in the discussion.

fig. 3
Condom use in a 12 month period (P values are from chi square univariate analysis)

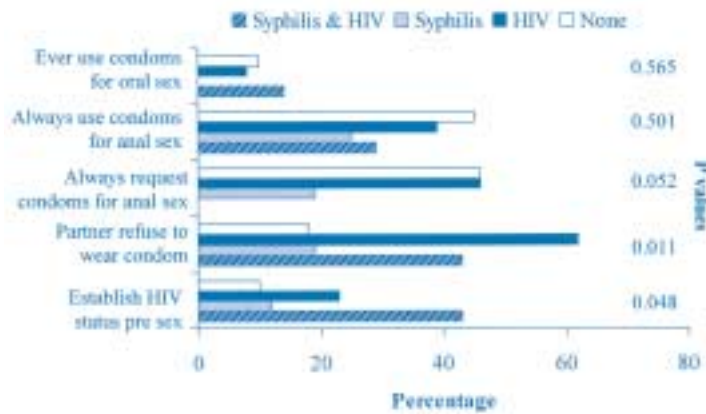
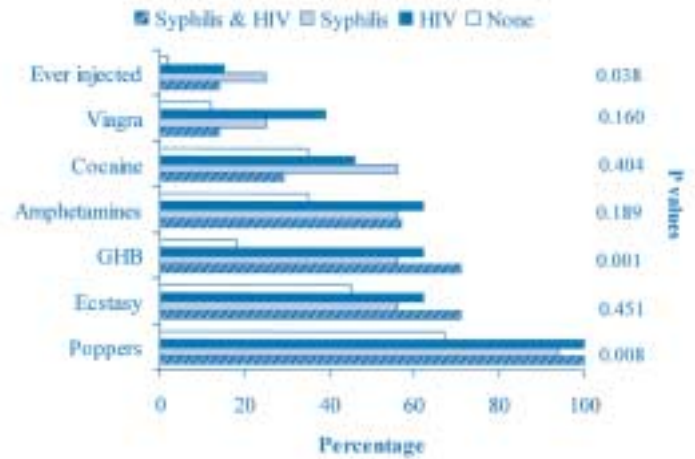


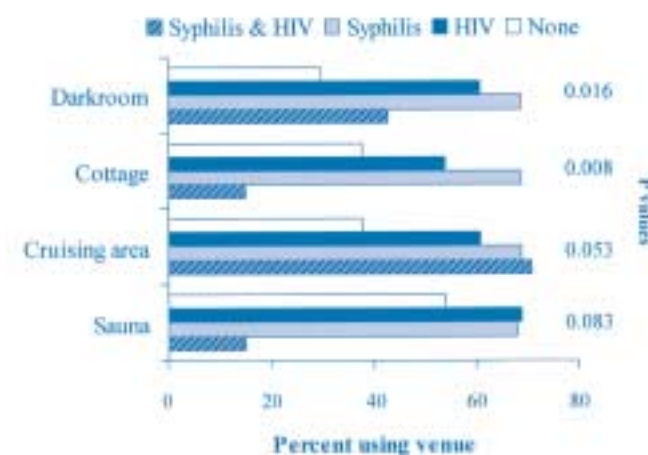
fig. 4
Whether participants had ever used various drugs or injected drugs (P values are from chi square univariate analysis)



Knowledge and awareness of risk

Controls were asked if they were aware of the syphilis outbreak in Manchester and 73% responded positively. Sixty six percent of controls stated they had seen information posters displayed in pubs and bars or in a GUM department. Of these 8% claimed their knowledge of syphilis had increased as a result. In general there was dissatisfaction with the standard of sexual health information aimed at gay men, with over half (53%) of the controls claiming they did not like the information available. Opinions on the style and presentation of the information included the factual content being too basic to be of any use and the writing on the posters being too small to draw attention. There was a consensus that sexual health information for gay men contained too many pictures of healthy gay men. Of those who said they would like more information on sexual health, the main request was for information on oral sex.

fig. 5
Venues used to meet sexual partners over a twelve month period (P values are from chi square univariate analysis)



Those with HIV alone were less likely than the rest of the participants to think that unprotected anal sex was a high risk activity (46% compared to 89%; P=0.003). Most individuals, regardless of infection category, thought that oral sex posed little or no risk of HIV transmission (61%). When asked about the risk of syphilis transmission through unprotected anal intercourse, all those with both HIV and syphilis, 94% of those with neither, 62% of those with HIV but only 56% of those with syphilis perceived the risk to be high (P<0.001). There was uncertainty surrounding the perceived risk of oral sex and syphilis transmission. Despite the fact that most of the controls were aware of the syphilis outbreak and had been exposed to the campaign, still only around half perceived oral sex to be risky (table 2).



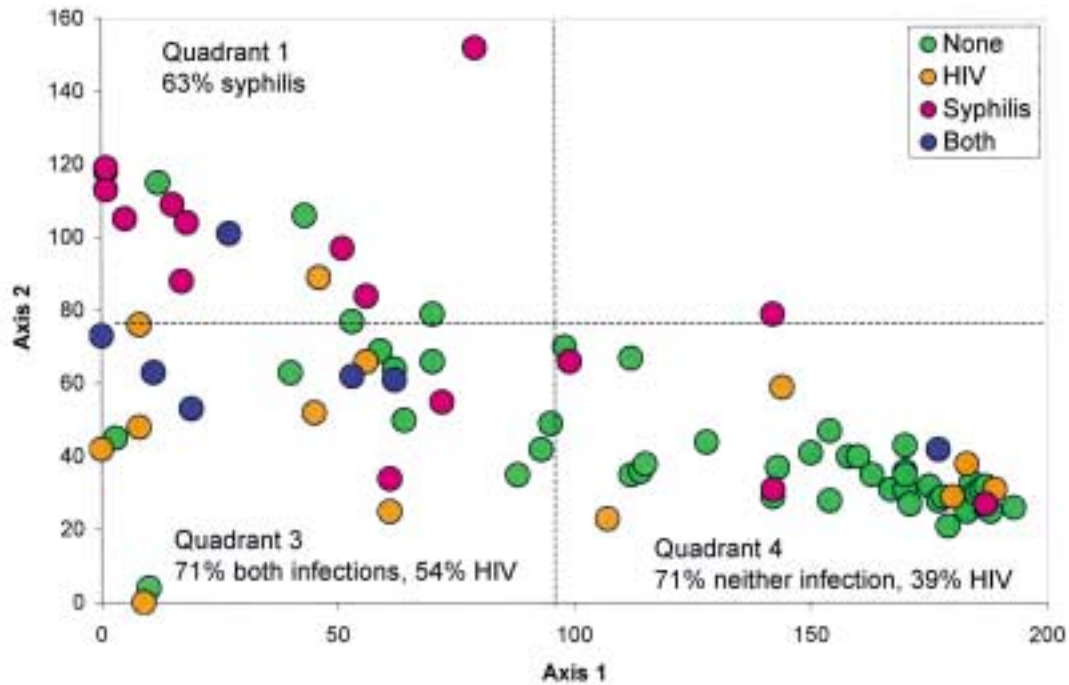
Table 2. Perception of the risk of transmitting syphilis through oral sex

Risk	No infection (n=49)	Syphilis (n=16)	HIV (n=13)	Syphilis and HIV (n=7)	Total (n=85)
Low	10 (20.4%)	4 (25.0%)	4 (30.8%)	1 (14.3%)	19 (22.4%)
Medium	13 (26.5%)	3 (18.8%)	4 (30.8%)	3 (42.9%)	23 (27.1%)
High	26 (53.1%)	6 (37.5%)	5 (38.5%)	3 (42.9%)	40 (47.1%)
Don't know		3 (18.8%)			3 (3.5%)



fig. 6

Ordination analysis showing similarity of behaviour of individuals (points close together represent individuals with similar behaviour)



D i s c u s s i o n

Results here show a strong association between syphilis infection and high numbers of sexual partners, particularly oral sex partners (figure 1). Moreover, since many of these were anonymous (figure 2), contact tracing of partners exposed to syphilis is not possible. However, results from this survey have identified specific venues (i.e. darkrooms, cottages and cruising areas: figure 5) where individuals with syphilis were more likely to seek sexual partners. Such areas must form a focus for concerted efforts both to increase understanding around the risks of oral transmission and to identify new cases. From this analysis it is evident that those with syphilis, and/or HIV are behaving in a manner that sets them apart from the majority of the uninfected controls. However, around a third of the uninfected controls were exhibiting the same behavioural patterns as those infected with HIV and syphilis (figure 6). These individuals are at an increased risk of contracting a sexually transmitted infection, and strategies should target these high risk individuals.

The strong overlap between HIV and syphilis (30% of syphilis cases were HIV positive) is a particular concern as dual infection may increase the likelihood of HIV transmission up to five fold⁷. Here, analyses of individuals with HIV revealed disproportionately high numbers of anal sex partners with most individuals failing to use condoms consistently. Across all study groups, knowledge of the HIV status of sexual partners was low. Disturbingly, individuals with HIV (regardless of syphilis status) were also more likely to have had partners refuse to wear condoms for anal sex. It has been suggested that some HIV negative men find it erotic to risk infection during unprotected anal sex with an HIV positive man⁸. HIV positive men in this study reported having had HIV negative men requesting unprotected anal sex from them with full knowledge of their HIV status. As with syphilis, individuals with HIV were more likely to use darkrooms and cottages to meet new partners. These settings should be used to address the complacency that seems to have arisen regarding unprotected anal sex and potential HIV transmission.

Drug use was also associated with having syphilis or syphilis and HIV. In particular, GHB, a drug more commonly associated with recreational use in nightclubs, was found here to be associated with anonymous sex in cruising areas. As GHB increases confidence and reduces inhibitions, its widespread use may significantly reduce the impact of safe sex messages. Consequently, forthcoming strategies to control sexually transmitted infections⁹ should emphasise multi-disciplinary approaches utilising safe sex messages combined with other public health measures to address the relationship between unsafe sex and substance use. Efforts should be made to ensure sexual health information is available through venues accessed by drug users and equally, information on drug use is available through GUM clinics.

A recent study has identified waiting times for GUM services in the North West of England to be the highest in the UK, with 38% of requests for a urgent appointment resulting in a wait of more than a week¹⁰. The current waiting time for a routine appointment in Manchester's GUM departments stands between 9-14 days. In this study, participants were offered the opportunity to attend a routine sexual health check. A third of those who made appointments did not attend, three of whom gave the long waiting time as a reason.

There remains considerable confusion around the risks of oral sex (table 2). Even though interviews with the controls in this study took place after the syphilis awareness campaign had been prominently displayed in the gay village, around half still did not rate oral sex as a high risk activity. As has also been identified in a recent needs assessment¹¹, of those interviewed here who said they would like more information on sexual health, the main request was for information on oral sex. The strong link between levels of oral sex amongst the syphilis-infected group, and the fact that several claimed that oral sex was their most likely source of infection⁴, suggest that work around informing about the risk of oral sex is urgently required. As such, the results of the interviews with the syphilis-infected individuals in Manchester⁴ has already helped inform national press releases on the risks of oral sex¹².

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