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(Accepted 30 November 1995)

Continuing transmission of sexually transmitted diseases among patients infected with HIV-1 attending genitourinary medicine clinics in England and Wales

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Abstract

Objective—To determine whether those who are aware of being infected with HIV continue to adopt behaviours that place others at risk of HIV infection.

Design—Ongoing survey of current diagnosis of sexually transmitted disease and awareness of HIV infection among patients attending genitourinary medicine clinics.

Setting—Six genitourinary medicine clinics in England and Wales (two in London and four outside) participating in unlinked anonymous HIV serosurveillance during 1990-3.

Subjects—All attenders having blood drawn for syphilis serology for the first time during the calendar quarter of attendance.

Main outcome measures—The proportion of syphilis serology specimens with antibody to HIV-1 detected by unlinked anonymous testing of the residue. The proportion of attenders infected with HIV-1 who remained clinically undetected, and the proportion who had another recently acquired sexually transmitted disease.

Results—Of 85 441 specimens tested, 2328 (2.7%) were positive for antibodies to HIV-1. About 30% of these specimens were from attenders whose HIV-1 infection remained clinically undetected. HIV-1 infection was found to coexist with another recently acquired sexually transmitted disease in 651 attenders, of whom 522 were homosexual or bisexual men. Of these, 245 (47%) already knew themselves to be infected with HIV-1. This proportion increased between 1990 and 1993.

Conclusions—A considerable proportion of patients infected with HIV-1 are not identified by voluntary confidential HIV testing in genitourinary medicine clinics. Substantial numbers of homosexual or bisexual men attending genitourinary medicine clinics continue to practise unsafe sex despite being aware of their infection with HIV-1.

Introduction

As the HIV epidemic evolves, important questions concerning current levels of infection, optimal strategies for detecting people infected with HIV in contact with health services, and the effectiveness of prevention programmes remain unanswered.¹ The occurrence of new episodes of other sexually transmitted diseases among people infected with HIV must be a strong indicator for continuing risk of HIV trans-

mission in the sexually active population. If transmission of these other sexually transmitted diseases is also continuing among those who are aware of their HIV infection then this raises questions about the effectiveness of counselling after testing and the potential benefit of policies designed to encourage HIV testing.

The unlinked anonymous survey of HIV seroprevalence among attenders of genitourinary medicine clinics in England and Wales provided an opportunity to look at these questions because it collects data on current diagnoses of sexually transmitted diseases and patients' awareness of their HIV status, as well as the result of unlinked anonymous HIV tests.

Patients and methods

Six genitourinary medicine clinics and associated laboratories were selected by using the criteria of large case load and willingness to participate for a minimum of five years. Approval for the survey was obtained from the Public Health Laboratory Service and local ethics committees. The principles of the method of unlinked anonymous testing,² which minimises the participation bias inherent in voluntary confidential HIV case finding,³⁻⁵ were followed. The detailed methods applied in the clinics and that for laboratory tests are described elsewhere.⁶

All attenders, including those known to be positive for antibodies to HIV-1, having blood drawn for syphilis serology for the first time during the calendar quarter of attendance were eligible for inclusion in the survey. If patients declared that they had been diagnosed or were known to have been diagnosed as positive for HIV-1 before the current episode of attendance this was recorded on the survey form.

A limited dataset was collected for each eligible attender and was matched at the coordinating centre with the result of the test for HIV-1 on the unlinked anonymous residue of the syphilis serology sample for that attender. The analyses presented in this paper are based on a dataset that contained the following items: diagnosis of sexually transmitted disease for each attender (coded as on the statistical return (KC60) made by genitourinary medicine clinics to the Department of Health), calendar quarter of clinic attendance, age group, exposure category, previous awareness of being infected with HIV, and unlinked anonymous test result. Data indicating the clinic attended were not included within the database to

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BMJ 1996;312:539-42

prevent the remote risk of deductive disclosure.² Exposure categories used for the analysis were homosexual or bisexual men, heterosexual men, heterosexual women, and "other." Attenders known to inject drugs were included in the "other" exposure category and excluded from the homosexual or bisexual and heterosexual categories.

The diagnoses of sexually transmitted disease assigned to attenders were classified according to the likelihood that they indicated a history of recent unprotected sexual intercourse. Diagnoses listed in the box were classified as clinical indicators of recent high risk behaviour.

Cross contamination between some specimens was found to have occurred in one centre during the fourth quarter of 1991 and the first quarter of 1992. All data for the two quarters concerned were removed from the dataset used for the analyses presented in this paper.

Results

The results presented are for 85 441 records for which a survey form and a corresponding laboratory result had been received by August 1994 for patients seen between the beginning of 1990 and the end of 1993 but exclude all patients seen in the last quarter of 1991 and the first quarter of 1992. Overall, 0.6% of eligible patients objected to testing, and specimens from these attenders remained untested. There were no significant differences in objection rates between exposure categories.

Four hundred and sixty four (27%) specimens positive for antibody to HIV-1 from homosexual or bisexual men, 96 (59%) from heterosexual men, and 59 (41%) from heterosexual women were from attenders whose HIV-1 infection remained clinically undetected at the end of that clinic episode (table 1). Two hundred and eighty three (16%) such specimens from homosexual or bisexual men, 24 (15%) from heterosexual men, and 29 (20%) from heterosexual women were

Conditions likely to have been acquired through recent unprotected sexual intercourse

KC60 code	Condition
A1-3	Infectious syphilis
A9	Epidemiological treatment of suspected syphilis
B1.4a-b	Other complicated gonorrhoea (excluding pelvic inflammatory disease and epididymitis)
B1.1-3	Postpubertal uncomplicated gonorrhoea
B1.4c	Gonococcal and chlamydial pelvic inflammatory disease and epididymitis
B1.4b	Gonococcal pelvic inflammatory disease and epididymitis
B2	Prepubertal gonorrhoea
B4	Epidemiological treatment of suspected gonorrhoea
C1-3	Chancroid/donovanosis/lymphogranuloma venereum
C10A	Herpes simplex—first attack
C11A	Wart virus infection—first attack
C13A	Antigen positive viral hepatitis B
C13B	Other viral hepatitis
C4A	Postpubertal uncomplicated chlamydia
C4B	Other complicated chlamydia (excluding pelvic inflammatory disease and epididymitis)
C4C	Prepubertal chlamydia
C4E	Epidemiological treatment of suspected chlamydia
C4F	Chlamydial pelvic inflammatory disease and epididymitis
C4G	Non-specific pelvic inflammatory disease and epididymitis
C4H	Non-specific urethritis (excluding pelvic inflammatory disease and epididymitis)
C4I	Epidemiological treatment of non-specific urethritis and related disease
C5	Chlamydial infection/non-specific urethritis with arthritis
C6A	Trichomoniasis
C8-9	Scabies/pediculosis

Table 1—Awareness of infection with HIV-1 by exposure category by year. (Figures in brackets are percentages of all positive)

Category of exposure	Total tested	Specimens positive for antibody to HIV-1			
		Total (% of total tested)	Aware of infection with HIV-1 before clinic episode	New diagnosis during clinic episode	Undetected infection with HIV-1 at end of clinic episode
Homosexual or bisexual men*:					
1990	1978	359 (18.1)	199 (55)	52 (14)	108 (30)
1991	2810	451 (16.0)	244 (54)	78 (17)	129 (29)
1992	2829	475 (16.8)	279 (59)	79 (17)	117 (25)
1993	2977	440 (14.8)	256 (58)	74 (17)	110 (25)
Total	10 594	1725 (16.3)	978 (57)	283 (16)	464 (27)
Heterosexual men*:					
1990	7487	32 (0.4)	6 (19)	6 (19)	20 (63)
1991	8115	38 (0.5)	13 (34)	5 (1)	20 (53)
1992	8256	23 (0.3)	6 (13)	6 (13)	11 (48)
1993	10 109	71 (0.7)	19 (27)	7 (10)	45 (69)
Total	33 967	164 (0.5)	44 (27)	24 (15)	96 (59)
Heterosexual women*:					
1990	7217	21 (0.3)	6 (29)	3 (14)	12 (57)
1991	8479	32 (0.4)	12 (38)	4 (13)	16 (50)
1992	9155	42 (0.5)	17 (40)	10 (24)	15 (36)
1993	11 410	48 (0.4)	20 (42)	12 (25)	16 (33)
Total	36 261	143 (0.4)	55 (38)	29 (20)	59 (41)
Other/unknown exposure categories:					
1990	1215	69 (5.7)	42 (61)	7 (10)	20 (29)
1991	1067	79 (7.4)	49 (62)	11 (14)	19 (24)
1992	857	70 (8.2)	44 (63)	14 (20)	12 (17)
1993	1480	78 (5.3)	58 (74)	12 (15)	8 (10)
Total	4619	296 (6.4)	193 (65)	44 (15)	59 (20)
Grand total	85 441	2328 (2.7)	1270 (55)	380 (16)	678 (29)

*Excludes attenders known to have injected drugs.

from attenders whose infection was diagnosed during that clinic episode. The remaining positive specimens were from attenders already known to be infected with HIV-1 before that clinic episode.

The proportion of clinically undetected HIV-1 infections fell with age for homosexual or bisexual men ($\chi^2=14.49$; $df=1$; $P=0.0001$; table 2), heterosexual men ($\chi^2=7.93$; $df=1$; $P=0.0049$), and heterosexual women ($\chi^2=6.49$; $df=1$; $P=0.0108$).

Among homosexual or bisexual men the proportion of specimens positive for antibody to HIV-1 that were from attenders not known to be infected with HIV before the clinic episode and that remained undetected fell from 30% (108/359) in 1990 to 25% (110/440) in 1993 (χ^2 for linear trend=4.49; $df=1$; $P=0.0341$). This proportion also fell for heterosexual women from 57% (12/21) in 1990 to 33% (16/20) in 1993 (χ^2 for linear trend=4.53; $df=1$; $P=0.0333$), whereas for heterosexual men there was no significant trend.

There were 30 380 (36%) attendances for which the diagnosis of sexually transmitted disease indicated a high probability of recent unprotected sexual intercourse. Overall, 651 (2.1%) specimens from these attenders were positive for antibody to HIV-1 compared with 1677 of 55 061 (3.0%) of specimens from attendances for which there was no acute sexually transmitted disease diagnosed.

Of the 1725 specimens from homosexual or bisexual men that were positive for antibody to HIV-1, 522 (30%) were from attenders with diagnoses of sexually transmitted disease that indicated recent unprotected

Table 2—Awareness of HIV infection by age in homosexual or bisexual men positive for antibody to HIV-1, 1990-3

Detail	<20 years	20-24 years	25-34 years	35-44 years	≥45 years	Unknown
Known positive	9	93	492	272	95	17
New diagnosis	6	42	148	53	26	8
Undetected infection	3	67	259	102	25	8
With acute sexually transmitted disease	17	33	29	24	17	24

Table 3—Proportion of patients with evidence of probable high risk sexual behaviour by exposure category in specimens from those whose samples were positive for antibody to HIV-1

Exposure category and knowledge of HIV infection before clinic visit	No with acute sexually transmitted disease indicating recent risk behaviour/ total No positive for antibody to HIV-1 (%)				
	1990	1991	1992	1993	Total
Homosexual or bisexual men*					
Aware of infection	49/199 (25)	52/244 (21)	74/279 (27)	71/256 (28)	246†/978 (25)
Not aware	73/160 (46)	82/207 (40)	64/196 (33)	57/184 (31)	276/747 (37)
Heterosexual men*					
Aware of infection	0/6	0/13	0/6	1/19 (5)	1/44 (2)
Not aware	15/26 (58)	11/25 (44)	3/17 (18)	20/52 (38)	49/120 (41)
Heterosexual women*					
Aware of infection	1/6 (17)	0/12	2/17 (12)	2/20 (10)	5/55 (9)
Not aware	2/15 (13)	4/20 (20)	4/25 (16)	5/28 (18)	15/88 (17)
Other/unknown exposure categories					
Aware of infection	8/42 (19)	9/49 (18)	11/44 (25)	4/58 (7)	32/193 (17)
Not aware	7/27 (26)	11/30 (37)	5/26 (19)	4/20 (20)	27/103 (26)

*Excludes attenders known to have injected drugs.

†Diagnoses: for 204 attendances the diagnoses included at least one of gonorrhoea (75), non-specific urethritis (74), or anogenital herpes or anogenital warts (66); 42 attendances were for other conditions.

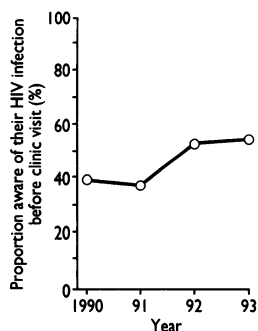


Fig 1—Proportion of homosexual and bisexual men with HIV infection and sexually transmitted disease who were aware of their HIV infection

sexual intercourse (table 3). This proportion declined from 34% (122/359) in 1990 to 30% (134/451) in 1991 and 29% in both 1992 (138/475) and 1993 (128/440). This decline was not significant. There was, however, a significant decline with age in the proportion of homosexual or bisexual men who were infected with HIV and an acute sexually transmitted disease and who attended a clinic (table 2), from a peak of 42% (33) at age 20-24 years to 19% (17) at age 45 years and over (χ^2 for linear trend=23.84; $P=0.0000$).

Of the 522 specimens positive for HIV-1 from homosexual or bisexual men attending with acute sexually transmitted diseases, 246 (47%) were from men known to be infected with HIV-1 before the clinic visit; this proportion increased significantly from 40% (49/122) in 1990 to 55% (71/128) in 1993 ($\chi^2=12.01$; $df=3$; $P=0.0074$, table 3 and figure).

Of the 8869 specimens negative for HIV-1 from homosexual or bisexual men, 30% (2656) were from attenders who had a coexisting "acute sexually transmitted disease," whereas 25% (246) of the 978 specimens positive for HIV-1 from known infected homosexual or bisexual men and 37% (276) of the 747 specimens positive for HIV-1 from infected homosexual or bisexual men who were not known to be infected before the clinic episode were from attenders who had a coexisting "acute sexually transmitted disease" ($\chi^2=28.12$; $df=2$; $P=0.0000$).

Fifty (30%) of the 164 specimens positive for HIV-1 from heterosexual men were from attenders with an acute sexually transmitted disease (table 3). Only one of these specimens was from a man known to be infected with HIV-1 before the clinic visit.

Twenty (14%) of the 143 specimens positive for HIV-1 from heterosexual women were from attenders with an acute sexually transmitted disease (table 3). Five of these 20 specimens were from women known to be infected with HIV-1 before the clinic visit.

Discussion

This survey provides evidence that the application of current policy on voluntary confidential HIV testing in genitourinary medicine clinics in England and Wales fails to identify a substantial proportion of infected patients, particularly heterosexuals, but also homosexual or bisexual men. Even among infected homosexual or bisexual men who had an acute sexually transmitted disease, 43% remained clinically undetected at the end of that clinic episode; although some of these attenders may have refused the offer of an HIV test. Testing all homosexual or bisexual men with an acute sexually transmitted disease would detect only 54% of all attenders with HIV-1 infection that were unknown at the start of the clinic episode. Thus all homosexual or bisexual male attenders should be tested if all HIV infections are to be detected. It is encouraging, however, that the proportion of HIV-1 infections among homosexual or bisexual men and heterosexual women that remained undetected at the end of a clinic episode fell between 1990 and 1993.

The low number of objectors in all exposure categories implies that participation bias is unlikely to have had a major impact on the results. The results of this survey will, however, probably underestimate the true proportion of those known to be infected with HIV attending the participating clinics as patients attending for HIV care may be less likely to be tested for syphilis than other attenders; although this could be offset by people with known infection being more regular attenders than other people. Prevalence estimates in this survey may also be lowered by the tendency, noted at several London clinics, for patients known to be positive for antibody to HIV-1 to seek treatment for an acute sexually transmitted disease at another clinic, where they chose not to reveal their HIV infection. These effects will lead to an over-estimation of the proportion of attenders positive for HIV-1 who are not known to be positive by the attending clinic.

This study provides evidence of continuing unsafe sexual behaviour among homosexual or bisexual men infected with HIV-1 attending genitourinary medicine clinics up to the end of 1993. This is consistent with other data indicating an increase in the incidence of sexually transmitted diseases, including HIV, within the male homosexual or bisexual community in England and Wales between 1988 and 1990.⁸

It is of concern that the proportion knowing themselves to be HIV infected among homosexual or bisexual men positive for HIV-1 and with an acute sexually transmitted disease increased between 1990 and 1993, from 40% to 55%. Some of the cases of "acute sexually transmitted disease" may have been acquired through "safer" sexual practice—for example, oral sex²—or represent longstanding infections that were acquired before diagnosis of HIV-1 infection (although anogenital warts and anogenital herpes accounted for only 27% of these cases) or represent transmission between men mutually aware of their infections. It is, however, unlikely that these represent more than a minority of cases.

The relatively small difference between the numbers of homosexual or bisexual men who were negative or positive for antibody to HIV-1 in the proportion that had an "acute sexually transmitted disease" (25% versus 30%) suggests that changes in sexual behaviour as a result of being diagnosed as infected with HIV are short lived or infrequent. This difference between those positive and negative for HIV could, however, be an underestimate, particularly if attenders are concealing their awareness of being infected or if infected people have an increased susceptibility for other sexually transmitted diseases. None the less, others

Key messages

- Application of current policy on voluntary confidential testing for infection with HIV in genitourinary clinics in England and Wales fails to identify a substantial proportion of infected patients, particularly among heterosexual patients but also among homosexual and bisexual men
- The proportion of infections with HIV-1 among homosexual and bisexual men and heterosexual women that remained undetected at the end of a clinic episode fell between 1990 and 1993
- The coexistence of HIV-1 infection and recently acquired sexually transmitted disease provides evidence of continuing unsafe sexual behaviour among homosexual and bisexual men infected with HIV-1 and attending a genitourinary clinic up to the end of 1993
- The results indicate that those who know they are infected with HIV often do not adopt safer sexual practices, which raises questions about the effectiveness of counselling after tests and the potential benefits of policies designed to encourage HIV testing

have also found that knowledge of being positive for HIV does not necessarily result in the adoption of safer sexual practice.¹⁰ This suggests a failure to deliver effective health education messages to those at highest risk for acquiring HIV and to those who have been diagnosed as being infected with HIV.

The sexual health target for reduction of infection with gonorrhoea set in the government's *Health of the Nation* strategy has been achieved.¹¹ None the less, high levels of sexual ill health continue.^{12,13} New targets are needed for HIV prevention, particularly ones focusing on homosexual or bisexual men.¹²⁻¹⁵ The measures from this unlinked anonymous programme of unrecognised HIV infections seen in genitourinary medicine clinics and acute sexually transmitted diseases seen in men aware of their HIV infection would seem to be suitable targets for clinically relevant national control programmes.

This survey would not have been possible without the support of clinical, clerical, and laboratory staff at clinics and hospitals, whose help is gratefully acknowledged. The development of this survey and others in the HIV prevalence monitoring programme in England and Wales benefited

from discussions with colleagues at the Scottish Centre for Infection and Environmental Health and with Dr A V Swan of the PHLS Statistics Unit.

The members of the survey group from 15 clinics and associated laboratories comprised J Anderson, P Carey, C Carne, D Carrington, L Claydon, A Codd, J Coleman, J Connelly, F Davidson, S Drake, G Kinghorn, G Kudesia, A Lawrence, N Lightfoot, R Maw, P R Mortimer, J Munro, S Murphy, K Mutton, J Pennington, A Pozniak, M Prince, K Radcliffe, N Sankar, M S Shafi, D Shanson, S Skidmore, C Sonnex, R Sparks, A Uttley, A Wade, P Watkins, P Wilson, T Wisdom, T Wreghitt, and G Zelin.

P Carey, C Carne, J Coleman, S Drake, A Lawrence, P R Mortimer, J Munro, K Mutton, D Shanson, C Sonnex, R Sparks, A Wade, and T Wreghitt contributed to the data presented in this analysis.

Funding: the Medical Research Council with funds provided by the Department of Health.

Conflict of interest: None.

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(Accepted 5 December 1995)

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BMJ 1996;312:542-3

History of chickenpox and steroid cards: a new warning?

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National steroid cards were designed to inform patients treated with corticosteroids of the dose and potential hazards of treatment. Recent reports of severe chickenpox associated with steroid treatment^{1,2} have highlighted a potential need to amend the current steroid card. In May 1994 the Chief Medical Officer wrote to all doctors in the United Kingdom regarding the hazards of exposure to chickenpox.³ With this background, we asked patients taking oral steroid treatment about the information they had received from their doctors.

Patients, methods, and results

Between September and November 1994 all patients who presented to the outpatient pharmacy of Chelsea and Westminster Hospital with a prescription for oral prednisolone were interviewed. Patients completed a standardised questionnaire asking their age, whether they carried a steroid card, if they had had chickenpox, and their doctors' instructions on stopping steroids and side effects. Patients were also asked about the condition for which they considered the prednisolone had been prescribed, together with the dose and duration of treatment.

A total of 105 consecutive patients presented with a prescription for steroids during the three month study. Of these, 102 (46 male and 56 female) patients (or accompanying immediate family with a child patient) fully completed the questionnaire; the median age of patients was 50 years (range 1 to 92).