REVIEW

Behavioural surveillance: the value of national coordination

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Sex Transm Infect 2002;**78**:398–405

Behavioural surveillance programmes have enabled the description of population patterns of risk behaviours for STI and HIV transmission and aid in the understanding of how epidemics of STI are generated. They have been instrumental in helping to refine public health interventions and inform the targeting of sexual health promotion and disease control strategies. The formalisation and coordination of behavioural surveillance in England and Wales could optimise our ability to measure the impact of interventions and health promotion strategies on behaviour. This will be particularly useful for monitoring the progress towards specific disease control targets set in the Department of Health's new Sexual Health and HIV Strategy.

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Accepted for publication 5 August 2002

Sexually transmitted infections (STI) and HIV result in considerable morbidity and mortality with substantial social and economic cost.[1] They place considerable burden on healthcare resources required for their treatment and prevention as well as long term management required for their sequelae including ectopic pregnancy, cervical cancer, and infertility. STIs are important in their own right but may also be markers for risk of HIV. Teenagers and young adults, women, and some ethnic minority groups are disproportionately affected.[2–5] Sexual behaviour remains the key determinant of STI transmission. Thus, the key indicators for understanding and monitoring transmission rates need to be appropriate for the population and risk group under consideration.

There is evidence of deterioration in sexual health in the United Kingdom. Surveillance data indicate large recent increases in the numbers and rates of bacterial and viral STIs in the United Kingdom. In 2001 there were 673 000 new episodes seen at genitourinary medicine (GUM) clinics in England.[6] New diagnoses of STI between 1996 and 2001 rose by 86% for gonorrhoea, 501% for infectious syphilis, and by 106% for genital chlamydia. The highest numbers of HIV diagnoses were seen in 2001 and there is evidence to suggest that HIV transmission is not slowing.[7] There have also been outbreaks of syphilis in homosexual men, many of whom have HIV.[8 9] These rises have been attributed to increasing high risk sexual behaviour, including unprotected sex and high rates of partner change particularly in young heterosexuals[10 11] and men who have sex with men (MSM).[8 9 12] Data from the National Survey of Sexual Attitudes and Lifestyle (Natsal) confirm this.[13] Similar increases have been seen in western[14 15] and eastern Europe[16 17] and the United States.[18–20] The resurgence of acute STI, the emergence of STI outbreaks among MSM, and concomitant increases in the risk of HIV transmission are cause for concern.

HIV and STI surveillance data in the United Kingdom are useful for monitoring trends in diagnoses. However, they are relatively poor indicators of infection incidence and burden in the population as they are influenced by a number of factors including frequency of symptomatic disease, test sensitivity and uptake, health seeking behaviours, and referral patterns. These factors also limit their usefulness for measuring the success of prevention programmes. Several factors unrelated to prevention programmes can contribute to observed stabilisation or decrease in STI and HIV prevalence in a given setting. These can include mortality, saturation effects in subpopulations at higher risk, differential migration patterns, or sampling bias.

Although disease surveillance data suggest deterioration in sexual health in the United Kingdom since the mid-1990s, they do not provide information on the sexual behaviours or mixing patterns that may be underlying this trend. Public health surveillance of sexual behaviour is needed to measure risk behaviours that will both allow the monitoring of the effectiveness of prevention programmes and may provide early warning signs for the spread of HIV and STIs. This has been achieved in many other countries including some in Asia,[21–23] Africa,[24] Europe,[25] and the United States.[26] Trends over time are needed because while one-off studies can provide useful baseline information trends are necessary for interpretation. The outcome should be timely, relevant, and have high quality data, which can allow those in health promotion and disease prevention to respond effectively to observed changes.[27]

WHAT IS BEHAVIOURAL SURVEILLANCE?

Behavioural surveillance is the ongoing systematic collection, analysis, and interpretation of behavioural data relevant to understanding trends in the sexual transmission of infection.[28] This should be followed by timely dissemination of these data to those responsible for prevention and control. Knowledge of the size of the population groups at risk, and the nature and determinants of risk within those populations are necessary. Behavioural surveillance generally aims to monitor trends in two broad groups of indicators;

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firstly, those that allow the identification of population subgroups at increased risk—for example, age, sex, sexual orientation, and ethnicity. Secondly, those behaviours that are amenable to change—for example, number and type of sexual partnerships, condom use, unprotected anal intercourse. The validity and reliability of sensitive data on behaviour are critical as they are self reported and can't be directly measured.[29] The triangulation of a small set of core measures selected from surveillance data and other complementary sources can strengthen the interpretation of these data as the relation between sexual behaviour and STI transmission is complex.

Any attempt to establish behavioural surveillance in England and Wales should therefore seek to answer the following questions: which behaviours are important determinants of current STI and HIV transmission? How are these behaviours distributed and how can they be measured over time? What key behavioural data are not currently being collected? How best can these gaps be filled?

HOW MAY IT BE ACHIEVED?

General population surveys

Behavioural surveillance is generally conducted at two levels, among the general population and within targeted risk groups. General population surveys are useful in assessing overall trends and distribution of behaviours that may be associated with STI transmission. These provide the most robust estimates of prevalence of behaviours, as they largely avoid the biases inherent in most targeted population surveys. Although regular repeated surveys are needed to measure changes in behaviours over time their expense may make this difficult. Adding additional questions to existing population social surveys is a method that has been successfully deployed in other countries[30] as a cost effective way of getting population based estimates. This has been suggested for collecting sexual behaviour data in the United Kingdom.[29] A large number of surveys are currently carried out which could be used in this way.[31 32] This kind of survey makes it possible to access a general population sample, but does limit the number of questions that can be asked.

General population surveys are usually less suitable for obtaining detailed information on population subgroups at highest risk. These groups tend to be small, more clustered, and difficult to access and small subgroups of individuals with relatively rare risk behaviours may not be captured in sufficient numbers. Groups of particular interest for HIV and STI transmission include homosexual and bisexual men, injecting drug users, commercial sex workers, and ethnic minorities, particularly those from or who have contact with countries with a high HIV/STI prevalence. These problems can be overcome through adapting study designs to include oversampling and focused enumeration.[13]

Targeted population surveys

Targeted population surveys are also a useful adjunct to these general population surveys as they give greater detail on populations at highest risk. However, the difficulty in accessing these populations makes probability sampling costly. More cost effective sampling strategies are needed; these can include advertising, snowballing, recruiting from GUM clinics, and social and commercial venues. However, these strategies may result in a sample selection bias and decreased representativeness of results. Targeted behavioural surveillance can include serial cross sectional surveys, using the same sampling strategy and using core questions to ascertain the prevalence of risk behaviours.

The disadvantage of targeted population surveys is that they are likely to be unrepresentative, given the nature of the convenience sampling. Those accessed through this mixture of social venues can only be representative of those using these sites. In addition, even among venue attenders the behaviour of study respondents may systematically differ from non-respondents. In order to overcome this problem, surveys from a range of settings are needed, in order to achieve a more representative sample. New and innovative ways of accessing these populations are needed—for example, accessing MSM through internet chatrooms.[33 34] Cross comparability of surveys done in different populations accessed through different means will allow an overview picture of the distribution of behavioural risk within the population under investigation. Questions that will allow the linking of the populations will enhance the interpretation of the individual surveys.[35]

Behavioural surveillance in England and Wales: assessing the existing capacity

Disease surveillance

Current surveillance systems collect limited data on the behavioural determinants of STI transmission. Where they exist they are often limited to facilitate ease of completion by busy clinical staff. Most systems rely on methods more focused on disease outcome, practicality, uniformity, and rapidity rather than on obtaining full demographic and behavioural details. Generally, the additional data collected are minimal (typically age, sex, sexual orientation) (table 1). These allow the grouping of diseases by risk factors, although clearly these are not behaviours amenable to change. Some enhanced surveillance systems have been developed that include more detailed behavioural data to allow the characterisation of those with diagnosed infections[36 37] (table 1) For example, the enhanced KC60 surveillance system will not only allow more risk factor information to be collected on an individual basis, but will also allow rates of co-infection and re-infection of STI to be examined and core groups to be more accurately described.[3 38]

There is comprehensive national surveillance of AIDS cases and diagnosed HIV infections.[39–41] This surveillance system has recently been enhanced, and now clinicians are also asked to report all newly diagnosed HIV infections. The new clinician HIV and AIDS report form collects more behavioural data at the time of first HIV diagnosis (table 1) and provides the most comprehensive picture of all surveillance systems.

The unlinked anonymous HIV seroprevalence surveys provide sentinel HIV prevalence data and have been ongoing since 1990.[42] Limited demographic and behavioural data are collected with the unlinked residual specimens following clinical tests. The surveys cover both those at higher risk of infection, such as homosexual men and heterosexuals attending GUM clinics and injecting drug users attending services, and a more general population sample through monitoring HIV prevalence in over 60% of all pregnant women. The survey of injecting drug users differs in that a voluntary saliva sample is provided with a self completed questionnaire detailing demographic, sexual, and drug injecting behaviour. This survey represents some of the most detailed sexual behaviour data collected within the existing surveillance systems.[43]

Data from the National Blood Service (NBS) provide prevalence information in a lower risk population group, as the criteria for donation excludes those at increased risk of blood borne infections, including men who have had sex with men, those who have ever injected drugs, and those who have had heterosexual contact with high risk partners[44] (table 1). Laboratory reports for confirmed acute hepatitis B are also routinely collected nationally.[45 46]

BEHAVIOURAL SURVEYS

Table 2 illustrates existing ongoing behavioural surveys carried out by different academic and research groups in Britain. Two general population surveys of adults are currently carried out. The first, Natsal, a probability sample study has been carried out twice a decade apart,[13 47] remains the largest probability sample study of its kind in Britain. The 2000 survey

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Table 1 Data currently available from HIV and STI surveillance—ongoing surveillance

Name and custodian	Description	Geographical area	Population covered	Time period	Demographic	Behavioural	Biological	Reference
Sexually transmitted infection surveillance								
New episodes seen at genitourinary medicine clinics (KC60). CDSC	Statutory reporting of all episodes diagnosed at GUM clinics	National	All episodes diagnosed at GUM clinics	1917–	Age group, sex	Sexual orientation (selected diagnoses)	STI diagnosis	6
Enhanced Surveillance of sexually transmitted infections in England. CDSC	Individual based KC60 by clinic, statutory reporting	London	All individuals attending GUM clinics	2000–	Age, sex, ethnicity, residence	Sexual orientation, previous STI, coinfections, repeat infections	STI diagnoses	
Gonococcal resistance to antimicrobials surveillance programme (GRASP). CDSC	Active, sentinel surveillance system prompted by laboratory referrals of gonococcal isolates to determine the epidemiology of antimicrobial resistance in north. *N gonorrhoeae* in England and Wales. Sampling for 3 months of each year.	30 GUM clinics	Individuals with antibiotic resistant gonococcol infections	2000–3	Age, sex, ethnicity, residence	Sexual orientation, number of sexual partners, region of sex abroad, concurrent STI, previous gonorrhoea	Gonorrhoea, antibiotic resistance, site of infection	37
Routine laboratory treponemal reporting. CDSC	Laboratory surveillance, additional information completed by clinicians sending specimen. Currently under review.	6 reference laboratories	All cases of infectious syphilis referred to reference laboratory for confirmation	1996–	Age, sex, country of birth, ethnicity, source of specimen	Sexual orientation, country where infection acquired and partners infection, pregnancy	Final syphilis diagnosis	69
Enhanced surveillance for infectious syphilis in the London Region. CDSC.	An enhanced study to monitor the number of cases and associated risk factors for infectious syphilis in London. Established in response to clusters of syphilis in homosexual men.	London	All cases of infectious syphilis (primary, secondary, and early latent) diagnosed at GUM clinics	April 2001–	Sex, age, county of birth, ethnicity	Sexual orientation, relevant social networks, reason for attending, number of sexual partners, where infection likely acquired, commercial sex workers	Stage of infection, HIV status (if known)	36
HIV infection surveillance								
HIV laboratory reports. CDSC	Reporting system from laboratories	National	All newly diagnosed HIV infections	1985–	Sex, age, ethnicity	Likely route of infection and location of infection if acquired heterosexually. Previous negative tests.	HIV-1/2 infection	39
AIDS case reports. CDSC	Reporting system from clinicians	National	All newly diagnosed AIDS cases	1985–99	Sex, age, ethnicity, country of birth	Likely route of infection and location of infection if this is ongoing heterosexual spread. Previous negative tests	AIDS case diagnoses. Pre-AIDS ARV treatment	39
Clinician HIV reporting. CDSC	Reporting system from clinicians	National	All newly diagnosed HIV infections	2000–	Sex age, ethnicity, country of birth, date of entry to UK	Various, depending on likely route of infection., including year of first sex, previous HIV tests, GUM clinic attendance and pregnancy history.	AIDS case diagnoses. Pre-AIDS ARV treatment	39
HIV infection route follow up. CDSC	Investigation, to interview where necessary of all newly diagnosed infections with no identified risk factor for HIV, to establish likely route of infection, or confirm ongoing heterosexual transmission in UK.	National	Newly diagnosed HIV infections reported with no identified likely route of infection	1991–	Sex age, ethnicity, country of birth, date of entry to UK, marital status	Detailed sexual behaviour, including previous STI and HIV test behaviour	HIV diagnosis	40
Survey of prevalent HIV infections diagnosed (SOPHID). CDSC	Annual cross sectional survey of all HIV diagnosed individuals receiving care	National	Prevalent diagnosed HIV infections	1995–	Sex, age, ethnicity	Likely route of infection	CD4 count, level of antiretroviral therapy	41
Unlinked anonymous survey of dried blood spots. CDSC	Repeated cross sectional survey unlinking and testing residual infant blood collected for metabolic testing for maternal HIV antibody	National (6 regions)	Pregnant women giving birth	1992–	Age, ethnicity, country of birth, area of residence		Infant blood tested for maternal HIV antibody	42

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Table 1 continued

Name and custodian	Description	Geographical area	Population covered	Time period	Demographic	Behavioural	Biological	Reference
Unlinked anonymous survey of GUM clinic attenders. CDSC	Repeated cross sectional survey unlinking and testing residual blood for HIV	Sentinel (15 GUM clinics)	GUM clinic attenders receiving syphilis testing	1990–	Sex age, country of birth	Sexual orientation, STI diagnoses at visit, last HIV negative test	Serum sample tested for HIV, STI diagnoses	42
Unlinked anonymous survey of injecting drug users. CDSC	Repeated voluntary anonymous cross sectional survey with self completed questionnaire and saliva sample	Sentinel	Injecting drug users contacting services	1990–	Sex, age	Sexual orientation number of sexual partners, condom use, drug injecting practices, previous HIV test	Saliva tested for HIV, hepatitis B and C	42
Blood (and tissue) donations. National Blood Service	Testing of all donations. Detailed information collected for all confirmed positives	National	Population selected to donate blood (and tissues)	1995– (HIV 1986– HCV 1991)	Sex, age, ethnicity, country of birth, region of residence	Possible exposures to infection and location and time. Details of high risk partners, if heterosexual. Previous negative tests	HIV, HBV, HCV and *T pallidum*	44
Antenatal screening. National Blood Service	Antenatal screening of pregnant women carried out by the National Blood Service	Selected areas	Pregnant women	HBV 2000– HIV 2001–	Age, ethnicity, region		HIV, HBV	44
Laboratory reports of acute hepatitis. CDSC	Laboratory reports of acute hepatitis B	National	Laboratory confirmed acute hepatitis	1985–	Sex, age	Sexual orientation	HBV	45, 46

also collected and tested urine samples for genital *Chlamydia trachomatis* using ligase chain reaction (LCR) techniques to provide the first national prevalence estimates.[48] The second, the Omnibus survey is a multipurpose survey of the adult population routinely carried out by the Office for National Statistics. A module on contraceptive use and general sexual health including condom use has been included annually since 1997[49] (table 2).

A national survey of young people is currently being carried out by the Teenage Pregnancy Unit, as part of an evaluation of the teenage pregnancy strategy (table 2). An individual based tracking survey will be repeated three times a year to collect information from young people aged 13–21 and parents of young people aged 10–17 over a 3 year period. It will collect information on knowledge, attitudes, and behaviours around sex and relationships.[50]

A number of annual surveys of homosexual men attending social venues,[51–53] GUM clinics,[51] and Gay Pride events[54] are currently carried out (table 2). These use a stable set of behavioural indicators that can be monitored repeatedly. The three surveys developed and used a common set of core behaviour questions that allow comparisons of the three populations of MSM. A number of other surveys of injecting drug users[55 56] and among ethnic minorities[2 4 57 58] have also been carried out but none have been sustained. There is clearly a need for more ongoing investment and support to continue projects once established.

HOW DO WE USE BEHAVIOURAL DATA?

Behavioural surveillance data can be used in a number of ways. They can allow the monitoring of the risk behaviours underlying HIV and STI transmission over time. UNAIDS has recommended that behavioural data collection should be a central part of HIV and STI surveillance programmes.[28 59]

A range of indicators can be used to measure the effectiveness of both HIV and STI prevention interventions in England and Wales. These include the behavioural determinants of disease transmission (for example, condom use, reported sexual partnerships) as well as disease incidence and prevalence in England and Wales. These "prevention indicators" have been developed to monitor four key areas relevant to HIV transmission and disease prevention and include HIV prevalence, HIV incidence, risk behaviour, and healthcare utilisation.[42] The indicators for monitoring the success (or failure) of HIV prevention in men who have sex with men are illustrated in table 3. Similar indicators have been used elsewhere,[25 26 60] although the use of behaviour change as a proxy marker for STI incidence has raised debate.[61 62] The disproportionate effect of some factors on the transmission dynamics of STI means that reported risk behaviour doesn't entirely correlate with transmission. The role of sexual networks in transmission is important and behavioural surveillance cannot always measure these. Prevention indicators have been evaluated in a number of settings, however, and found to be useful for measuring the success of prevention programmes, although multiple sources of data are necessary to provide context.[63] This in turn facilitates more effective HIV prevention and community planning. Prevention indicators may be developed using a variety of available data within ongoing surveillance systems. This allows the interpretation of HIV and STI trends within different population groups, and through the monitoring of risk behaviours, can indicate when outbreaks of infection may occur.[64]

A potential research priority highlighted in the new national strategy for sexual health and HIV was a need for better understanding of the sexual networks, health seeking behaviour, and risk behaviour of targeted groups.[65] The monitoring of behavioural indicators within different population groups would provide data on both health seeking behaviours

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Table 2 Behavioural surveillance data currently available from external academic and research groups,—ongoing surveillance

Name and custodian	Description	Geographical area	Population covered	Time period	Demographic	Behavioural	Biological	Reference
National Survey of Sexual Attitudes and lifestyles (I and II). Department of STD Royal Free and University College Medical School.	A survey of sexual attitudes and lifestyles in British population, using stratified probability sample of men and women aged 16–44. Interviews using CAPI and CASI	National	General population, 11161 surveyed	2000	Ethnic, socioeconomic, and demographic data	Sexual behaviour and attitudes, including partner formation, sexual mixing and STI acquisition	Urine sample tested for chlamydia	13
Omnibus Study, Office for National Statistics.	Multipurpose survey of population. Interviewing carried out each month; questions cover a variety of topics reflecting different users requirements. Random probability sample of 3000 private households selected monthly using postcode address file as sampling frame. Uses CAPI	National	General population, adults aged 16 and over	1997–	Age, ethnicity, residence	Contraception, condom use, sexual orientation, number of sexual partners in past year, knowledge of STIs		49
Evaluation of teenage pregnancy strategy. Tracking survey. Teenage pregnancy unit. London School of Hygiene and Tropical Medicine, University College London and BMRB Social Research.	Individual based tracking survey of knowledge attitudes and behaviour, using random location sampling. Fieldwork included 200 sampling panels in England using areas with higher density of 13–44 year olds. Interviews using CAPI, and self completion for sex questions	National	12150 young people (aged 13–21) and parents of young people (aged 10–17).	Oct 2000– March 2003	Age, sex, socioeconomic status	Knowledge attitudes and behaviour around sex and relationships and impact of awareness of teenage pregnancy strategy's media campaign		50
Gay Men's Sexual Health Survey. Department of Sexually Transmitted Diseases. Royal Free and University College Medical School.	Repeated cross sectional survey to estimate prevalence of high risk sexual behaviour among homo/bisexual men in London. Sites selected to be representative of GUM clinics and commercial venues. Original sampling frame defined using a register of all known primarily gay venues in London	Inner London, Brighton and Manchester in 2000	Homosexual men resident, socialising or using sexual health services in London	1996–	Age, ethnicity, residence, education and employment and health service use including perceived HIV status and HIV testing history.	Number of sexual partners, age of first anal intercourse, age of last sex partner, condom use and HIV status of UAI partners	Saliva sample, tested for HIV, since 2000	51
Gay Men's Sex Survey. Sigma Research.	Repeated cross sectional survey of homo/bisexual men. Self completed questionnaire. Questions vary by city, but set of core questions collected through the study period. Additional recruitment has been done through HIV health promotion agencies and free gay newspaper	National (7 cities)	Homo/bisexual men attending Gay Pride festivals and events	1993– (excluding 1996)	Age, ethnicity, education, residence, health service use including previous HIV tests, perceived HIV status and previous STIs	Sexual behaviour and attitudes including condom use, number of partners, serostatus of partners		54
The 4 Gym Study. Camden and Islington Community Health Services NHS Trust and The Royal Free Hospital School of Medicine	Repeated cross sectional questionnaire survey of MSM attending gyms, including peer education evaluation	Inner London	Homosexual men attending 5 gyms in inner London	1997–	Age, residence, ethnicity, education	Sexual orientation, drug use, last HIV test, number of sexual partners, HIV status of partners		52
Royal Free Hampstead NHS Trust Hospital	Repeated cross sectional questionnaire survey of all attending for HIV tests within a period of time. Investigates the sexual behaviours of those seeking HIV tests Comparison of behaviours of first testers with repeat testers.	One London HIV testing clinic	Population attending HIV testing clinic including heterosexuals and homosexuals	1995–6, 1998–9, 2002–3	Age, ethnicity, residence, education	Number of sexual partners, health care use, previous HIV tests, reason for tests	HIV test result	70

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Table 3 Prevention indicators for HIV and hepatitis transmission in homo/bisexual men

	Area	Subcategory	
Prevalence markers			
New diagnoses of HIV infections	UK	<25	
		>25	
		Total	
Prevalent diagnosed HIV infections receiving care	England	All	
First HIV tests at six sentinel laboratories	England	Total	
		Proportion positive	
Prevalence of previously undiagnosed HIV infection in GUM clinic attenders†	London	<25	
	Elsewhere in England and Wales	<25	
Incidence markers			
Median age at diagnosis of HIV infection	UK	All	
Median CD4 counts at year of HIV infection diagnosis‡	England and Wales	<25	
		>25	
Laboratory reports of acute hepatitis B acquired through sex between men	England and Wales	All	
Markers of risk			
Homosexually acquired gonorrhoea	England and Wales	All	
Acute STI in HIV positive GUM clinic attenders	England and Wales	Known positive	Proportion with STI
			Number with STI
			Total
Percentage reporting unprotected anal intercourse in the past year	London	Any partners	
		Partners of unknown or serodiscordant HIV status	
Markers of healthcare utilisation			
Attending GUM clinic in the past year	London	Proportion	
		Number	
Having an HIV test in the past year	London	Proportion	
		Number	
HIV tests carried out at GUM clinics§	England and Wales	Number	

†Undiagnosed before the clinic attendance.
‡Mean CD4 count.
§HIV testing with counselling: new episodes seen at genitourinary medicine clinics.

and risk behaviours. Behavioural surveillance could also measure progress towards increased HIV testing of GUM clinic attendees through monitoring HIV testing patterns in different population groups.

Finally, behavioural surveillance data will enable us to identify priority areas for further in-depth epidemiological or socioanthropological research. Much of this research should be developed in collaboration with local academic and service partners in the most vulnerable areas or population groups.

WHAT ARE OUR OPTIONS?

Behavioural surveillance programmes have now been implemented in the United States,[26 66] Switzerland,[25] Australia, and Hong Kong.[67] The United States has formed a HIV/STD Behavioural Surveillance Working Group to build and maintain a behavioural surveillance system for HIV and STI. They have achieved this through developing standardised measures of risk behaviours for comparability of data across systems and used these in monitoring a combination of general population, at-risk populations, and infected populations. Modules of questions have been provided at the national level for states to use as appropriate.[66] In addition, HIV prevention indicators have been developed, which have set out specific indicators suitable for monitoring at state and local level. Collection of data for these is coordinated at local level.

Canada has similarly combined national behaviour telephone surveys with more targeted behavioural surveys in homosexual men and injecting drug users (IDU) although they have not established nationally standardised modules of questions. Australia has used a combination of targeted behavioural surveys in MSM and IDU, from which key indicators are coordinated nationally with HIV surveillance and incidence data. They are currently moving towards national coordination of STI surveillance,[68] and the development of a coordinated national approach to collection of behavioural risk factor data. The first national survey of sexual health and sexual behaviour and attitudes administered through telephone interview is currently being carried out. Hong Kong has established a behavioural surveillance system, carrying out an annual general population survey of sexual behaviour in men aged 18–60 using a combination of personal interview and a prerecorded telephone interview using a mobile phone.[23]

A combination of approaches could be used in England and Wales. A behavioural surveillance unit (BSU) within the HIV and STI Division has now been established at the Communicable Disease Surveillance Centre (CDSC). In association with key external partners the unit aims to collate data derived from ongoing local and national sexual behavioural surveillance and research programmes within CDSC and outside.

The BSU will streamline current behavioural data collection through existing surveillance systems. Collaborative partnerships with academic and research institutions involved in behavioural research will be established to define and collate key behavioural indicators relevant to HIV and other STI transmission. These indicators will include sexual behaviours such as number of sexual partners, types of sexual intercourse (vaginal, anal, and oral), and potentially preventative behaviours such as condom use and health service use for HIV and other STI screening. This would give an overview of behaviours at the population level in both the general population and in those with disease. A surveillance system, which will allow the prospective monitoring of the important risk indicators, could then be established.

A set of core questions will be established, which will draw on existing validated questions used in a variety of studies. This will enable improved comparability of data from diverse sources, at both national and local level. It will provide a comprehensive picture of sexual health, which can be monitored over time.

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Key points

- Surveillance data show large recent rises in STIs in the UK but lack details on the sexual behaviours and mixing patterns underlying these trends
- Behavioural surveillance has successfully monitored the effectiveness of prevention programmes internationally
- Key indicators will be produced from the wealth of existing disease and behavioural survey data available
- The impact of interventions and health promotion strategies on behaviour in England and Wales can be measured using these indicators

As a secondary, longer term objective, the BSU will work towards developing new behavioural surveillance systems for monitoring groups where there are currently inadequate data. Specially designed studies will be developed to complete the knowledge gaps—for example, in primary care and in ethnic minorities, where data cannot be obtained through enhancing existing systems. Again this is likely to be best achieved in partnership with external collaborators.

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Enhanced risk of HIV sexual transmission during structured treatment interruption

We report a case of HIV transmission through sexual intercourse while the sexual partner underwent antiretroviral structured treatment interruption. We would like to underline that giving proper information about a higher contamination risk during structured treatment interruption is a critical issue. Moreover, we consider that it is the responsibility of a medical investigator and physician to deliver a clear message in order to reinforce prophylaxis indications for sexual intercourse during this period.

A patient was infected with HIV for 9 years when he started HAART. At this time, his CD4 count was 280×10^6/l and plasma viral load was 5.1 $\log_{10}$/ml. A first structured treatment interruption (2 months' duration) was proposed after 2 years, while plasma viral load was undetectable. He was asked to use preservatives strictly at this time. A peak of HIV replication was observed (4.3 $\log_{10}$/ml). Treatment was then reintroduced. One year later, he was still healthy (CD4 count 450×10^6/l and undetectable plasma viral load). He asked for a new structured treatment interruption. Plasma viral load reached 4.6 $\log_{10}$/ml 2 months later.

This homosexual man had a regular HIV negative sexual partner for 2 years. His HIV serology was found to be negative 2 months before the second structured treatment interruption. This sexual partner experienced a short period of unexplained fever 2 months after his boyfriend's treatment was discontinued. He was found to be HIV positive 4 months after structured treatment interruption. He denied having had any sexual relationship with other sexual partners during this period, as well as any other risk factor for HIV transmission. Moreover, genetic sequencing of the viruses, which was performed in both patients at the same date, revealed minor mutations on the protease gene (L63P, A71V, and V77I) in both patients without any mutation on reverse transcriptase, which is another point to suggest the virus transmission by our patient.

Our HIV infected patient told us that he practised safe sex systematically during the first years of HIV infection, but that it was less systematic when viral load became undetectable (around 20% of unprotected sexual intercourse during the past 2 years with this partner). He practised safe sex during the first structured treatment interruption, but not during the second one. Both of them denied any record of sexually transmitted infection except HIV. They were found to be negative for hepatitis B and C and syphilis.

Structured treatment interruption is an attractive strategy currently in evaluation in HIV-1 infected patients after long term viral suppression. As far as we know, antiretroviral interruption does not reduce therapy efficacy once reinitiated, delaying the reduction of viral load.[1] During the phase of drug interruption, plasma HIV RNA rebounds to detectable levels within days of stopping HAART (median increase 0.2 log/day).[2] HAART treatment decreases HIV RNA concentration in blood and is generally associated with a decrease of seminal HIV RNA.[3] Moreover, an increase of HIV RNA in plasma is known to enhance the risk of transmission.[4] Finally, we may assume that a sudden increase in HIV RNA in blood during structured treatment interruption may induce a viral rebound in semen.

Some key messages have to be taken into account. Firstly, the impact of sexual transmission during clinical trials assessing the benefit/risk ratio of structured treatment interruption has to be evaluated prospectively as a side effect of the strategy. Secondly, patients have to be informed that they are particularly at risk of HIV transmission during this period and that sexual relations have to be heavily protected when antiretroviral regimen is stopped. It is the responsibility of investigators involved in such trials to inform patients. Thirdly, in order to avoid complaints against physicians, we believe that patients must be informed of this very high risk period.

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Accepted for publication 30 September 2002

Chaperoning in genitourinary medicine clinics

In 1996 the General Medical Council recommended, where possible, offering chaperones to patients during intimate examinations. This advice was incorporated into a report from a Royal College of Obstetricians and Gynaecologists working party.[1] Subsequently, Torrance *et al* performed a postal survey of practice in 175 genitourinary medicine (GUM) clinics in the United Kingdom.[2] This study also concluded that chaperones should be offered to patients more widely during genital examinations in genitourinary medicine (GUM) clinics.[2] In contrast, other studies have shown that male patients are comfortable with genital examinations being performed by doctors of either sex,[3] and that it is not necessary to provide a chaperone when male patients are examined by a male doctor.[4]

We carried out a postal survey of the use of chaperones in 31 GUM clinics in the North Thames Region in order to assess current practice. Responses were received from 20 centres (64.5%). Only two (10%) clinics had a written clinic policy and only one (5%) had carried out a patient survey on views about the provision of chaperones. None of the clinics had carried out a staff (nurses and doctors) survey of their views about chaperoning.

We identified two interesting observations (table 1). Firstly, there was a significant difference in provision of chaperones for female patients, depending on whether the person carrying out the examination was a female doctor (12/20) or a female nurse (1/20); Yates's corrected χ^2 test = 11.40, 1 df, $p<0.001$. Secondly, there was a difference in provision of chaperones for female patients examined by female doctors (12/20) compared with male patients examined by male doctors (2/20); Yates's corrected χ^2 test = 8.90, 1 df, $p<0.003$ (table 1).

In addition, it was noted that in 18 clinics not offering routine availability of chaperones for male patients being examined by a male

Table 1 Results of a postal survey of practice in 20 GUM clinics in the North Thames Region

	Chaperone offered	
	Yes	No
Female patient:		
Female doctor	12	8
Female nurse	1	19
Male doctor	20	0
Male nurse*†	12	0
Male patient:		
Female doctor‡	4	15
Female nurse§	3	15
Male doctor	2	18
Male nurse†	1	18

*Seven clinics do not allow this interaction; †one clinic does not have male nurses; ‡one clinic does not allow the interaction; §two clinics do not allow this interaction.

doctor or nurse, a chaperone would be offered in six clinics (33%) for cases of sexual assault, or for colposcopy. A chaperone would also be offered for the procedure of prostatic massage in five clinics (28%). Several clinics reported that they were more likely to offer chaperones to those patients with a past history of aggressive behaviour towards staff or to those with psychiatric problems.

Our study does not inform the discussion as to who should act as chaperone in GUM clinics. Previous studies in general practice have suggested that adolescent females prefer a female relative to be present during a genital examination.[5] In the context of the GUM clinic, perhaps the specialist nurse or healthcare assistant is the ideal person—as in addition to reassuring the patient, they may aid the examiner and safeguard both patient and healthcare worker against allegations of inappropriate behaviour. In some small clinics this may be an impossible target to meet. However, the time and cost of resolving allegations against healthcare workers must be balanced against the costs of employing appropriate staff.

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Accepted for publication 30 September 2002

Cytokine profiles in HIV seropositive patients with tuberculous meningitis

The immunological response in pulmonary and pleural tuberculosis has been extensively studied. However, the response in tuberculous meningitis has not been well documented.[1] In pulmonary disease, exposure to tuberculous antigens results in a T cell and natural killer cellular response, elaborating various cytokines, mainly of T helper type 1 (Th1) origin. Stimulated macrophages elaborate tumour necrosis factor (TNF) α, interleukin (IL) 12, and IL 1, promoting further recruitment and activation of macrophages and lymphocytes.

TNF α correlates with disease severity and may contribute to tissue necrosis; however, TNFα has also contributed to survival in mouse studies.[2] Transforming growth factor β (Th3 cytokine) suppresses macrophage activation. IL 2 may be beneficial in promoting an immune response in HIV seropositive patients. Th1 and Th2 cytokine responses have been observed in cerebrospinal fluid (CSF) of HIV seronegative patients with tuberculous meningitis.[3 4]. Whether the response is similar in HIV seropositive patients with tuberculous meningitis is unknown.

We studied the cytokine response and its correlation with disease severity in HIV seropositive and HIV seronegative patients with tuberculous meningitis.

Tuberculous meningitis was diagnosed on clinical and CSF examination after exclusion of viral, acute bacterial, and other causes of aseptic meningitis. Disease severity was assessed according to the Medical Research Council stages 1 to 3. HIV ELISA was done on all patients. CSF samples were subjected to microscopy, culture, protein and glucose analysis, Venereal Disease Research Laboratory test, fluorescent treponemal antibody analysis, cryptococcal antigen analysis, viral studies, cysticercus ELISA, CD4 counts, and determination of concentrations of adenosine deaminase (ADA), CSF IgG, and albumin.

For cytokine assays, CSF was centrifuged at 3000 *g*, and supernatant was aliquoted and stored at –70°C. TNF α, interferon (IFN) γ, and IL 10 concentrations were measured by ELISA kits (Genzyme Diagnostics, Cambridge, Massachusetts, USA) with detection limits of 3 pg/ml, 3 pg/ml, and 5 pg/ml, respectively.

Data were summarised as medians and ranges. Non-parametric Wilcoxon rank sum tests were used to compare HIV seropositive groups with HIV seronegative groups, tuberculous meningitis severity groups, and groups derived according to the blood brain barrier index for cytokine concentrations. Spearman's rank correlation was used to derive correlations of cytokine concentration, ADA concentrations, and CD4 counts in CSF.

There were 27 patients: 18 (67%) women and 9 (33%) men. Seventeen were HIV seropositive and 10 HIV seronegative. The average interval between onset of symptoms and the first clinical assessment was 17 days (range 5–90 days) in 18 patients where this was recorded. The mean (SD) age was 26.8 (11.6) years. There was one patient aged 10 and one aged 60, and the rest were between 25 and 40. The cytokine concentrations were not analysed according to age, as this would make the categories too small and of little value. The IgG index was calculated for 23 patients. There was no significant difference between the HIV seropositive and HIV seronegative groups for ADA ($p = 0.4$) and CD4 counts ($p = 0.19$) in CSF and cytokine concentrations (table 1).

Ten patients (37%) were classified as having grade 1 tuberculous meningitis. Sixteen (59%) had grade 2 and one (4%) grade 3, which for analysis was considered to be grade 2. Table 1 summarises the cytokine concentrations for patients in stages 1 and 2.

Patients with stage 2 disease had significantly stronger Th1 responses. There was no difference in the IL 10 concentrations. The two patients with stage 2 disease who died had very high IFN γ concentrations, both greater than 2048 pg/ml.

IL 10 concentrations were moderately positively correlated with IFN γ concentrations ($r = 0.53$). The correlation coefficients were –0.18 for IFN γ, –0.33 for TNF α, and –0.34 for IL 10. Correlation coefficients between ADA and cytokine concentrations were 0.34 for IFN γ, 0.47 for TNF α, and 0.22 for IL 10. Cytokine concentrations correlated poorly with CD4 counts in CSF.

It is postulated that in HIV infection a predominant Th2 response accounts for extrapulmonary disease.[5] This study does not favour a predominance of either Th1 or Th2 in the CSF. It is possible that a Th0 response, which is a non-differentiated response seen early on in immune activation, was seen in our patients, as they were examined untreated and relatively early in the disease. Other investigators have also documented this phenomenon.[3] The positive correlation between IFN γ and IL 10 suggests that these were produced concurrently. This may reflect a control mechanism regulating Th1 and Th2 responses.

There was no difference in cytokine and ADA concentrations and CD4 counts between HIV seropositive and HIV seronegative patients. It is known that the clinical response to antituberculous treatment in both groups is similar.[5] Perhaps this similarity correlates with similar immune responses in both groups. The size of each group is small and a type 1 statistical error has to be considered. Further studies to confirm our findings would be of value.

The significantly greater TNF α and IFN γ concentrations in the severe group of tuberculous meningitis is confirmed by other studies[6] and suggests that disease severity results mainly from the immune response rather than the organism itself.

The lack of correlation between CD4 and cytokine concentrations may be explained by the fact that there are other sources of cytokines in the CSF, namely macrophages and natural killer cells. Concentrations of ADA, which are derived from lymphocytes, are consistent with other reports, where they were correlated with cytokine concentrations.

There was no correlation between the IgG index and cytokine concentrations, suggesting that the blood brain barrier did not

Table 1 Differences between HIV seropositive and HIV seronegative groups and tuberculous meningitis severity

	HIV positive		HIV negative			Stage 1		Stage 2		
Cytokine	Median	Range	Median	Range	p Value	Median	Range	Median	Range	p Value
IFN γ (pg/ml)	569.9	16.0–2048	890.6	0–2048	0.9	184.5	0–1771.0	1000.0	16.0–2048	0.03
TNF α (pg/ml)	1.6	0–67.5	9.8	0–309.3	0.11	0.65	0–19.2	9.8	0–309.3	0.008
IL 10 (pg/ml)	24.6	0–127.9	17.3	0–296.3	0.9	3.68	0–53.0	27.4	0–296.4	0.97

IFN, interferon; Il, interleukin; TNF, tumour necrosis factor.

significantly influence concentrations. Unfortunately, corresponding serum concentrations were not available. This would have been valuable. This is the first study correlating CSF cytokine responses to severity of tuberculous meningitis and comparing HIV positive with HIV negative groups. Further studies should be done to confirm these findings, perhaps to define their relevance to complications and to explore the possibility of IL 2 treatment in HIV positive patients.

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Acknowledgements

This study was sponsored by the Glaxo TB initiative.

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Hepatitis C testing in HIV infected patients

Numerous seroprevalence studies have shown a high rate of co-infection with hepatitis C among HIV-1 infected patients, ranging from 98% in haemophiliacs, 80% among injecting drug users, to 3–15% in homosexual/bisexual men.[1] Although it is estimated that there are 200 000–400 000 people infected with hepatitis C (HCV) in the United Kingdom,[2] the number of coinfected individuals is unknown. Data have shown that HIV increases the rate of HCV progression,[1] and there is also some evidence suggesting that HCV worsens HIV progression, although this is more controversial.[3]

There is a growing recognition of the significant impact of co-infection on the management of HIV disease. Hepatitis morbidity and mortality among coinfected patients has increased fivefold in recent years.[4] Furthermore the presence of HCV increases the frequency of hepatotoxicity with antiretroviral therapy, and may also impact on the choice of antiretroviral drug, with avoidance of drugs that are potentially hepatotoxic such as ritonavir and nevirapine.[4] Most importantly there is now effective treatment available for the management of HCV infection.[2] Recent preliminary data suggest in HIV-HCV co-infected patients superior virological response in those receiving PEG-interferon with ribavirin compared to standard interferon with ribavirin.[5] Finally, management of the HIV-HCV co-infected patients involves other interventions such as vaccination for other viral hepatitis A and B, and reducing alcohol intake.

These findings all highlight the importance of identifying those HIV infected patients who are co-infected with HCV. However, a recent survey at Kings' College Hospital in March 2002 revealed that only 63% of a cohort of 850 current HIV infected attendees had been tested for HCV. The majority of those not yet tested for HCV were patients who had presented before the routine introduction of HCV testing in 1999. Similar findings have been reported from other European centres. In a French cohort of 4017 HIV infected patients only 2589 (64%) were tested for HCV.[6] Although a substantial number of these patients have stored samples available on which retrospective HCV testing could be performed, the current guidance from Royal College of Physicians working group is that consent must be obtained before testing.[7]

Current guidelines from the United States now recommends HCV testing for all HIV infected patients.[8] Antibody based screening assays for HCV infection have evolved over the past decade and currently the most widely are third generation ELISA assays (Ortho).[2] Confirmation of positive results by recombinant immunoblot assays (Chiron RIBA, others) is still recommended as a proportion of positive tests may represent false positive results.[2] Qualitative and quantitative PCR (polymerase chain reaction) tests that detect the presence of HCV RNA and have sensitivity in the range of 50–1000 equivalents per ml are now also available.[2] We undertook a recent informal survey of 10 UK teaching hospitals, which showed differences in HCV testing policies. Seven clinical sites use serological testing for screening and confirm all initially positive results with a second serological assay, and then confirm positive results with a qualitative PCR test. Three sites use qualitative PCR testing for those with an initial positive serological test. For those with a negative PCR further confirmatory antibody assay are done at two sites and one site requests repeat PCR testing at 6 and 12 months.

What is the role of PCR testing in co-infection? At least 4–7% of HIV-HCV co-infected patients have no detectable antibodies in the presence of HCV viraemia[9] as they fail to produce antibodies or have low titres (can't be detected or give equivocal or indeterminate) or loss of detectable antibodies from serum despite persistent viraemia in immunosuppressed patients.[10] Therefore, additional testing with PCR is often indicated. The guidelines recommend[2] that all patients with positive HCV antibody tests and those patients thought to be at risk of HCV infection despite negative or indeterminate serological tests should undergo qualitative PCR testing of serum. A positive result confirms current viraemia whereas a negative test suggests non-viraemic infection. Patients with a a positive ELISA but negative PCR should be tested with recombinant immunoblot assay to confirm antibody status.

In conclusion, we recommend that centres caring for HIV infected patients should develop clear policies and strategies for ensuring all their new and existing HIV infected patients have undergone testing for HCV.

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Accepted for publication 10 October 2002

First, do not harm: also an issue in NAA assay diagnostics for chlamydial infection

In his update on *Chlamydia trachomatis* diagnostics,[1] Chernesky emphasises that nucleic acid amplification (NAA) assays can be useful for screening purposes, because of their increased sensitivity and the possibility of non-invasive sample collection. Since the introduction of these assays, many screening interventions have been undertaken and evaluated mostly in an optimal research context. However, a number of problems can be expected if these diagnostics are implemented in large scale routine clinical practice or in community screening programmes.

Firstly, multiple testing sites may be needed for accurate results,[1] but cannot be realised for reasons of cost and inconvenience.

Secondly, the positive predictive value of a test is low in low prevalence populations. To avoid false positive diagnoses in these situations repeat testing of the sample, preferably by a different technique, is highly recommended. However, in clinical practice a single

positive result is often considered to indicate that a patient is infected.[2]

Thirdly, reproducibility problems do occur and are varying in time,[3] and confirmatory testing is required when test results are intermediate or near the cut-off value. A low positive test result that is not caused by the presence of amplification inhibitors points to a low number of target organisms in the sample. Repeat testing is then a matter of statistical chance of the second portion of the sample containing detectable numbers of target organisms. Such results should be transmitted to the clinician accompanied by interpretative comments.

Fourthly, diagnostic accuracy may be affected by contamination of the specimen during laboratory processing .

Fifthly, it is not clear whether detection of a very small amount of chlamydial DNA always reflects clinically significant infection: NAA assays might identify residual DNA from a cleared or treated infection, DNA of non-viable organisms, or DNA of levels of pathogens which are too low to be infectious.[4 5]

For this reasons it is likely that in routine practice a number of results will be interpreted as positive in patients who are not truly infected.

However, the impact of a chlamydia diagnosis on people's lives is considerable,[6] and can include stigmatisation, anxiety about reproductive health, and potential partner discord. Pre-test and post-test counselling has been shown to be labour intensive for healthcare providers too, since most infections in asymptomatic patients will be unexpected.

To overcome these problems, rigid diagnostic protocols must be developed before introducing any screening programme. Not only should infected people be identified but false positive diagnoses should be avoided. Laboratories should participate in quality control programmes, and test runs should include multiple controls. Healthcare providers should be offered agreed standards to which they can manage the different aspects of screening and counselling for chlamydial infection.

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Accepted for publication 17 October 2002

Geographical focusing: an intervention to address increased risk for sexually transmitted diseases during repatriation and resettlement in post-war Mozambique

Countries in the early post-war phase face population movements contributing to increased vulnerability for sexually transmitted diseases (STD) and HIV. Mozambique chose geographically focused interventions to control STD spread in the first post-war years.

Mozambique was one of the poorest countries in the world in 1993 with per capita GNP of US$63 and life expectancy of 48 years.[1]

Seventeen years of civil war and economic crisis destabilised the country causing massive population movements towards urban areas and neighbouring countries. Between 1992 and 1995, an estimated 1.7 million refugees from Malawi, Zimbabwe, Tanzania, Zambia, and Swaziland returned, soldiers were demobilised, and internally displaced people resettled.[2] The war destroyed the health infrastructure, especially in rural areas, precluding provision of STD services and effective primary health care (PHC).[3]

Vulnerable groups and populations of the areas through which the refugees were returning, were considered particularly vulnerable to the risk of STD/HIV.[4]

The National STD/AIDS Control Programme, supported by the European Commission, decided to focus STD/HIV interventions at the PHC level in the areas most affected by population movements.

Four studies carried out between 1987–92 showed HIV seroprevalence rates of 3.2%–4.6% in displaced populations, higher than the 1.2% of the general population.

Very high STD prevalence rates (51%) were demonstrated in pregnant women attending PHC services for antenatal care.[5] Displaced populations showed lower awareness of condoms than the general population.[6]

Fifteen districts in five provinces were selected on the basis of existing population health facilities and projected influx of people.[2] PHC services were strengthened overcoming the existing shortages of staff, drugs, and materials. Clinical, laboratory, and health education skills of over 100 PHC workers in these priority districts were upgraded through training. Drugs for STD treatment, condoms, and educational materials were delivered. An existing popular health education initiative using theatre groups expanded, reaching over 100 000 people in local languages.

Difficulties encountered were mostly related to the destabilisation due to the war, such as transport problems, demotivation and relocations of health staff, parallel drug and treatment markets, and poor condom availability. Nevertheless, significant progress was noted. One major achievement was the increase in STD patient attendance, quadrupling in one province and doubling or tripling in others. The number of contacts reached also increased significantly: in 1992, 4.5% of STD patients were contacts, in 1993 9%, and in 1994 20.8%. Another achievement was increased condom distribution, from 2.5 million in 1993 to 5 million in 1994.

Geographical focusing of interventions in early post-war Mozambique showed significant impact on STD attendance, proving the feasibility of introducing STD care in difficult circumstances. Strengthening 15 districts provided the basis for improvement of the STD programme in other areas and enhanced general functioning of PHC centres in the initial priority districts. Improved supervision, in turn improving clinical, laboratory, and educational activities, was subsequently expanded to other districts. The use of syndromic management protocols contributed positively to STD management throughout the country.

Focusing interventions in areas with especially vulnerable populations, combined with an integrated approach to STD/HIV control, may have contributed to the control of the spread of STD and HIV in early post-war Mozambique.

Acknowledgements

Grant: European Commission, DG VIII/8, contract No RPR-MOZ-003.

The authors would like to thank all those who contributed to this letter and especially Kathy Attawell for her assistance in editing this report and Professor Marleen Temmerman of Ghent University for her encouragement and assistance.

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Accepted for publication 20 September 2002

A novel research approach in sex on premises venues (SOPV): objective measure of sexual behaviour and low level intrusion to patrons

Sex on premises venues (SOPV) are commercial venues where men who have sex with men (MSM) meet other MSM for casual, usually anonymous, sex. These venues are challenging environments for traditional methods of behavioural research—for example, interviews. An alternative research method adapted from a study with sex workers in Nicaragua may be used in SOPVs.[1 2] This study counted the number of used condoms per client as a measure of "safe" sexual behaviour. A pilot study in two parts was conducted at a Melbourne SOPV to determine the feasibility of this approach. The merit of this method was dependent on the consistency of the ratio of used condoms per SOPV patron, and consequently the method's sensitivity to detect behaviour change.

Part 1 of this pilot aimed to establish a system of SOPV waste collection and condom counting. SOPV staff collected venue waste and research staff counted the number of condoms in the waste that were free from condom packaging. Part 2 piloted SOPV staff handing out anonymous, self complete questionnaires to patrons during the time periods when waste was being collected. The questionnaire only asked about anal sex and condom use during the participant's visit at the SOPV.

Part 1 operated on 16 Saturdays and Sundays during the day. An overall ratio of 0.8 condoms per patron was calculated (95% CI: 0.7 to 1.1), and the ratio for each day ranged from 0.3 to 1.6. It was suspected that inconsistent collection of waste on Saturdays and Sundays contributed to the variability of the calculated condom to patron ratio each day. To have the same SOPV staff collecting waste each time and to avoid weekend functions at the SOPV, collection continued on the following nine Wednesday and Thursday evenings. For these evenings an overall ratio of 0.56 condoms per patron was calculated (95% CI: 0.4 to 0.7), and the ratio for each day ranged from 0.2 to 1.0.

Part 2 of this pilot operated on Wednesday and Thursday evenings of the following 8 weeks. Approximately 180 patrons were given a questionnaire by SOPV staff, of which 76 (~40%) completed and returned the questionnaire (mean 43.8 (SD 13.3 years). Forty four participants reported engaging in protected anal sex during their visit to the SOPV (58%, 95% CI: 47% to 69%), with a mode of one episode of protected anal sex per visit. Using this proportion of 58%, a ratio of 1.4 condoms per patron engaging in protected anal sex was recalculated for the Saturday and Sunday collections. For all Wednesday and Thursday collections (Part 1 and 2) the ratio was 0.9.

The findings of this pilot study are inconclusive with respect to the value of this research method for behavioural study. Controlling for measurement and selection bias was difficult and resulted in a variable ratio of used condoms to patrons for each collection day. Research projects with more resources should look for greater control of bias, including encouragement of good communication with SOPV staff. However, this pilot study has demonstrated the potential of counting discarded condoms as a measure of safe sex behaviour in SOPVs. Counting condoms is an objective measure that doesn't rely on self reports of behaviour, and condom collection can be conducted with minimal intrusion to patrons visiting the SOPV.

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Accepted for publication 16 October 2002

NOTICES

International Herpes Alliance and International Herpes Management Forum

The International Herpes Alliance has introduced a website (www.herpesalliance.org) from which can be downloaded patient information leaflets. Its sister organisation the International Herpes Management Forum (website: www.IHMF.org) has launched new guidelines on the management of herpesvirus infections in pregnancy at the 9th International Congress on Infectious Disease (ICID) in Buenos Aires.

Pan-American Health Organization, regional office of the World Health Organization

A catalogue of publications is available online (www.paho.org). The monthly journal of PAHO, the Pan American Journal of Public Health, is also available (subscriptions: pubsvc@tsp.sheridan.com).

XIX International Congress of the Society of The Fetus as a Patient

1–4 May 2003, Gran Hotel Sitges, Barcelona-Sitges, Spain
Further details: (fax: +34 93 418 7832; email: bcn2003@iudexeus.uab.es).

Australasian Sexual Health Conference: Tango down South—2003!

4–7 June 2003, Christchurch Convention Centre, New Zealand
Further details: Dart Associates (tel: +02 9418 9396/97; email: dartconv@mpx.com.au; web site: http://www.acshp.org.au).

CORRECTION

We would like to apologise for an error that occurred in the paper by McGarrigle *et al* (*Sex Transm Infect* 2002;**78**:398–405). In table 2, under the heading "Name and custodian" the following affiliations should have appeared. Row one: London School of Hygiene and Tropical Medicine, National Centre for Social Research, and Royal Free & University College Medical School. Row six: City University and Department of Primary Care and Population Sciences and Royal Free Centre for HIV Medicine, Royal Free & University Medical College. Row seven: Study on HIV testing. Royal Free Hampstead NHS Trust Hospital and Department of Primary Care and Population Sciences and Royal Free Centre for HIV Medicine, Royal Free & University College Medical School.

EDITORS' NOTICE

Inadvertent failure to disclose an interest

Podophyllin office therapy against condyloma should be abandoned. Von Krogh *et al* (*Sex Transm Inf* 2001;**77**:409–12). The author Dr G Von Krogh inadvertently failed to disclose that he had received consultancy fees or reimbursement of expenses to attend educational meetings relating to anogenital papilloma virus infection from the following companies: 3M, Perstorp, Stiefel, Oclassen, and MSD. In addition clinical trials on anogenital HPV infection had been funded within his department by both 3M and MSD.