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HETEROSEXUAL AIDS

Views in the media on the spread of HIV/AIDS among heterosexuals range from claims of a 'plot' to overstate the risks, to warnings of a 'ticking time bomb' with major implications for future public health. This is despite recent detailed information on HIV prevalence and sexual behaviour which allows more accurate projections to be made.

This briefing examines recent findings and their implications for health education policy.

CURRENT UK POSITION AND TRENDS

The disease AIDS (Acquired Immune Deficiency Syndrome) was first recognised in 1981 and its causative agent (HIV; Human Immunodeficiency Virus) discovered in 1983. As the potential seriousness of AIDS was revealed, the Government initiated various measures to record the incidence of the disease and estimate the extent of HIV infection. Keeping track of HIV and AIDS in the population is however complicated by the long and varying incubation period (~2-15 years; average 8-10 years) which separates infection with HIV from the onset of AIDS. This means that the current number of AIDS cases reflects patterns of HIV infection over the last decade or so. Equally, the full impact of current HIV infection will not be seen as severe HIV disease and as AIDS cases until well after the year 2000[1].

Different approaches have to be taken to obtain up-to-date pictures of the infection and the disease. Information on AIDS is provided from doctors' reports of AIDS diagnoses (in confidence) to the Public Health Laboratory Service (PHLS) Communicable Disease Surveillance Centre (England and Wales) or to the Communicable Diseases (Scotland) Unit. This system inevitably contains reporting delays and some under-reporting; PHLS makes allowance for these factors and the number of new AIDS cases each year has risen from 115 in 1984 to 1455 in 1991 (estimated to be ~1800 for 1992).

With HIV, the number of people infected has, barring testing the whole population of the UK, to be inferred from limited measurements of small groups. It is thus inevitable that there will be more uncertainty in estimates of current HIV infection than over the number of AIDS cases. PHLS will only be aware of those who have been tested - the main sources of information are from named HIV testing (e.g. clinic attendees), anonymous screening programmes (e.g. pregnant women and newborn babies[2], attendees at sexually-transmitted disease (STD) clinics and injecting drug user centres), and from blood screening.

Table 1 TOTAL NUMBERS INFECTED WITH HIV IN ENGLAND AND WALES (at end 1991) *(Source: PHLS)*

EXPOSURE CATEGORY	NUMBER OF HIV INFECTED PERSONS ALIVE	
	Reported	*Estimated total (range)*
Homosexual (male)	7590	13900 (10650-18250)
IDUs	1210	2000 (1500-3200)
Heterosexual	1570	6500 (4600-8600)
Blood/blood factors	770	950 (890-1275)
TOTAL	11140	23400 (19600-28400)

(Numbers include AIDS cases.)

These surveys show how the extent of HIV infection varies between different groups. The recent National Survey of Sexual Attitudes and Lifestyles (NATSSAL) gives some insight into the number of people in different groups, so that the number of infected people may be estimated. This and other (less direct) methods lead to the estimates for the numbers infected in England and Wales in **Table 1**. Of the 23,400 people believed to be infected, many will be unaware of their condition. Indeed, PHLS surveys show that less than a third of heterosexually acquired AIDS patients had been aware they were HIV-positive before developing symptoms - in contrast, virtually all those infected via blood or blood products, and over half those infected through homosexual exposure or drug misuse, had been aware of their infection.

ROUTES OF INFECTION

AIDS. The number of AIDS cases diagnosed each year in England and Wales from 1984 to the latest complete figures for 1991 is shown in **Figure 1**. The number of cases in all categories has continued to rise, but heterosexual transmission has increased in importance (from 3% to 13% of all cases). Thus while AIDS cases attributed to homosexual activity rose from 87 to 944, cases from heterosexual transmission rose from 3 to 164 over this period. In Scotland, the proportion of AIDS cases due to heterosexual transmission rose from 3% in 1987 to 9% by 1991.

HIV. As already pointed out, today's AIDS cases arise from infection many years earlier, and epidemiologists have to use indirect methods to estimate the levels of infection shown in **Figure 2**. This shows a large fall in new infections after 1985/6 - most probably a result of

1. The progression to AIDS often proceeds via 'severe HIV disease' where the immune system is compromised, but the patient has yet to develop one of the AIDS indicator diseases.

2. See POST Briefing No 28.

moves away from high-risk behaviour by homosexuals (and to a lesser extent drug misusers). On the other hand, cases of new heterosexual infections have continued to rise. In 1990 and 1991, it is likely that **3 times as many people became infected through heterosexual as homosexual activity** - by contrast in 1984, infection by homosexual activity was estimated to outnumber that from heterosexual activity forty-fold. In Scotland, estimates (not shown in Figure 2) suggest that HIV infections (for all exposure categories combined) also peaked in 1984 at 600-870 new infections per year.

Sources of Heterosexual HIV/AIDS are shown in **Table 2**, and can be grouped into 'first' generation transmission from high-risk partners who had not themselves acquired the infection heterosexually, and 'second' generation transmission where someone infected heterosexually has transmitted the virus heterosexually. Most second generation transmission has so far come from infection abroad or from partners infected abroad - only 5% of the cases have been attributed to sex with a partner with no obvious risk factors, while a further 5% have unknown origin.

INTERNATIONAL PERSPECTIVE

HIV and AIDS in the UK are only part of a world-wide phenomenon. The World Health Organisation (WHO) estimates that there are around 14 million people with HIV; three-quarters of infected adults acquired their infection heterosexually. The spread of the disease has been most rapid in parts of SE Asia, Africa, the USA and some European countries (notably Spain, France and Italy). There are significant differences in the character of the epidemic between countries (**Table 3**). The dominant source of infection in Italy and Spain is through injecting drug use, while homosexual exposure accounts for most cases in France, UK and the Netherlands. Heterosexual transmission is the single biggest cause of AIDS in Belgium. In Europe as a whole, the number of heterosexually acquired AIDS cases rose by 25% between 1991-92 and in the USA by 17% between 1988-92. In Africa and SE Asia, almost all AIDS cases are from heterosexual transmission and the epidemic has spread much more rapidly[3].

FORECASTING THE FUTURE

Two Working Groups set up to advise the Chief Medical Officers have made projections of future AIDS incidence in England and Wales (the Day report, 1993) and in Scotland (the Reid report, 1993), taking into account historical trends, and using mathematical models which calculate the progression from HIV infection to AIDS among members of each risk group from estimates of previous and current HIV infection rates.

Figure 1 ANNUAL AIDS INCIDENCE FOR 1984-1991 (OBSERVED) AND 1992-1997 (PROJECTED) FOR ENGLAND AND WALES *(Source: PHLS)*

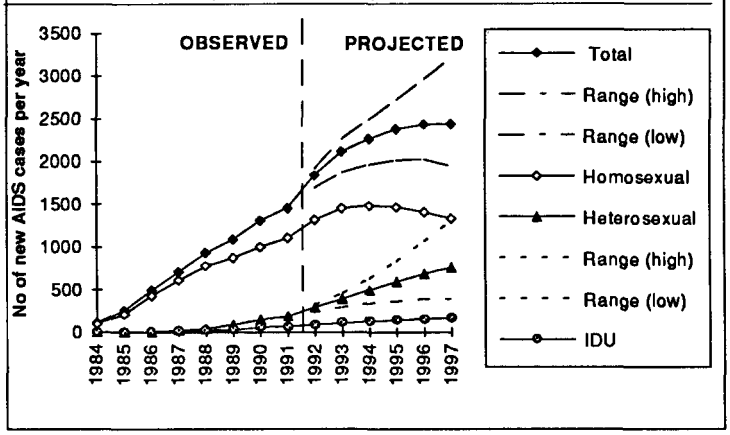
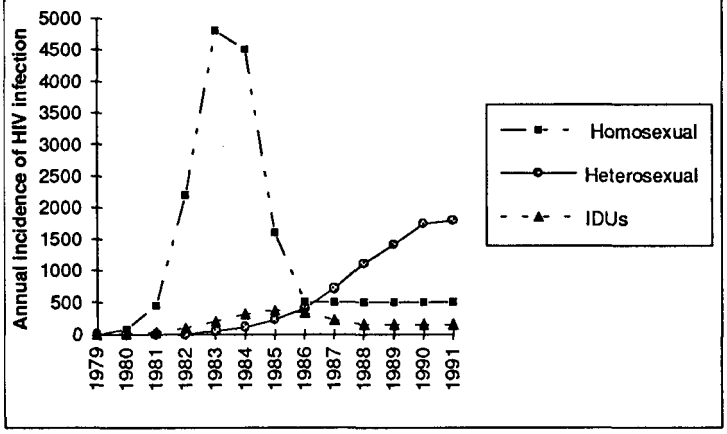


Figure 2 ANNUAL HIV INCIDENCE (ESTIMATED) BY SELECTED EXPOSURE CATEGORIES IN ENGLAND AND WALES, 1979-91



The projections for England and Wales were included in Figure 1. The number of new AIDS cases each year is projected to rise to 2440 (range 1945 to 3215) by 1997. The most significant feature of the predicted trends is the decline in AIDS incidence due to homosexual exposure (from 72% of all diagnoses in 1992 to 54% in 1997) and the increase in cases due to heterosexual exposure (from 13% in 1991 to 31% in 1997). In Scotland, it is predicted that new cases of AIDS will also continue to rise - from 110 in 1992 to 150 in 1995.

Projecting into the future is, by definition, uncertain. With AIDS forecasting, uncertainties creep in from several sources; extrapolating from the estimates of pre-existing HIV infections (e.g. Figure 2) requires many assumptions about the incubation period of the disease and the effects of more modern patient treatment. Predicting the rate of future infection also has to be done on the basis of imperfect knowledge of individuals' infectiousness and sexual behaviour patterns. Projecting heterosexual cases of AIDS is also made more uncertain because of the relatively small number of previous cases on which to base an extrapolation.

3. While not fully understood, contributory factors include; infection due to other STDs, low rates of condom use, high rates of partner exchange (including sex workers), and poor health infrastructure.

Table 2 SOURCES OF HETEROSEXUALLY ACQUIRED HIV IN ENGLAND AND WALES (TO END MARCH 1993)

EXPOSURE CATEGORY	NUMBER OBSERVED (CUMULATIVE)	% OF TOTAL
'FIRST GENERATION'		
(From 'high risk' partner)	291	13%
'SECOND GENERATION'		
High Risk-Acquired 'abroad'	1643	73%
High Risk -Acquired in UK from partner from'abroad'	82	4%
Low Risk - Acquired in UK from 'low risk' partner	117	5%
UNKNOWN	104	5%
TOTAL	2237	100%

Notes:
- *'High risk' partners are bisexual men, injecting drug users, and blood / blood factor recipients.*
- *'Abroad': a country where the main transmission route is through sex between men and women.*
- *'Low risk' - there is no evidence of any of the risk factors above.*

Table 3 CUMULATIVE TOTAL OF AIDS CASES (UP TO 1993) IN VARIOUS COUNTRIES *(Source: WHO)*

Country	*Total*	*(per Million)*	*% Heterosexual*
France	23,774	425	12.1%
Italy	16,512	291	7.4%
Spain	17,829	475	6.4%
Netherlands	2,556	170	7.5%
Denmark	1,172	227	11.9%
Belgium	1,286	136	43.5%
Portugal	1,217	119	28.3%
Switzerland	2,982	439	14.6%
UK	7,233	127	10%
USA	284,840	970	6.7%

ISSUES

Forecast reliability

Forecasting future numbers of AIDS cases and trends in HIV infection is important in informing policy decisions on resource allocation, health education priorities etc. How accurate have such forecasts been? **Figure 3** shows that the 1990 PHLS forecast has proved quite accurate, while the earlier (1988) forecast overestimated the number of AIDS cases substantially. This was because extrapolations had to be made on very limited information and because the full extent of the behavioural changes occurring among homosexual men and drug misusers in the mid-1980s had yet to be apparent. By the time the 1990 projections were prepared, these factors could be taken into account and the projections were scaled down accordingly. The most recent (1993) projections incorporate more information concerning HIV prevalence and behavioural patterns (from anonymous screening programmes and NATSSAL) and this has led to slightly lower projections than in 1990[4].

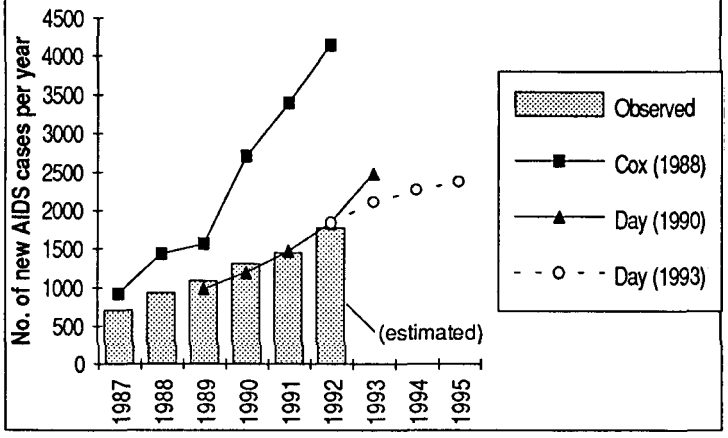
The fact that the recent forecasts predict fewer AIDS cases than earlier ones, has been portrayed by some sectors of the media as evidence of a so-called 'AIDS lobby' exaggerating the likely extent of the epidemic. Scientists point out that such forecasts are commissioned to predict what will happen under different sets of assumptions - but base their central forecasts on the assumption that there will be no dramatic change in present risk behaviour (e.g. a major increase in condom use). Since these predictions are designed to inform policy and individual behaviour, it is not surprising if behaviour subsequently changes, thus invalidating the assumptions behind the model's predictions and making them seem, with hindsight, overly alarmist.

AIDS forecasting could be improved if the impact of the HIV virus on each infected individual's immune system were monitored. In Scotland, this is done by measuring regularly the patient's blood 'CD4 count', but this is not yet widespread practice elsewhere. Some also see a need to extend the anonymous HIV testing programme, and to collect additional information (e.g. country of origin, ethnic group) where cases of HIV infection are found.

A Heterosexual Epidemic?

Figure 2 shows that the number of new heterosexual infections continues to grow. The future course of the heterosexual epidemic will depend primarily on the infectivity of HIV and on the opportunities for its transmission - i.e. on sexual behaviour. Studies suggest that, on average, the risk of transmission from men to women is roughly twice that from women to men. However the risk of unprotected sex with an infected partner varies with each individual circumstance, so it is very misleading to quote an 'average' chance (e.g. 1 in 1000) of becoming infected. The real risk of unprotected sex depends on the phase of the partner's infection (infectivity is highest in the months just after infection and just prior to developing and during AIDS), whether other STD's are present, as well as sexual practice. Evidence that changes in behaviour (e.g. condom use) are effective at reducing infection rates comes from the rapid drop in new infections among homosexuals in the mid-1980s. However, recent results suggest infections may be increasing again, indicating that effort is needed to sustain such changes (e.g. by continued targeted health education and other measures).

Figure 3 COMPARISON OF PROJECTIONS WITH OBSERVED NUMER OF CASES (ENGLAND AND WALES)



4. More information has also allowed the range of projections to be reduced - the 1997 projection is between 1945 and 3215 in the latest report.

Table 4 NUMBER OF HETEROSEXUAL PARTNERS (LAST 5 YRS)

No. of Partners Reported	% of Men (Women) in each age range 16-24	25-34	35-44	45-59
0	21 (21)	5 (3)	5 (3)	6 (11)
1	20 (33)	52 (68)	73 (82)	81 (82)
2	12 (16)	12 (14)	9 (9)	6 (5)
3-4	20 (17)	16 (10)	8 (4)	5 (2)
5-9	16 (11)	10 (4)	4 (1)	2 (0)
10+	11 (3)	6 (1)	2 (0)	1 (0)

The rate at which people change sexual partners is better understood as a result of surveys such as NATSSAL (**Table 4**). These suggest that a relatively small fraction of the population report very high rates of partner change (e.g. 1% of men report 16% of all sexual partners), with the highest rates being found among the 16-24 age group (men report higher numbers of sexual partners than women).

On the eventual extent of the heterosexual epidemic, there are two possible basic scenarios:
1. The epidemic remains concentrated among small groups whose behaviour clearly puts them at high risk.
2. The epidemic spreads into the much larger 'low-risk' heterosexual community.

Which of these scenarios is most likely to occur depends on the degree of mixing that occurs, both between and within the different risk groups. If there is little mixing between the high risk groups and heterosexuals with no obvious risk factors, then the epidemic will remain largely confined within the high risk groups (HIV infection may increase rapidly but would ultimately be self-limiting). In this scenario, Health Education and other resources would be most effective if targeted at these high risk groups - a recent example being the Department of Health (DH)'s 'holiday' campaign which targets people travelling abroad. Conversely, if there is significant mixing between high and low-risk heterosexual groups, then HIV will spread slowly via second generation transmission into the general population and may eventually become much more widespread. In this case, targeted programmes would not suffice and general awareness campaigns would be more appropriate.

Currently, 90% of heterosexual HIV infections can be attributed to 'high-risk' contacts (Table 2), and thus at present, the epidemic appears closer to scenario 1 than 2. Nevertheless, some see the fact that there is a 'pool' of over 25,000 HIV-positive people in England and Wales (of whom 7,000 or more are heterosexual) as making further transmission likely, and see the 5-10% of cases without obvious risk factors as evidence that spread into the general population out of the high-risk categories is occurring. Critical to understanding these dangers is information on 'who mixes with whom' within and between the various 'high' and 'low' risk groups. This is difficult since it requires extensive contact tracing, which can only be pursued through voluntary testing. This is recognised as a priority by the DH.

Implications for Policy and Health Education

Recent DH policy is to remove the separate organisation and funding of HIV/AIDS programmes and incorporate them into the wider sexual health and communicable disease programmes (in line with the Health of the Nation Initiative which includes HIV/AIDS with sexual health as a 'Key Area'). Health care and promotion campaigns have thus placed more emphasis on local 'healthy alliances' between health purchasers (RHAs, FHSAs) and health specialists, academics, youth leaders, school governors, local authorities, voluntary groups etc., to pursue **targeted local initiatives** on HIV prevention. This allows organisations to extend outreach programmes aimed at specific high-risk groups. For instance, to target young people, buses tour festivals, night clubs, raves etc., distributing educational material on safer sex and condoms. Some groups also work closely with school governors to organise clinics and education programmes in schools for the 14-16 age group.

Nevertheless, while agreeing that local targeting of obviously high-risk groups is essential, many still see it as important to maintain a consistent **national public campaign** that infection remains a real risk to heterosexuals who do not practice safer sex. There is also concern that more central co-ordination of the various local initiatives is required to ensure that successful schemes developed in one area are adopted (where appropriate) in others. The Health Education Authority (via the National HIV Prevention Service) is setting up a database to record local initiatives to help information exchange; the DH is also reviewing the balance of its HIV/AIDS policy on these aspects.

Since the NATSSAL and other surveys show the age of first sexual activity continuing to fall, workers in the HIV/AIDS field conclude that **education in schools** is critically important. Policy in this area has recently changed - from September 1993, HIV/AIDS will be removed from the National Science Curriculum and (from August 1994) dealt with under the extra-curricular heading of Sex Education, with more emphasis on a moral context. It will be compulsory for schools to provide sex education, but parents will have the option of withdrawing children from the lessons. Some groups are worried that these changes will reduce advice about contraception and sexual health, and that some children will receive no sex education at all. The Department for Education will publish guidelines by April '94, but will leave decisions on detailed course content to schools, raising concerns that information available to children on HIV prevention may vary considerably.

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