(some of whom were seen initially in the trial period), histology and other reports on 28 patients, and prescribing advice on nine patients were sent from the hospital department to the general practice, allowing the practice to dispense the patients' drugs on the same day.

What are the conclusions about fax technology? There is no doubt that patients could be sorted out quickly, with information being transmitted and treatment started on the same day. Nine patients had urgent problems that were dealt with on the same day, but a telephone conversation between the general practitioner and the consultant could have been as quick, although the fax technology saved one person's time on the telephone. Referrals from general practice, drug information queries, domiciliary requests, maps, and other information were readily transmitted to the hospital department, and information from the hospital department could be sent to the general practice, and this could include discharge summaries.¹ Furthermore, with more advanced machines even photographs of rashes could be transmitted to a department.

As one of the telephone lines was not a dedicated line fully automatic transmission was not always achieved between the two areas. If fax machines increase in numbers then they will become more attractively priced, and more dedicated lines will allow easier automatic transmission of information. Even so we could not justify the costs of a fax link between a rural general practice and a district based dermatology department. Fax can save time but is not always quicker, and it certainly will not resolve problems with waiting lists. We found that during the early part of the study referral rates were increased because of the new technology and interest. When fax machines are available in more areas, possibly linked to computers and computerised typewriters, information will be more readily transmitted between hospitals and general practice. At present, however, routine medicine is not always adaptable to fax; or, possibly, fax technology is not quite ready for medicine.

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The illnesses of Elizabeth Barrett Browning

SIR,—Elizabeth Barrett Browning's first serious illness was certainly an encephalomyelitis of one kind or another, and it may well have been poliomyelitis, as Dr D A B Young argues in his valuable paper.¹ The chief source is the report by the Gloucester surgeon William Cother. (When the document was auctioned in 1937 he was called Dr Coker in Sotheby's catalogue, and authors on the subject have perpetuated the error, but it is time we got it right.) All the manifestations that Mr Cother described, except her much dilated pupils, are detailed by Dr Young. The contemporary correspondence among the Barretts contains three other symptoms: hyperaesthesia of the skin of her back, temporary difficulty with micturition, and weakness of a leg.² These are all compatible with a diagnosis of poliomyelitis. Elizabeth had measles, however, a week or so before she was brought to

Gloucester in June 1821,³ so measles encephalitis would be a contender if we could account for the earlier period of indisposition suffered by all three Barrett sisters.

The medical men could find nothing wrong with her spine when she arrived in Gloucester. Elizabeth's letter about Dr Baron coming to examine her back was written not in 1823 but soon after her arrival. Dr Baron was her physician there, not Dr Nuttall (who was a lifelong friend of Mr Barrett's and a physician in London). He found no abnormality, and neither did Mr Cother several weeks later. Yet, presumably because of the paroxysms of pain and myoclonic jerking, they assumed that she was suffering from "diseased spine"—tuberculosis of the spine. Pott in his classic work had noted that in diseased spine "the limbs are frequently convulsed by involuntary twitchings" and they had observed it in their own patients. Eventually Elizabeth was given specific treatment for diseased spine. It consisted of "undeviating, absolute rest, in the horizontal position, continued without interruption, till the cures are completed" in a high crib bed with a thick, unyielding mattress.⁴ After it was started, in a letter to her sister she referred to her "spine complaint,"⁵ no doubt a euphemism to save Elizabeth's feelings—early death or a humped back were well known prospects of diseased spine. "Feebleness of the spine" had been another such euphemism.

There may, however, have been wasting of some intercostal muscles, arising from thoracic cord involvement during her first illness. Although Mr Cother was present during a paroxysm of pain which was mainly abdominal, other accounts point to chest pain: a very early letter from Dr Nuttall's comments on a description of her symptoms and several short notes from Mrs Barrett while visiting Elizabeth in August and September refer to "the pain in the ribs" still coming in paroxysms.⁶

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Sexual behaviour and risk factors for HIV infection

SIR,—In their description of a large group of homosexual and bisexual men Dr Brian A Evans and colleagues report a decline in prevalence of HIV infection among first time clinic attenders between 1984 and 1987.¹ We are concerned that this may reflect nothing more than a time trend in selection bias rather than a true decline in prevalence in the underlying homosexual and bisexual population.

There are two main potential sources of bias in the study. Firstly, and unavoidably, the subjects were volunteers attending a genitourinary clinic. In addition, they were recruited to the study only after counselling. Dr Evans and colleagues do not inform us, however, of the proportion of potentially eligible subjects who declined to enter the study. Such information is a minimum requirement in arriving at a judgment about the evidence from the study. They try to reassure us that selection factors have remained unaltered by reporting that variables that are not the subject of health education programmes have remained constant. But as these variables are not those that are subject to public concern and will not influence

homosexuals' decisions about HIV testing this reassurance is insufficient.

Our concern might be less if another study from London (albeit not confined to first time attenders) had not recently reported a fairly constant prevalence of HIV infection over a similar period.² We therefore do not think that the evidence presented by Dr Evans and colleagues justifies their optimistic conclusion.

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2 Loveday C, Pomeroy L, Weller IVD, et al. Human immunodeficiency viruses in patients attending a sexually transmitted disease clinic in London, 1982-7. *Br Med J* 1989;298:419-22.

SIR,—Dr Brian A Evans and colleagues have reported that "there has been a genuine and considerable modification in sexual lifestyle by a large proportion of homosexual men and that, as a consequence, the incidence of sexually transmitted diseases, including HIV, has fallen."¹ Such a conclusion does not seem to have firm statistical support.

Although an overall significance test for trend was highly significant ($p=0.004$, table II), the 95% confidence intervals of the percentage positive for HIV in each group of men clearly show that the prevalence estimates are compatible with random variation (figure).² A difference persists only

Percentage positive for HIV infection among four groups of homosexuals by period of presentation. Vertical bars are 95% confidence intervals (data from Evans et al¹)

between the first group, seen in an early phase of the HIV epidemic (between November 1984 and June 1985), and the last, seen between January and November 1987. From July 1985 to September 1987 the prevalence of infection remained fairly constant (24%, 25%, and 21%,¹ χ^2 for trend = 0.68, $p=0.40$). In addition, changes in sexual behaviour did not show a definite trend towards safer sex. Whereas a decreasing trend in the number of sexual partners persisted from July 1985 onwards this was not true for anoreceptive intercourse. Moreover, information on the use of condoms was not included. The significance tests for trend of sexual behaviour were much more influenced by the difference between the first and the three other groups than by the difference among all four groups.

Among homosexual men a higher prevalence of HIV infection and high risk sexual activities in the early phase of the HIV epidemic as well as the adoption of safer sexual practices later have been reported by several epidemiological studies, in

particular cohort studies.¹¹ Changes in sexual behaviour, however, were not necessarily accompanied by a decreasing rate of new HIV infections,¹² as among other factors the risk of acquiring the infection with every new partner depends on the real (unknown) prevalence of HIV in the local homosexual community.

Finally, homosexuals who voluntarily attend AIDS clinics or agree to participate in cohort studies cannot be considered to be representative of the homosexual population. On the contrary, they probably constitute a selected group who are much more aware of the risk of HIV infection and AIDS than non-attenders and more likely to change sexual behaviour known to increase the risk of infection. It is not difficult to hypothesise that patterns of self referral criteria might have changed over time in relation to changes in sexual behaviour. Therefore the supposed association between changes in sexual behaviour and the decreasing prevalence of HIV infection may have been confounded by the homosexuals' reasons for attending AIDS clinics.

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AUTHORS' REPLY.—There are several possible explanations for our observation that the prevalence of HIV infection in first time genitourinary clinic attenders fell over the period we studied. We have discussed the problems of interpretation and fully appreciate that there are alternatives to the one we favoured. The proposition by Dr Ian Harvey and colleagues, however, that our patients ranked themselves by actual risk behaviour and acquisition of sexually transmitted diseases seems to stretch credulity to its limits. After all, the health education campaigns brought in large numbers of patients who perceived themselves to be at risk but resulted in little change in the absolute numbers positive on testing.¹

The methodology employed by Loveday *et al.*² presents two problems: data extracted from routine clinical records are not open to validation and, more relevant to the issue in question, inclusion of reattending patients may introduce bias by increasing the proportion of patients infected with HIV because these patients are more likely to return to the clinic with time (only a previously defined study cohort was excluded). The prevalence of HIV infection among new patients may well have declined, as we found in our study.

Consent to testing and the use of condoms have been dealt with in subsequent studies currently in preparation, but these topics were of less concern in 1984 when our investigation began, and we cannot agree that the rate of consent is "a minimum requirement in arriving at a judgment about the evidence."

Dr Diego Serraino's observations seem essentially to agree with our own. His statistical comments, however, require correction. Overlapping confidence intervals do not necessarily indicate random variation. The important statistic for this

Distribution of homosexual men retaining semen after anal intercourse

Period of presentation	No (%)
Nov 1984 to June 1985	215/291 (74)
July 1985 to March 1986	128/210 (61)
April to Dec 1986	65/117 (56)
Jan to Sept 1987	44/105 (42)

χ^2 for trend $p < 0.001$.

purpose is the standard error of the difference between any two prevalence estimates. Our χ^2 test for trend shows that the difference in prevalence is consistent with an orderly progression; it is hardly surprising that the statistical significance disappears if relevant data are omitted.

Although the use of condoms had not been officially advocated when our study began in November 1984, we questioned all patients about anal retention of semen with the practice of bowel evacuation after intercourse in mind. The use of condoms would inevitably have produced a negative response to this question, and our results are therefore shown in the table. Despite the highly significant down trend 42% of our patients in the final cohort were retaining semen after intercourse with casual partners.

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SIR.—Dr Brian Evans and others provide valuable supportive evidence for the sexual behaviours that are most risky for male homosexuals in terms of HIV infection.¹

It is disappointing, however, that their clinic survey did not include information on the use of condoms. Surveys of homosexual men between February 1986 and February 1987 by the Department of Health and Social Security indicate substantial increases in the numbers using condoms during anal intercourse.² These positive trends are continuing. We interviewed 356 homosexual men during 1988 in London, Oxford, Northampton, and Manchester. Only 74 (21%) reported currently having anoreceptive sex without a condom.

Two results from our study suggest possible limitations of studies of homosexual behaviour based on clinic attenders. Firstly, men whom we recruited from genitourinary medicine clinics (82, 23% of the sample) were significantly more likely to have had anoreceptive sex in the previous year than those who were recruited elsewhere (59, 72% *v* 54, 56%— $p < 0.05$). Secondly, men recruited from clinics were significantly more likely than others to have had a casual sexual partner in the previous year (71/79, 90% *v* 217/274, 79%— $p < 0.05$). Risky sexual behaviour may therefore be less common amongst homosexual men than suggested by Dr Evans and others' results based on clinic attenders.

Further support for this view comes from comparing sexual behaviour with casual partners in their survey and in ours. In their most recent

cohort 70% were currently having anoreceptive intercourse, compared with only 20% in our survey. Indeed, we suggest that recent experience of this risky form of intercourse may have been an important factor in provoking the men in their study to seek an HIV test.

Dr Evans and others introduce their survey by commenting that "role reversal has been necessary to create an epidemic." We took this to refer to the role of the passive partner in anal intercourse. This piece of mythology about homosexual behaviour needs to be jettisoned. Among the 273 men reporting anal intercourse in our survey, 164 (60%) had been both an active and a passive partner.

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Cryptosporidiosis: another source

SIR.—The article by Dr N S Galbraith draws attention to newly recognised potential sources of infection with cryptosporidium including educational farm visits.¹

This is the centennial year of the Ministry of Agriculture (subsequently Ministry of Agriculture, Fisheries, and Food), and as part of the "celebrations" (sic), with the help of the Royal Agricultural Society, it is intended that all children up to the age of 11 should visit a farm during the year (J Burns, personal communication). Such visits clearly carry risks of infection, including cryptosporidiosis, and Dr Galbraith's warning of the need for attention to hygiene is therefore timely.

It is not only visits to farms, however, that carry the risk of zoonotic exposure. During continuing studies of cryptosporidiosis in north Wales over nearly six years sheep have occasionally been implicated as a source of infection. Last year a case-control study was set up to test the hypothesis that some of the excess of cases seen during the spring peak in the incidence of the infection might be attributed to such exposure.² A highly significant association was shown, particularly with bottle fed orphan lambs (Fisher's exact test $p = 0.0006$). Farm visits by children and, particularly, helping with the bottle feeding of orphan lambs are common in this area. Unexpectedly, the cases showing the association included some children in urban and semirural play groups who had not visited farms but had been visited by a farming relative of one of their group with a bottle fed lamb. Whereas very young lambs with cryptosporidiosis may exhibit scouring older lambs may acquire the infection but remain free of symptoms.² The epidemiology of human cryptosporidiosis is complex and includes person to person transmission.³ Zoonotic infection of the kind described here may provide the origin of some apparently urban outbreaks and clusters of cases.