have more clinical information available to them than was provided in this study. However, mistakes made by the subjects with colour deficient vision—such as missing mycobacteria, amyloid, or *Helicobacter pylori*—are clinically important and indicate that these subjects are disadvantaged in their work. Because mistakes were made with most of the slides and therefore with a large range of stains, it is difficult to advise histopathologists with colour deficient vision on the best stains to use. It is likely that histopathologists with this disability adapt their practice to find a safe system of working, but they may not appreciate the full range of hues that they are not seeing. This study did not test whether immunofluorescent stains which contrast light green or yellow against a dark green or black background are misinterpreted by someone with a deutan deficiency. Mistaken diagnoses would seem to be more likely if a colour deficient doctor and colour deficient scientific officer work together.

In the general population, deutan colour deficiency is three times more prevalent than protan deficiency; however, in this study the ratio was greater than 10:1. People with protan deficiency may self select themselves out of histopathology, or they may have been underrepresented in this sample. They have particular difficulty with red-black colour discrimination and would be expected to have the most difficulty with a study of this kind. Deutan deficiency too was greater in this sample than in general (9.3% *v* 6%), but the reason is unknown.

As recently as 1991, an editorial in the *Lancet* confidently stated that "the colour perception of the person peering down a microscope at a biopsy specimen is an irrelevance." [6] The results of this study challenge this view, and we recommend that the colour vision of all histopathologists and MLSOs is assessed. If they are found to have a severe protan or deutan deficiency, they should be counselled and advised to adopt a safe system of working. This might include avoiding specific staining techniques or using adaptive computer technology. This technology (which currently costs about £10 000) involves electronically capturing the polychromatic image of the slide under the microscope, changing it into digital form, and then converting with specialised software the red, green, or blue parts of the image into colours which the histopathologist can identify.

Key messages

- Coloured images are being used increasingly as an aid to diagnosis, but 8% of men and 0.5% of women have colour deficient vision
- Histopathologists and medical laboratory scientific officers who stain histopathological specimens should have their colour vision tested; if they are found to have a severe protan (red) or deutan (green) deficiency, they should be advised to adopt a safe system of working
- Students at medical school should have their colour vision tested as this may help with their choice of specialty and alert them to potential difficulties with their work

Ideally, histopathologists should have their colour vision tested before entering the specialty. Doctors with colour deficient vision have suggested that students should have their colour vision tested at medical school as those with dyschromatopsia may have problems with endoscopy, fundoscopy, polychromatic radiological imaging, and colorimetric blood or urine testing.[7 8]

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Prevalence of HIV-1 infection among heterosexual men and women attending genitourinary clinics in Scotland: unlinked anonymous testing

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In late 1990 a survey of unlinked anonymous HIV testing of patients attending genitourinary clinics in Glasgow and Edinburgh was implemented to monitor the prevalence of HIV-1 infection among sentinel populations at high risk of infection. These clinics served 90% and 100% of their respective city populations. We report on the prevalence of HIV infection among heterosexual men and women who were not known to have injected drugs and who attended clinics in Edinburgh and Glasgow from 1991 to 1995.

Subjects, methods, and results

Each clinic routinely performed serology testing for syphilis on patients who might have acquired a sexually transmitted disease. Patients eligible for study included those who presented for the first time in a calendar quarter and who did not object to their blood undergoing unlinked anonymous testing for HIV. Epidemiological data were recorded and included clinic of attendance, sexual orientation, sex, whether the patient

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Risk of HIV infection among heterosexual men and women attending genitourinary clinics in Glasgow and Edinburgh

		Males			Females		
Clinic location	Geographical connection	No of tests (1991-5)	No (%) HIV positive	Relative risk (95% CI)	No of tests (1991-5)	No (%) HIV positive	Relative risk (95% CI)
Glasgow	Total*	12 981	30 (0.23)	1	7566	7 (0.09)	1
Edinburgh	Total*	10 620	34 (0.32)	1.39 (0.85 to 0.26)	8979	28 (0.31)	3.37 (1.47 to 7.71)
Glasgow	UK only	9703	9 (0.09)	1	6270	1 (0.02)	1
Edinburgh	UK only	8095	24 (0.30)	3.2 (1.5 to 6.9)	7131	23 (0.32)	20.2 (2.7 to 149.7)
Glasgow	Other	2919	10 (0.34)	3.69 (1.5 to 9.08)	1141	2 (0.18)	10.99 (1 to 121.1)
Edinburgh	Other	2282	6 (0.26)	2.83 (1.01 to 7.96)	1707	2 (0.12)	7.35 (0.67 to 81.0)
Glasgow	Africa	359	11 (3.06)	33.0 (13.9 to 79.2)	155	4 (2.58)	161.8 (18.2 to 1439)
Edinburgh	Africa	243	4 (1.65)	17.8 (5.5 to 57.2)	141	3 (2.13)	133.4 (13.9 to 1274)

*All cases. UK=United Kingdom.

had ever injected drugs, and limited geographical characteristics which applied to lifetime HIV risk; information was collected on location of risk, nationality of sexual contact, and nationality of patient according to the categories United Kingdom, Europe, Africa, Asia, Americas, and Oceania. The process of anonymising specimens, testing them for HIV, and ascribing limited risk factor information to the results has been described previously.[1] Specimens were also categorised by their geographical characteristics into three groups of increasing risk—United Kingdom, other, and Africa—specimens from people declaring any nationality or location associations with Africa being classed as Africa.

Between January 1991 and December 1995, 40 146 specimens from heterosexual attenders were tested anonymously for HIV. In addition, 46 (0.11%) attenders objected to their blood being tested for HIV and 7392 (15.5%) were not tested for other reasons, including difficulties in gaining venous access. Of the 99 seropositive specimens from patients recorded as heterosexual, 57 were classed geographically as the United Kingdom alone, 22 as Africa, and 20 as other. The overall infection hazard between 1991 and 1995 was similar for men in both cities but greater for women in Edinburgh (table). When cases were grouped by geographical connection, highly significant differences in risk were apparent in both men and women; among people with British connections alone, those in Glasgow had a lower risk than those in Edinburgh, while all those with an African connection had the greatest risk. In Glasgow alone, those with other geographical associations had a slightly greater risk than those with only a British connection.

Comment

The prevalence of HIV infection in men and women with only a British connection was about 0.3% in Edinburgh compared with less than 0.1% in Glasgow. These observations probably reflected the impact of HIV epidemics among injecting drug users on the spread of infection to non-injecting heterosexual men and women; prevalence among injecting drug users in Glasgow never exceeded 2% while in Edinburgh it varied between 20% and 51%.[2]

In central Scotland, however, heterosexual men and women with an African connection had the greatest risk of being HIV positive. Similar or even more pronounced observations might be expected elsewhere in the United Kingdom. Indirect evidence suggests that most pregnant women who are HIV positive in London originate from Africa, but zidovudine, which can reduce the risk of vertical transmission, cannot be given to many of them because their infections remain undetected.[3] Recent investigations suggested that HIV subtype E, prevalent in Asia and Africa, may have greater transmissibility than subtype B, which predominates in Europe.[4]

As recommended by the health departments of the United Kingdom, measures should be taken to improve awareness of HIV and its prevention among travellers, especially people travelling to countries where HIV transmission is common.[5]

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Endpiece

Escaping the future

Perhaps by means of the past one can begin to comprehend the present. Or learn which way to run from the future.

P J O'Rourke, *A Ramble Through Lebanon* (1985)