Our observations suggest that, in practice, very early and late convalescent sera are less useful for the detection of antigen in fæces from patients who are already in the icteric phase of the disease—and that fæcal extracts from such patients are less useful for the detection of very early and late convalescent antibodies.

This finding is limited to the IgG antibodies. With IgM antibodies no differences in ratio between the two antigens are found.

Details of this work will be published elsewhere.

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HEPATITIS A ANTIBODIES IN LONDON BLOOD DONORS, MEDICAL STUDENTS, AND PATIENTS

SIR,—Although tests are available for antibody to hepatitis A virus (HAV) there have been few reports of the prevalence of anti-HAV in the U.K. In Western Europe, the proportion of blood donors found to have antibody to HAV has varied widely—13% (Sweden), 17% (Norway), 39% (Switzerland), 55% (West Germany, accident patients), and 75% (France).[1]

We have determined the prevalence of anti-HAV by 'Havab' test (Abbott Laboratories among donors attending the South London Blood Transfusion Centre (blood kindly supplied by Dr K. L. Rogers), in final year medical students at St Thomas' Hospital, and in selected groups of patients attending St Thomas' Hospital. Tests for anti-HBs were also done ('Ausab'; Abbott Laboratories).

The table shows that 33% of the blood donors were immune to HAV, 81% of these being over the age of 30. Only 14% of

PREVALENCE OF ANTIBODY TO HAV AND HBS AMONG SOUTH LONDON BLOOD DONORS AND MEDICAL STUDENTS AND PATIENTS AT ST THOMAS' HOSPITAL, LONDON

Group	Age (yr) (mean and range)	Prevalence of anti-HAV	Prevalence of anti-HBs
Blood donors (n=95)	35(19-65)	33%	4%
Medical students (n=70)	23(21-44)	14%	3%
Drug addicts (n=89)	28(18-48)	52%	52%
Hæmophiliacs (n=73)	30(13-67)	29%	75%
Male homosexuals (n=75)	30(16-62)	40%	35%
Renal dialysis (n=86)	40(19-64)	54%	15%

the final year medical students were immune to HAV. 3 of the 10 positive had lived for a long time or had been partly brought up in the tropics and 3 others had a history of acute hepatitis. Many final year medical students in Britain spend elective periods in developing countries; clearly they should be offered passive protection with normal human immunoglobulin before their departure to hepatitis A endemic areas.

The high prevalence of anti-HAV among drug addicts (52%) probably reflects their social habits rather than syringe-associated transmission of HAV. However, the sharing of used needles and syringes leads to a greater exposure to HBV. The prevalence of anti-HAV among hæmophiliacs was similar to that among blood donors, confirming that HAV, unlike HBV, is not transmitted by the transfusion of blood and blood products. While the prevalence of anti-HAV among male homosexuals was not obviously increased, the increased frequency of anti-HBs was as expected.[2] Although patients on renal dialysis are not at any increased risk of HAV infection,[3] in our series the prevalence of anti-HAV was higher than that in the blood donors. However, the high prevalence is probably age related since 77% of the patients in this group were aged 30 or more.

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VIRAL HEPATITIS MARKERS IN BLOOD DONORS WITH HISTORY OF JAUNDICE

SIR,—We have tested North London blood donors for viral hepatitis markers and have compared our results with those reported by Dr Follett and colleagues (Feb. 2, p. 246) for the West of Scotland. There are similarities but also some differences in results from the two areas.

Our own radioimmunoassay tests for HBsAg, anti-HBs, and anti-HBc give broadly similar results to those achieved with the commercial kits used by Follett et al. For the assay of hepatitis A antibody (anti-HAV) we used the same test ('Havab'; Abbott Laboratories).

In West Scotland 1·6% of donors who gave a history of jaundice (JH donors) had serological evidence of previous hepatitis B virus (HBV) infection compared with 2·2% of randomly selected donors. In North London we tested blood from 2000 consecutive new donors for hepatitis B markers. Among the donors born in Britain 13·2% of the JH donors had evidence of past infection with hepatitis B, compared with 1·6% of the donors who gave no history of past jaundice (table).

HEPATITIS B ANTIBODIES IN BRITISH BORN BLOOD DONORS IN NORTH LONDON

Donors	No. of donors tested	Anti-HBs only*	Anti-HBc only	No. with both anti-HBs and anti-HBc	Total with HB antibodies
JH	68	0	3	6	*9 (13%)*
Other	1808	13	5	11	*29 (1·6%)*

*>0·01 IU/ml.

This difference between JH donors and others was not unexpected since HBV is a fairly common cause of acute viral hepatitis in young adults in the London area.[1] Like Follett et al. we found that JH donors were no more often HBsAg positive than were unselected donors. We have tested 2200 JH donors by RIA for HBsAg and found 3 positive (1 in 733); this compares with an incidence of 1 in 849 for all British born donors.[2] In our experience patients with acute icteric hepatitis B rarely become long-term HBsAg carriers, and we believe that the rarity of carriers among JH donors, even though as a group they have experienced more HBV infection than other donors, provides further evidence that the carrier state usually starts with an inapparent infection.

In West Scotland 93% of JH donors between 18 and 40 years of age had anti-HAV compared with 57% of randomly selected donors in the same age group. In North London the contrast was more pronounced; 88% (n=50) of British born JH donors had anti-HAV compared with 16% (n=100) of a control group of donors. The difference between the two areas

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suggests that there had been significantly more past infection with HAV among new donors in West Scotland than in North London, though a history of past jaundice was more common among the latter; in North London 3·6% (n=1876) of British born new donors had a history of jaundice and in West Scotland 2·6% (n=7460). These differences may have resulted from more inapparent childhood infections among the Scottish donors.

In our series of 2000 new donors there were 124 who had been born abroad in countries where HAV infections are more common than they are in Britain. Only 5 gave a history of jaundice, but 72% had anti-HAV (n=50). Their average anti-HAV titre was four-fold lower than that of British born JH donors with antibody. The few histories of jaundice and the low anti-HAV titres among donors born abroad suggest that many may have been infected in infancy or childhood.

Much of the immunoglobulin prepared in the U.K. is given for hepatitis A prophylaxis to people going to work abroad in countries where HAV infection is common. A higher titre immunoglobulin which would protect for longer or might be given in smaller doses could be made from the plasma of donors selected simply on the basis of a past history of jaundice; we would expect this globulin to be at least two-fold higher in anti-HAV titre than that made from unselected donors.

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BLOOD DONORS WITH HISTORY OF JAUNDICE

SIR,—The former policy of the Scottish Blood Transfusion Service was to reject as donors all persons admitting a history of jaundice. Lately this policy has been modified to exclude only would-be donors with a history of jaundice within the previous twelve months: donations are now accepted from most persons with a history of jaundice, provided they are HB_sAg negative upon routine testing.

We investigated the prevalence of HB_sAg in 9257 new (previously untested) donors with and without a history of jaundice. The attempt was made to include in the "jaundice" category only those donors who had a clear recollection of having had clinical jaundice or definite hepatitis: a history of neonatal jaundice was not included in this category. Donors whose jaundice episode had occurred later than 1971 were sent a detailed questionnaire seeking evidence of an episode of hepatitis B, and hospital and general practice records were consulted where possible. Further information was obtained on 36 of the 45 donors in this group.

HB_sAg was detected in 12 new blood-donors—1 out of the 792 with a history of jaundice plus 18 out of 8467 with no such history. The single HB_sAg positive donor among those with a history of jaundice was a drug addict, known to his GP to be a carrier. Of the 36 donors who were followed up, 16 gave a history strongly suggestive of viral hepatitis, but in only 6 was it possible to obtain the results of HB_sAg testing at the time of illness: all were negative. These findings show that in this community a history of jaundice does not define a group with a high prevalence of HB_sAg carriage.

A study in the West of Scotland[1] found a slightly higher HB_sAg carrier rate (1·6 times higher) among donors with a history of jaundice than among those with no such history. However, new and previously screened donors were included and this may have underestimated the differences between the two groups. A report from Manchester[2] found approximately three times as many HB_sAg carriers among 2561 new donors with a history of jaundice when compared with 38 333 new donors with no history of jaundice. The RPHA 'Hepatest' assay was used in the Manchester study, while we used a more sensitive RIA system[3] so that the true difference in HB_sAg prevalence may be greater in the two populations than the data suggest. The explanation for these differing results probably lies in the characteristics of the different local populations.

We conclude that in the donor population of South-East Scotland a history of jaundice is not associated with an increased risk of HBsAg carriage. This is in agreement with findings in the West of Scotland[3] reported by Dr Follett and colleagues (Feb. 2, p. 246). The prevalence of antibody to hepatitis A in our region is similar in donors with and without a history of jaundice (84% and 78%, respectively). This suggests that the viruses of "non-A, non-B hepatitis" may be a significant cause of jaundice in this population.

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TISSUE CEA TEST IN ENDOCERVICAL AND ENDOMETRIAL ADENOCARCINOMA

SIR,—Dr Wahlström and his colleagues (Dec. 1, p. 1159), in their study with immunoperoxidase staining for carcinoembryonic antigen (CEA), found that 80% of endocervical tumours were CEA positive while only 8% of endometrial tumours contained CEA. By eliminating endocervical clear-cell tumours and adenosquamous tumours of the endometrium, they improved their results to 80% of endocervical tumours and 0% of endometrial tumours. They concluded that the CEA test would prove valuable in the routine distinction of these two tumours.

The usefulness of this test is questionable, however, when one considers the incidences of endometrial and endocervical adenocarcinoma. Endocervical carcinoma represents approximately 10% of all cases of invasive cervical carcinoma.[5] Some 1600 cases per year are seen in the United States, while the corresponding figure for endometrial carcinoma is 37 000.[5] On Wahlström's figures 80% (i.e., 1280) of the endocervical tumours would be CEA positive (true positive, TP) while 8% (or 2960) endometrial tumours would be CEA positive (false positive, FP). On Galen's formula[6] (TP÷[TP+FP]), the predictive value of diagnosing a tumour as endocervical on the basis of a positive CEA stain would be only 30%. Similar results can be obtained using standard histochemical stains for mucin since 72% of endocervical carcinomas are mucin positive,[7] while only 5% of endometrial tumours contain stainable mucin.[8] Excluding both clear cell and adenosquamous tumours would, while decreasing the number of false positive results, eliminate most cases where the site of origin is often difficult to establish.

In view of the expense of immunoperoxidase staining, the carcinogenicity of the benzidine dyes used in most immunoperoxidase methods, and the lack of predictive power, immuno-

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