the opportunity of addressing you on virus hepatitis. The subject is topical particularly in the Eastern Region of Scotland where the disease has been notifiable since 1 January 1968. In my efforts to have it made notifiable I am conscious of the support I received from the practitioners in the area. I would value your continued support in notifying these cases since notification is the key which opens the door to the study of the many problems associated with this disease. Lastly, I am grateful to the members of your College who have agreed to participate in the planned study of family contacts. I am sure that co-operation between general practitioners and hospital staff in an exercise of this kind is very much worthwhile.

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ADDENDUM

Recently, considerable interest has been aroused following the discovery of an antigen (Australian antigen) which is believed to be closely associated with, if not actually, the virus of infectious hepatitis. The results of attempts to grow this agent in tissue culture are awaited with interest. Meanwhile, tests for the antigen may be a useful means of screening potential blood donors.

Red faces and yellow faces

Dr J. D. E. Knox, M.D., M.R.C.P., F.R.C.G.P. (*General practitioner*)

Some four years ago I started a prospective study to determine the incidence of infective hepatitis. The criteria for inclusion were simple: all patients who on clinical and epidemiological evidence were suspected of having infective hepatitis, and in whom the suspicion was strong enough to make the observer overcome the inhibitions and difficulties inherent in having serum liver function tests performed. A firm diagnosis rested mainly on the biochemical evidence of disturbed liver functions—interpreted retrospectively in the light of all evidence.

At this point I should say that because I was also concerned to evaluate the usefulness of certain 'do it yourself' kits for liver function tests, I had an additional incentive to resort to the needle, even in children who were not manifestly ill (Knox 1966).

Results

From table I it will be seen that during the study I performed liver function tests on 72 patients: 62 because I suspected at first contact that they might be suffering from infective hepatitis and ten because, although I had considered some other diagnosis at first, it became obvious that I should have to reconsider it—as they became yellow, my face became red! In table II can be seen the labels I had applied to these ten patients. Half had been considered as having simple pharyngitis, and we know from the work of Pickles (1949) that this is a common mode of presentation. Then I failed to take literally enough, the 'jaundiced view of life' presented by two additional patients—both adult women in whom the presenting phase of the illness was very much in keeping with

my pre-conceived ideas of them as persons. They were always taking that anxious thought of the morrow. And of course, I was 'had' by the abdominal pain of appendicitis-like nature. My blushes were modified by the fact that it was only on the operating table that the surgeon had second thoughts.

But I simply was not prepared for infective hepatitis masquerading as chest pain, even if it was right-sided and anterior. That, I decided, was definitely unfair. Urinary

TABLE I

INFECTIVE HEPATITIS

41	Cases from general practice
62	Suspected cases
31	Confirmed cases
10	Cases from patients with 'wrong label' at first contact

TABLE II

INITIAL DIAGNOSIS OF TEN UNSUSPECTED CASES OF INFECTIVE HEPATITIS

Febrile illness/U.R.I.		5
Depression		2
Miscellaneous: pleurodynia	1	3
appendicitis	1	
urinary infection	1	
Total unsuspected		10

tract infection is a little unlikely, you might say. Nevertheless, the combination of a fevered patient (with a 'febrile' urine), a little dysuria, and no other obvious cause for her symptoms makes this misdiagnosis a little less unforgivable. There are, of course, other ways in which infective hepatitis can present itself; one well known, though uncommon mode of presentation is polyarthralgia, with a clinical picture suggestive of early rheumatoid arthritis. This was not encountered in my small series.

What about those cases, initially suspected of having hepatitis whose biochemistry and subsequent clinical course disproved that diagnosis?

Nearly half of my series comes into this category. The final diagnoses are set out in table III. Half of the 31 cases were mild gastric upsets, and a further quarter were straightforward upper respiratory tract infections which for one reason or another—such as a 'febrile' urine, or possibly recent contact with a case of hepatitis—I suspected, wrongly as it turned out, of incubating the disease.

TABLE III

FINAL DIAGNOSIS OF 31 UNCONFIRMED CASES OF SUSPECTED INFECTIVE HEPATITIS

Gastro-intestinal upsets		15
Febrile illness/U.R.I.		7
Depression		3
Miscellaneous: B-haem. strept. septicaemia	1	6
glandular fever	1	
pregnancy	1	
'the pill'	1	
rheumatic fever	1	
chlorpromazine	1	
Total unconfirmed		31

TABLE IV

SERUM BILIRUBIN IN EARLY STAGES OF DISEASE IN 32 PATIENTS WITH INFECTIVE HEPATITIS

Serum bilirubin mg. per cent	*No. of patients*
0·1—0·9 (normal)	4
1·0—4·9 (anicterus)	24
5·0 and over (icterus)	4
Total	32

The miscellaneous group is worth a little more attention, if only because it contains at least two iatrogenic conditions—malaise, and biochemical evidence of hepatic disturbance associated with drugs, chlorpromazine or an oral contraceptive. In view of the common association between glandular fever and jaundice, it is surprising that confusion between the two diseases arose only once. The inclusion of rheumatic fever serves to remind one that this disease can be ushered in by a day or two of vague ill-

health and PUO; βeta-haemolytic streptococcal septicaemia with pyrexia, intravascular haemolysis and excess urobilinogenuria certainly raised the suspicion of the much more common disease in the early stages. Pregnancy, especially in the unmarried, and particularly if there is misleading information on the last menstrual period, can be a difficult differential diagnosis.

Anicteric infective hepatitis

In 32 of the 41 patients in this series (shown to have hepatitis) it was possible to measure the serum bilirubin levels within the first few days of clinical illness (table IV). There is no hard and fast rule about the level of serum bilirubin at which a patient becomes visibly jaundiced, because of such variables as duration of the raised level, complexion, lighting, and so on, but I suggest that values around 5 mg per cent in children might be a reasonable dividing line in general practice. If this is accepted, then seven out of eight patients were not obviously jaundiced at initial contact, and, what is more, most of them remained anicteric throughout their relatively mild and brief illness. Havens (1962) has stressed the epidemiological significance of this phenomenon; infective hepatitis with jaundice is possibly the atypical manifestation of a relatively common infection.

Conclusion

It is clear that teaching on this disease needs revision—it requires to be put in its proper perspective. This can only be done by studies in general practice and by family doctors. It is not too much to suggest that such a factual approach as that attempted here might profitably be applied to a much wider range of conditions taught in hospitals, the clinical picture of which is necessarily distorted by the process of selection applied in the daily working of our National Health Service: an approach which Keith Hodgkin (1966) has used to such good effect.

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Discussion

Dr D. Buchanan (*Dundee*): To avoid taking blood from every child who is 'off his food' is there any simple test for hepatitis which can be carried out in the surgery or should a sample of urine be sent to the laboratory?

Dr Jamieson: There is no short cut and no simple test other than the urine test, which is a very easy test in the consulting room. In the study that we are planning, we have adopted the transaminase and the dehydrogenase tests as the most delicate indicators of hepatocellular damage, and for this reason we are hoping to extract blood even from young children. For routine I believe that the examination of urine would provide useful information and this can be done quite easily in the home.