dissolution. Whether doses of ursodeoxycholic acid larger than 500 mg daily are more effective is not clear, but in one study a more rapid response was observed with 900-1000 mg than with 250-600 mg daily.[24] One manufacturer offering ursodeoxycholic acid for clinical use in Britain recommends a dose of 450-600 mg daily, and the other recommends 8-12 mg/kg a day, even though the response to treatment does not relate to body size. A simple compromise is to treat all patients with ursodeoxycholic acid 750 mg daily, giving most of the dose after the last meal of the day. There is no evidence of any real difference in the dissolution rates given by the two bile acids commonly used in treatment, but some difference may eventually emerge.[25] Ursodeoxycholic acid is prone to cause calcification of radiolucent stones during treatment, though this may not affect dissolution rates.[22 25] In an effort to prevent induced calcification, however, combinations of the two bile acids have been used with apparently good results.[26] Similarly, use of newer agents such as ursocholic acid or a combination of chenodeoxycholic acid 7-10 mg/kg a day with Rowachol have been proposed but have not yet been fully evaluated.[27 28]

Gall stone dissolution treatment is unreliable and often protracted, for continued treatment even after two years may eventually completely dissolve stones which had previously shown only a partial response.[29] Dietary treatment has been combined with chenodeoxycholic acid to speed up the dissolution rate,[30] though the overall success rate was not improved and dietary treatment conferred no advantage when used with ursodeoxycholic acid.[31] The rare condition cerebrotendinous xanthomatosis is an absolute indication for treatment with chenodeoxycholic acid, which not only corrects the abnormality of bile acid metabolism but also improves neurological performance.

Fourteen years on, therefore, we know that some gall stones can be dissolved but whether this is practical therapeutics is still under debate. The high rate of recurrence after treatment compromises the overall usefulness of the treatment, even though the recurrent stones are readily dissolved.[32] The British Gallstone Study Group reported that dietary manipulation had not shown potential in preventing recurrence. Continued low dose chenodeoxycholic acid is ineffective.[33] Continuation of alternate month full dose chenodeoxycholic acid treatment has shown promise in preventing recurrence,[34] and the use of continuous low dose ursodeoxycholic acid is under investigation. At present the consensus seems to be that after confirmed complete dissolution of gall stones the clinician should await developments and then deal with recurrent symptoms as they arise. That advice may well have to be changed when the results of trials in progress are reported.

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Are all mesotheliomas due to asbestos?

Mesotheliomas became well known only in the 1960s. Their occurrence is closely related to exposure to asbestos; in most cases the exposure has been heavy, but in others it has been light, transient, and discoverable only by painstaking inquiry. In 100 patients with pleural mesothelioma in Liverpool exposure was established in 88, and in all but one of these light microscopy showed over 20 000 coated and uncoated asbestos fibres per gram of dried lung.[1] In seven no exposure was discovered and in six of these the counts were below 20 000. In only two were no fibres seen, whereas the lungs of the other four contained several thousand per gram. Were these mesotheliomas caused by asbestos picked up from the environment?

Most lungs nowadays contain asbestos: 29% of specimens from controls in the Liverpool study had over 20 000 fibres per gram, and in only seven were none seen.[1] In East Anglia 4% of specimens taken at surgery and 30% of those taken at necropsy did not show fibres.[2] Such figures are influenced by the technique used.[3] Furthermore, light microscopy greatly underestimates the number of fibres; electron microscopy would probably show considerable numbers in many of the negative cases. These, however, would be mainly chrysotile and not amphibole fibres, which are the main determinants of the development of mesothelioma.[4]

Some asbestos has been used for centuries, and its commercial exploitation began in 1880, but it became a common material only in this century. Some mesotheliomas, however, were diagnosed before this time, suggesting that they were not caused by asbestos.[5] Other pointers in the same direction are that mesothelioma in unexposed people occurs at an earlier age than tumours related to asbestos[6] and that the parents of such patients have a high incidence of cancer.[7]

The interval between first exposure to asbestos and the development of a mesothelioma is long. In gas mask workers —with accurately defined exposure between 1939 and 1944 —the first tumour appeared in 1963.[8] The mean latent period to death in workers in an asbestos factory was 32 years, and in only two out of 188 was it less than 18 years (both 14 years).[4] In South Africa, where environmental pollution with crocidolite has been very heavy in the past, mesotheliomas did not develop until adult life,[9] and in the area of Turkey where mesotheliomas due to a non-asbestos mineral, erionite, are common, the tumours are not in persons under the age of 20, despite exposure to fibres in the soil and walls of buildings from early childhood.[10]

The clear conclusion is that most, if not all, mesotheliomas induced by fibre have a latent period of at least 12 years and usually much longer. Sporadic cases, however, occur in unexposed children below the age of 12.[11] Most probably these are not caused by environmental asbestos; so it is reasonable to postulate that some cases occurring in adults are also not caused by asbestos.

The latent period is of medicolegal importance. It should be taken into account when a mesothelioma develops soon after asbestos exposure, particularly light exposure. Timing also needs to be considered when there has been exposure in several employments and a judgment has to be made on which may have contributed to the development of the tumour.

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Research in general practice

The research division of the Royal College of General Practitioners is unhappy with the facilities available for established general practitioners and with the research content of vocational training programmes—see the article by Stott *et al* (p 1198). They looked only at what is available through the widely scattered academic departments of general practice and the offices and representatives of the Royal College of General Practitioners, ignoring the many other sources of help and advice which may be tapped, but it is reasonable to expect the college and universities to show a lead here. Whether the college as a whole is as concerned as its research division is debatable; the last two reference books for members[1,2] contain only one article discussing research methods,[3] and the 1984 *Medical Annual* contains none.[4]

Aspiring general practitioners are sometimes advised that a research interest may be a handicap when they are applying for jobs, and a recent article provides some evidence for that warning.[5] Yet the British general practitioner has almost unique opportunities for some forms of research. Since everyone is supposed to register with a general practitioner, and most people do so, many sorts of epidemiological study, management reviews of specific diseases, and audits of screening procedures may be performed in a way that would be impossible in, for example, the United States. By contrast, some other sorts of research are difficult in general practice: for example, assessment of the efficacy of different drugs or biochemical studies of tests tend to be unsatisfactory because of insufficient numbers and inadequate control groups. Multicentre general practitioner trials of drugs are rarely convincing. There are, of course, exceptions such as the oral contraceptive and hypertension studies, but these require a large multidisciplinary team, and the individual general practitioner usually acts as a recorder of data rather than testing his or her own hypotheses.

General practice research should, then, be different from that found in hospitals, and I question Stott's suggestion that all trainee general practitioners should be expected to participate in it; it is difficult to produce a good quality piece of research during one year as a trainee. If vocational training schemes were directed more towards the needs of the aspiring general practitioner and less towards providing junior staff for hospital specialties things might be different, in that time could be set aside to pursue research or other special interests over the whole of the three year course. Even then only a few enthusiasts would be likely to produce something worth while for themselves or others. Those with such enthusiasm must be encouraged, and all trainees should learn about research methods during their vocational training courses, with additional help and facilities being given to those who show an interest. Trainees need to acquire, however, many skills, and research ability is not the most important. Moreover, it would be foolish to allow achievement in research to become a dominant factor in selecting potential general practitioners or in estimating their worth to their patients or profession.

Nevertheless, established general practitioners who are interested in research could and should have better facilities. Many sources of advice are already available, but it may be both time consuming and difficult fully to exploit them, especially for a doctor who lives and works some distance from recognised centres. Academic departments are overstretched and underfunded, and the Royal College of General Practitioners' faculty secretaries and regional advisers are unlikely to have much time to help unless they have a research interest themselves. Postgraduate medical centres might perhaps do more. Each year more relevant textbooks, journals, and collections of articles should find a place in the library, together with files of information on sources of statistical advice, help with research methods, and funding available both locally and nationally. Postgraduate centres might also act as a forum for general practitioner research groups and for presenting and discussing results. Most already provide an admirable education programme for general practitioners, but the flow of information is usually