regulated; in most other countries it is not. The fact remains that nowhere are specialist certificates regarded as indicating suitability for appointment to a post carrying responsibilities equivalent to those of a consultant.

The second misconception is that there is such a thing as completion of full specialist training. Medical education is a lifelong process—defining a point at which training is complete is impossible. The best that can be achieved is to define training sufficient for a particular purpose. The directives have done this in setting down minimum standards for those seeking the legally defined privileges of specialists within social security systems. In another setting the joint higher training committees have also done it by laying down standards required for consultant appointment.

By demanding greater than the minimum experience from those seeking consultant posts, the United Kingdom cannot reasonably be seen to be breaching the directives, not least because all countries have, in practice, similar requirements. These arrangements do not discriminate against specialists from other countries of the European Community, who are entitled to be appointed to NHS posts commensurate with their training and experience. They would be discriminatory if eligibility for appointment depended on training having taken place in posts supervised by one of the higher training committees, but this is not the case. At least one specialist trained elsewhere in Europe has already been appointed a consultant in Britain.

The challenge to training arrangements in Britain has resulted directly from the appearance of the General Medical Council's indicative register of those who have completed specialist training. Although the medical acts do not empower the council to keep a specialist register (and any doctor may, in Britain, legally describe himself or herself as a specialist), the indicative register has for the first time conferred on those holding certificates of accreditation or appointed to NHS consultant posts a privilege not available to others—namely, the inclusion of the suffix T in the medical register. This privilege is unlikely to have any discriminatory effect in terms of the likelihood of appointment to a post in the NHS as appointments committees base their judgments on candidates' training and experience. It may, however, be held to be discriminatory in respect of a consultant from another country of the European Community wanting to enter private practice in the United Kingdom. One of the principal

purposes of the indicative register was to enable the public to distinguish those trained to consultant standard from those with lesser experience in the unregulated field of private practice.

Legal opinion on this matter is divided, and a definitive answer can come only from the European Court of Justice. The General Medical Council has several options. The first is to allow certified specialists from other countries within the European Community to use the T indicator. This would be irrational as their specialist certificates and United Kingdom accreditation are different in kind. It would also be unfair to British trained doctors wishing to work as specialists in other European countries, who would have to complete a much longer training to acquire a certificate than is demanded elsewhere. Alternatively, the council might maintain an indicative register of those trained to the standards laid down in the directives, but the relevance of this to medical practice in Britain and to the aims of the present indicative register is questionable. To publish two indicators would perpetuate any discrimination implicit in the present system. The council's last option is to abandon the indicative register altogether.

Regarding doctors who have completed training up to the minimum standards set out in the directives as fully trained and employing them in career posts would be incompatible with the exclusively hospital based pattern of specialist practice in Britain and would remove at a stroke any obligation on the NHS to provide training for them beyond this level. The well organised and regulated system of specialist training that exists in Britain is an asset worth retaining.

The future of the General Medical Council's indicative register is less sure. The legal arguments in support of it are sufficiently strong for them to be tested in the European court. The potential benefits from the indicative register are, however, marginal, and sacrificing it would be preferable to losing the essential elements of British specialist training.

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Diagnosing maxillary sinusitis

Often difficult

People frequently attribute episodes of facial pain to sinusitis, and many of them are right: maxillary sinusitis usually accompanies the common cold. Other causes include tension headache, migraine, or dental disease; in some cases no cause is found. Many patients treat themselves with decongestants. Others consult their general practitioners, possibly have their sinuses examined radiologically, and are prescribed antibiotics. These may not affect the outcome as infection is not the only factor. In short, while the diagnosis is obvious in many patients, in many it is not. Once these patients become convinced that they have sinusitis ear, nose, and throat surgeons often find this belief difficult to dispel.

Even specialists have difficulties in deciding what constitutes significant maxillary sinus disease. Plain radiographs,

even with multiple projections, are notoriously unreliable. Only complete opacity or a fluid level is significant; polyps or mucosal thickening do not necessarily equate with active disease. Rates of false positive and negative results of 35% and 10% respectively have been quoted.^{1,2} To complicate matters further, more sophisticated imaging techniques often show incidental abnormalities of the paranasal sinuses. In a retrospective study of 483 magnetic resonance scans undertaken for investigation of posterior fossa signs or symptoms, a quarter of maxillary sinuses appeared abnormal.³ In a prospective study of 133 patients the same workers failed to find any statistical relation between nasal symptoms, other than a cold, and the appearance on magnetic resonance imaging. Some simple tests are appropriate for acute symptoms—

for example, nasal swabs, ultrasonography, and diagnostic lavage. Others, more suitable for chronic cases, can realistically be undertaken only in a referral centre; these include smears, mucosal biopsy, estimation of the ciliary beat frequency, and sinuscopy. With the possible exception of endoscopy none of these techniques is totally reliable.^{4,5} In this issue, van Duijn and colleagues (p 684)⁶ have investigated the predictive value of signs and symptoms in the diagnosis of maxillary sinusitis (diagnosed by ultrasonography). General practitioners' clinical diagnoses were confirmed in only half the cases. Even when the diagnosis was weighted by clinical symptoms inaccuracy and uncertainty persisted.

Should this be surprising and, in any case, does it really matter? Recently, with the development of functional endoscopic sinus surgery,⁷ some patients with mucosal disease previously thought to be insignificant have been rid of their symptoms. Abnormalities of the lining of the ethmoid sinuses cause mechanical or functional obstruction to drainage of the paranasal sinuses, but under close endoscopic control the ethmoid sinus can be opened through the middle meatus and sufficient tissue removed to allow adequate ventilation and restore mucociliary clearance. Paradoxically, in some clinically successful cases abnormal mucosal changes have persisted; others with endoscopically perfect results have

continued to have symptoms. A need clearly exists for more research into the mechanisms of sinusitis and long term clinical trials of treatment.

Unfortunately, general practitioners are in the unenviable position of being the least well equipped to diagnose sinusitis but are being criticised for diagnosing it too often and overprescribing antibiotics. Yet they are liable to litigation should the patient develop complications from infection. Orbital and intracranial sequelae of inadequately treated maxillary sinusitis are still seen regularly today and can have catastrophic consequences such as loss of sight, meningitis, or a brain abscess.

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Transfusing *Yersinia enterocolitica*

Rare but deadly

Severe, often fatal reactions after the transfusion of contaminated blood have been well described.¹ Single unit closed collection systems have greatly reduced environmental contamination of donated blood,² but recent cases of infection with pseudomonads have led to renewed calls for strict adherence to aseptic technique in collecting and processing blood and careful temperature control of blood banks.³ These precautions, however, do not prevent transfusion reactions arising from blood contaminated with *Yersinia enterocolitica*.

Y enterocolitica is a Gram negative coccobacillus that is normally associated with self limiting gastrointestinal illness. Although its optimum temperature for growth is 25°C, it is one of the few human pathogens that can grow at 4°C (incubation at this temperature is used for enrichment culture in the laboratory). Outside the United Kingdom 17 deaths in 27 reported cases of fever and shock immediately after transfusion have been reported with the subsequent isolation of *Y enterocolitica* from the donated unit or the recipient's blood.⁴⁻⁸ At least six cases with four deaths have occurred in the United Kingdom since the first report in 1988 (R Mitchell, personal communication; J Smillie and F Ala, annual meeting of British Blood Transfusion Society; Nottingham, 3-6 Sept 1991).^{9,10} Common features of most reports include the storage of whole blood or red cell concentrates for over three weeks before transfusion and serological evidence of donor infection with *Y enterocolitica* with or without a history of diarrhoea at the time of donation.

Experimental inoculation of small numbers (less than one colony forming unit/ml) of *Y enterocolitica* into units of packed red cells kept at 4°C is followed, after a lag phase of one to two weeks, by exponential growth to over 10⁶ colonies/ml after three weeks' incubation, when endotoxin is first detectable.¹¹ Transfusion reactions are presumed to result from a chain of

coincidences in which a mild, even asymptomatic, infection in the donor gives rise to a transient bacteraemia at the time of donation. This seeds the unit of blood with a small inoculum of the organism and, after enrichment culture at 4°C for over three weeks, the unit contains numerous bacteria and associated endotoxin. Transfusing this blood results in septicaemia and endotoxin mediated shock. Although prolonged incubation at refrigerator temperature is usually the rule in reactions, one case has been described after transfusion of platelets (R Mitchell, unpublished communication), which implies rapid growth at 22°C in a medium relatively poor in red cells. To put this problem in perspective, in the United States, which has made most effort to encourage reports of this phenomenon, the Food and Drug Administration is aware of seven deaths in 13 cases since 1986⁸ (about one death per nine million transfusions).

Although a rare complication, it has proved difficult to find a simple screening method for blood banks. Conventional serology by agglutination gives numerous cross reactions, may give negative results in acute infection, and may give positive results in 1-4% of some populations. An expert advisory committee of the Food and Drug Administration has summarised other possible approaches and their drawbacks.⁸ Excluding donors with a history of gastrointestinal illness in the month before donation would result in unworkable numbers of lost donations and would not detect the asymptomatic donors responsible for most incidents. Conventional culture of all donations is problematic and of uncertain sensitivity. Reducing the time for which whole blood and red cells are stored would have serious implications for the blood supply.

Y enterocolitica does not produce haemolysis of a degree sufficient to render the unit visibly darker when viewed in