remembered that he had been bitten on the hand by a mouse which he had rescued from his pet cat.

A provisional diagnosis of leptospirosis was made and the patient was treated with intravenous ampicillin 6 g daily in divided doses. He made a good clinical recovery and returned to West Germany after 10 days. His liver function tests returned to normal over the following two months. Initial serological examination performed in Italy and subsequent examinations performed during convalescence confirmed infection with *Leptospira interrogans (grippotyphosa* variety).

Leptospirosis transmitted by rodent bites has been previously described, and is an unusual mode of transmission.[1,2] The mechanism is unclear as leptospires have not been found in rodent saliva, but it is probable that contamination of the fresh wound by urine occurs. It has been suggested that this may result from urine being present in the animal's fur as a result of preening, or else may occur as a result of the animal spraying urine in fright.[1]

L. interrogans (grippotyphosa variety) is endemic in small rodents in central Europe, the major host being the common vole (*Microtus arvalis*).[3] In Czechoslovakia up to 12% of abattoir workers and 11% of agricultural workers have been shown to be positive for leptospiral antibodies, *L. grippotyphosa* being the second commonest serovar.[4] Epizootics occur in rodents and these may be related to outbreaks of disease in humans. Principally affected are those in contact with small animals, particularly in wet and damp conditions.[5] This is highlighted by the synonyms for the disease, such as swamp fever, mud fever, slime fever, field fever or the German *schlammfieber.*

Clinically the disease is usually a mild one typified by sudden onset of chills and rigors, resembling influenza. Myalgia is characteristic. Jaundice and renal failure are rare, with the illness normally lasting seven to 10 days. Mortality is less than 1%.[4]

L. interrogans (grippotyphosa variety) is diagnosed infrequently in the British Isles.[6,7] Although our patient was diagnosed and treated abroad, he had travelled a significant distance between exposure and subsequent illness, and could easily have presented in the United Kingdom. With increasing tourist traffic to endemic areas, particularly of campers and backpackers, this disease should be included in the differential diagnosis of the febrile traveller.

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We thank Dr S A Watkins of the PHLS Leptospira Reference Unit, Hereford, and the Instituzione mallattiae Reparto Infettive del ospetale Santissimo Trinita for their help in investigation, and the Director General of Medical Services (RAF) for permission to report this case. This publication is entirely the opinion of the authors and does not represent the views of the Ministry of Defence.

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Pneumatic otoscopy and tympanometry

Sir,

There remains some controversy about the relative use of pneumatic otoscopy and tympanometry in the diagnosis of otitis media with effusion. Although tympanometry is preferable,[1] it is not generally available in general practice and pneumatic otoscopy has been recommended.[2] There are, however, disadvantages with pneumatic otoscopy. In particular it is a subjective examination and there can be variation in what is termed impaired mobility of the tympanic membrane. Furthermore, pneumatic otoscopy is technically more difficult to perform in children. The ear should be free from wax as good illumination is essential and the patient should refrain from head movement.

A study carried out at the Victoria Infirmary, Glasgow, comparing the findings of pneumatic otoscopy with the compliance levels of tympanometry, revealed that a mobile tympanic membrane corresponded to a high tympanometric compliance and at the levels recorded there would be less than a 5% chance of fluid occurring in the middle ear. Alternatively the compliance levels for slightly mobile and immobile eardrums were intermediate, and the presence of middle ear fluid could not therefore be reliably predicted.

Pneumatic otoscopy has been found to have a high sensitivity (84–91%) and a relatively low specificity (74–78%),[3] which means that even in experienced hands it is not an ideal screening test. If pneumatic otoscopy is used alone (with the above specificity) false positives will occur at a rate of 22–26%, leading to an over-diagnosis of middle ear effusion. This error in numbers will be greater when the population being examined is mostly normal, for example in screening. Therefore, when pneumatic otoscopy is used alone, the results should be interpreted with care.

Hand-held tympanometers are now available and with the reduction in size there has been a corresponding reduction in price. A more recent alternative to tympanometry is acoustic reflectometry using a hand-held device which measures sound reflected from the eardrum without requiring an airtight seal. Reasonable results have been obtained when this is used in combination with pneumatic otoscopy, providing the correct cut-off point is taken between normal and abnormal.[4,5]

In conclusion, when using these methods for the detection of otitis media with effusion, the best results will be obtained from a combination of pneumatic otoscopy and tympanometry: the finding of definite mobility of the eardrum on pneumatic otoscopy suggesting normality, together with flat tympanometric readings indicating the presence of fluid.

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Characteristics of long-term benzodiazepine users

Sir,

The results presented by Simpson and colleagues on the characteristics of long-term benzodiazepine users in general practice (January *Journal,* p.22) were similar to those I found in a small unpublished audit carried out at Montpelier health centre in Bristol where I was a trainee. The inner city practice of 11 100 patients had 100 patients on computerized repeat prescriptions for benzodiazepines — 68 were

women and 32 men with an age range of 34 to 97 years (median 64 years). The length of time they had been taking benzodiazepines varied from 0 to 28 years with a median of 13 years. These patients were compared with matched controls.

The Wilcoxon test was used to compare the attendance rate of the two groups in the previous year and showed that those taking benzodiazepines attended more frequently ($P<0.001$) (attendance was not necessary to obtain a repeat prescription). The chi square test was used to compare a broad labelling of chronic illness, whether patients had seen a psychiatrist, whether alcohol abuse was noted and whether there was any evidence or suspicion of depression. Patients taking benzodiazepines had a significantly higher rate of chronic illness ($P<0.001$), psychiatric involvement ($P<0.001$) and depression ($P<0.001$) than the control group.

Using Prescription Pricing Authority information it was estimated that another 120 patients in the practice were receiving benzodiazepines on a long-term basis, thus giving a prevalence of 2.0%. This compares with 2.6% found by Simpson and colleagues and 1.6%[1] and 2.2%[2] found in other studies. Interestingly, that 23 of the controls had been prescribed short courses of diazepam in the past reflects the popularity of benzodiazepines in the late 1960s and 1970s.

The frequency at which prescriptions were issued revealed that many of the long-term users in my study did not take their drugs continuously. Simpson and colleagues state that 'the boundary between a benzodiazepine anxiolytic and hypnotic is not absolute in pharmocological terms or with regard to how the drug is administered'. In my audit I would have found it difficult to decide whether a patient was taking a hypnotic, an anxiolytic or an anxiolytic plus hypnotic. There may be variation between dosages and in the interval between doses in an individual patient who wants a day time anxiolytic effect one day and a nocturnal hypnotic effect the next. In addition, there may be increased use at times of crisis, and hoarding when times are better. What is written on the prescription and recorded in the notes may not represent what the patient takes. I expect this difficulty in allocation to groups is why it has 'not previously been addressed in the literature' and it is admirable that Simpson and colleagues were able to overcome this problem.

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Health checks for infrequent attenders

Sir,

A number of points are raised by N F Thompson's paper on health checks for infrequent attenders (January *Journal* p.16). First, a number of patients did not return for tetanus vaccine or cervical smears. We have found it essential to encourage immediate uptake of these. Secondly, the health checks were performed only by the general practitioner. Using a practice nurse, particularly for cervical smears in the clinic, may have produced better compliance and also reduced the cost of the service. Thirdly, only allowing one hour per clinic must have produced a degree of stress in the participating doctor who would probably not be inclined to include other services on a 'there and then' basis.

At present we incorporate our infrequent attenders and new patients in our 'well-person checks'. Because a nurse is working during most of the doctors' surgeries the patient can choose a time to suit. An opportunistic 'Would you like a health check if the nurse is free?' from the general practitioner is another useful tactic.

We have an uptake of screening of 40% among patients invited and, interestingly, a number of patients respond to a second invitation. Cervical smear and tetanus uptake during the checks is over 50%.

Thomson's practice evidently has a high uptake of preventive services but we wonder whether a rethink or greater flexibility may help to improve the service beyond recognition.

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Efficient use of time in general practice

Sir,

I would like to support the conclusions of the editorial by Dr Roland (December *Journal*, p.485). We operate exactly the system of booking patients that he suggests and have done so for the last three years.[1] The system works well although our 'extras' usually fill up any available spaces, so that surgeries generally extend to three hours. However, the booked patients experience minimal delays with their appointment times and consequently the doctors feel less rushed. Our consultation rate is a little over three per patient per year and I am sure this system would work well in most general practice settings.

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Reference

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Sir,

Some readers may not have noticed the revolutionary implication of Dr Ian Hill-Smith's article on appointment interval (December *Journal*, p.492) and the editorial which refers to it (p.485). This is that the average time allotted to appointments should correspond to the average time actually taken by the doctor. There is a simple test of whether this extraordinary idea has been put into practice; this is to note the times at which booked surgeries finish. If this is more than 10 minutes later than the booked time more than one time in 10, there are exasperated patients, being calmed by harrassed staff, waiting to see a doctor who does not understand 'the efficient use of time in general practice'.

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Comparing trainer and trainee referral rates

Sir,

The comparison of referral rates among trainers and trainees described by Rashid and Jagger (February *Journal*, p.53) deserves further comment. They rightly conclude that such data need to be carefully interpreted, and I share their doubts that crude referral rates are a sensitive enough performance indicator for the purpose of resource allocation.

In any audit of rates, the importance of the denominator is axiomatic. With regard to referrals, rates based on the total number of patients at risk, that is the list size, may be just as valid as rates quoted with a denominator defined by number of consultations. It is unfortunate that the