

modest alkalosis causing vasoconstriction (pH about 7.4-7.5) this difference increased to 0.53 kPa (unpublished observations). Forster *et al* have found unsatisfactory correlation between arterial and arteriased venous samples for partial pressure of oxygen.⁴

Capillary or venous sampling to estimate arterial blood gas pressure has been used for many years,²⁻⁴ and several other indirect methods have also been used.⁵ While some results have been encouraging, the conclusion that such methods should become routine is probably still premature. If knowledge of the arterial blood gas pressures is important in determining management in potentially life threatening conditions then the arterial blood gas pressures should be measured.

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Capillary sampling is routine in Germany

EDITOR.—Capillary blood sampling for measurement of blood gas pressures and pH, described by Khavar Dar and colleagues, has been normal practice in Germany for many years.¹ Arterial puncture is performed only when an indwelling line is needed. Use of a scalpel blade is unnecessary and dangerous. A blood lancet (Monojector lancet device, Sherwood Medical) provides enough blood for the capillary tube and can be used on the finger as well as the ear lobe.

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Mount Everest study supports use of capillary samples

EDITOR.—Like Khavar Dar and colleagues, we have investigated the differences between arterial and capillary estimations of blood gas pressures, although under different circumstances.¹ We used a blood gas analyser (Ciba Corning 248) to measure blood gas pressures in 52 members of the 1994 British Mount Everest medical expedition at Mount Everest base camp (altitude 5300 m) in Nepal. Capillary samples were preferred because of our concern about the hazards of arterial puncture. To compare arterial and capillary values, four researchers also underwent arterial puncture. Arterial samples were taken without local anaesthesia from the radial artery with a 25 gauge needle; capillary samples were taken by puncture of the medial aspect of the thumb, which had been warmed in a glove or by holding it in the axilla. Blood gas pressures and acid-base values were compared with a paired *t* test.

Differences (arterial minus capillary) were non-significant for partial pressures of carbon dioxide (-0.59 kPa (95% confidence interval -1.63 to 0.16 kPa); P=0.09) and oxygen (0.215 kPa (-0.8 to 1.35 kPa); P=0.54) as well as pH (-0.0065 (-0.08 to 0.0055); P=0.66). Capillary standard bicarbonate concentration was significantly higher than the arterial concentration (-2.5 mmol/l

(-4.31 to -0.84 mmol/l; P=0.018). There were no complications from the blood sampling, and, in contrast to Dar and colleagues' finding, little discomfort was reported with arterial puncture, perhaps because of the smaller diameter needle used. Although the numbers are small, our data support the use of capillary blood sampling in patients and research subjects, both in wards and on mountains.

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Geographical relations between patients and general practitioners

EDITOR.—Scott A Murray and colleagues draw attention to the geographical relations between patients and general practitioners in an urban area.¹ In rural areas lists are low, travel is a major factor for patients and doctors, and there is the additional, and potentially perverse, factor of rural practice units. Remuneration heavily based on capitation penalises rural practitioners, and rural practice units are intended to offset this partially. Unfortunately, no worthwhile limits are placed on the distribution of these payments, with the result that urban practices may be tempted to extend their range of operations to attract or retain rural practice units. Likewise rural practices may be tempted to extend their ranges to maintain numbers of patients in the face of urban encroachment. This is plainly self defeating, jeopardises standards of care, and precipitates ever more frenetic work rates for the practitioners.

A balance must be struck between safeguarding standards of care, the freedom of patients and doctors to choose each other, and the continued viability of rural practices. I propose the following amendments to the regulations. They do not prevent doctors and patients from choosing each other but do encourage reevaluation of the relationship and the motives in maintaining it.

Firstly, no practice whose main premises are in a town with a population of over 8000 should be eligible for rural practice units.

Secondly, rural practice units should be payable from the existing 3 mile range, in 1 mile increments, up to but not beyond a point 3 miles from the next practice. Patients beyond this limit should neither attract payments nor count toward the 20% threshold for payment.

Thirdly, patients living in areas that are beyond the limits of a neighbouring practice's area should be offered an interview with the independent medical adviser or community health council in order to determine that their preferences and needs are being adequately met and that they are fully acquainted with the options open to them.

The independent medical advisers of family health services authorities may care to speculate on practitioners' ability to fulfil their contractual obligations to particularly far flung patients. It is flattering to have one's ego stroked by patients

asking to remain registered when they move much closer to another practice. It is treading a path paved with good intentions and obscured by a fog of folly to accede.

Murray and colleagues reflect my view: "The enthusiastic recommendation of a neighbouring practice may allow some patients to feel that they will have continuity of care despite changing surgeries." I have every confidence in my neighbouring practices and do not hesitate to direct patients to them when they move. Having patients and doctors crossing on the road as they travel to see each other in adjacent manors makes no sense at all, especially in a rural area.

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- 1 Murray S, Graham L, Dlugolecka M. How many general practitioners for 1433 patients? *BMJ* 1995;310:100. (14 January.)

Paracetamol and self poisoning

EDITOR.—Keith Hawton and colleagues' unsubstantiated comment that "prevention of fatal self poisoning with paracetamol is now an urgent issue" is not supported by information on fatal self poisoning.¹ In England and Wales in 1992 the number of deaths due to overdoses of medicines was 1951, of which 144 were due to paracetamol poisoning. The number of deaths due to poisoning with analgesics obtained over the counter, including paracetamol, has been declining steadily, from 322 in 1975 to 191 in 1992 (the latest year for which full data are available). Furthermore, the number of deaths due to paracetamol poisoning fell in 1991 and 1992 (Office of Population Censuses and Surveys, personal communication).² Altogether 116 of the 144 deaths due to paracetamol poisoning were probably suicides; while paracetamol is by far the most widely used medicine for therapeutic purposes in Britain, it is responsible for fewer than 3% of all suicides (Office of Population Censuses and Surveys, personal communication).²

Any preventable death is cause for concern, but it is important not to exaggerate the importance of paracetamol poisoning in the overall context of fatal overdoses of medicines and suicide. It is especially important that perceived urgency should not lead to hasty attempts to do something—particularly something as speculative as the measures offered by Hawton and colleagues—at the expense of an analgesic that contributes much to the safe day to day management of pain by many millions of people.

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- 1 Hawton K, Ware C, Mistry H, Hewitt J, Kingsbury S, Roberts D, *et al*. Why patients choose paracetamol for self poisoning and their knowledge of its dangers. *BMJ* 1995;310:164. (21 January.)
- 2 Office of Population Censuses and Surveys. *Mortality statistics: injury and poisoning 1992*. London: HMSO, 1994: table 10. (Series DH4 No 18.)

Preventing suicide

EDITOR.—We agree with Greg Wilkinson that additional resources are required for the identification and treatment of people with mental illness.¹ Australian statistics show a high incidence of suicide among people with mental illness. These same statistics, though, refute the contention that there is "no good evidence of benefit from such commonly cited measures as seeking to influence the means available." Even a cursory examination

of strategies to prevent suicide shows the dramatic reduction in fatal completed suicides in Britain as a result of coal gas being replaced by natural gas, which does not contain carbon monoxide. The history of the prevention of suicide in Australia also shows the remarkable cessation of suicides in middle aged women due to overdosage of barbiturates following a change in prescribing practices by general practitioners.

Clearly, a large proportion of people who commit suicide would not die if access to highly lethal methods was less easy. We have examined a series of 30 suicides due to firearms; the histories clearly showed a subgroup of people who had committed suicide on impulse. Indeed, a recent paper looking at people who attempted to commit suicide by using firearms showed that most had no history of mental illness and, several days after the attempt, had no wish to die.²

A second point made by Wilkinson is clearly also incorrect: he states that there is no good evidence for targeting strategies to prevent suicide at people presenting at general hospitals after attempted suicide.³ Work under way in Perth, Australia, shows a clear benefit from the provision of psychological assessment and support in reducing the frequency of further attempts at suicide. While it remains to be seen if this strategy has an impact on the longer term mortality from suicide, in the short to medium term there are clear reductions in the morbidity and health burden associated with repeated attempts.

While the treatment of people with mental illness is an important aspect of reducing suicide, there is compelling and sound evidence for a range of other strategies that reduce access to means of suicide, restraint in media reporting, and management of attempted suicides.

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- 1 Wilkinson G, Morgan HG. Can suicide be prevented? *BMJ* 1994;309:860-2. (1 October.)
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Multiple significance tests

EDITOR.—J Martin Bland and Douglas G Altman highlight the need, in significance testing, to take account of simultaneous tests that are not independent.¹ This is a common situation in investigations of outbreaks of food poisoning. Such investigations usually take the form of a cohort or case-control study based on a questionnaire that contains questions about all, or as many as are known, of the foods to which those affected may have been exposed.² Usually one statistical test is performed for every "exposure"—that is, for every item of food included in the survey. Bonferroni's correction is one of the best known methods of adjustment but requires knowledge of the number of statistical tests performed on the dataset.³

To investigate correction for simultaneous inference in reports of investigations of outbreaks we analysed a sample of published reports of outbreaks from 1991 and 1992. We manually trawled journals that had some association with public health, epidemiology, food hygiene, infectious disease, and microbiology from the shelves of a large regional medical library. Any studies that

reported the investigations of outbreaks of food poisoning were included in this study. We found 27 such reports, of which 16 were cohort studies and the remainder case-control studies. Only two reports mentioned the number of foods included in the investigation, and none mentioned the possible need to take account of simultaneous inference. Only 11 reports stated the significance level against which the result of the statistical test was compared (in each case it was taken to be 0.05), and it seems that epidemiologists reporting outbreak investigations often ignore basic statistics.

Even if one supports Rothman's view that correction for simultaneous inference is not necessary, the number of tests performed in investigations of outbreaks and the level of significance should be stated to allow readers the choice of whether to make an adjustment and thus to ensure an informed interpretation of the results.⁴

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The Gulf war syndrome

EDITOR.—Since my predecessor last wrote to the *BMJ* the number of patients concerned about their health in relation to service during the Gulf war in 1990-1 who have undergone systematic assessment by the defence medical services has risen to 200. Our assessment programme is being subjected to clinical audit by the Royal College of Physicians. When the programme is complete a detailed report will be published; meanwhile, I offer this summary of our findings.

Some 45 000 British personnel were involved in the Gulf war conflict, and 237 have come forward under our clinical assessment programme. Five broad diagnostic categories have emerged.

Minor organic disorders (40%)—These are well defined minor medical or surgical conditions. Diagnoses include bronchial asthma, proctitis, the irritable bowel syndrome, tension headache, and various dermatoses. In no case can an unequivocal causative link be shown with service during the Gulf war.

Major organic disorders (14%)—These are well defined serious illnesses requiring long term treatment. Diagnoses include ischaemic heart disease, malignant disease, cardiomyopathy, inflammatory bowel disease, and the nephrotic syndrome. Again, there is no unequivocal causative link with service during the Gulf war.

Psychiatric disorders (36%)—This category includes post-traumatic stress disorder, adjustment disorders, anxiety states, and depression. A clear relation between service during the Gulf war and the onset of illness can be shown in a number of these patients.

The chronic fatigue syndrome (8%)—This controversial diagnosis is restricted to those who satisfy the criteria of the US Centers for Disease Control. No consistent temporal relation between service during the Gulf war and the onset of the syndrome has emerged.

Worried well (2%)—These patients have presented for assessment as a result of either anxiety

induced by the media or exhortation from relatives. They have been reassured by the medical examination process.

No evidence has emerged that any organic disorder has occurred more commonly in Gulf veterans than in any similar population over a similar four year period. As might be expected, certain psychiatric conditions (post-traumatic stress disorder, adjustment disorders) can be attributed to the Gulf conflict, though there is no evidence that their incidence is greater than that in earlier conflicts. The incidence of the chronic fatigue syndrome may fuel the debate over this condition, but overall the symptom "fatigue" was reported no more commonly in the assessment group than in an age matched general population.²

These findings remain consistent with the earlier British position¹ and recent American findings.^{3,4}

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- 1 Beale P. Gulf illness. *BMJ* 1994;308:1574. (11 June.)
- 2 Meltzer H, Gill B, Petticrew M. *The prevalence of psychiatric morbidity among adults aged 16-64, living in private households, in Great Britain*. London: Office of Population Censuses and Surveys, 1994. (OPCS surveys of psychiatric morbidity in Great Britain bulletin No 1.)
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- 4 US Institute of Medicine. *Health consequences of service during the Persian Gulf war: initial findings and recommendations for immediate action*. Washington, DC: National Academy Press, 1995.

Referencing medical articles on computer networks

EDITOR.—Interest is increasing in the use of electronic communication between computer users over networks such as the internet. This allows the rapid dissemination of information between doctors in different continents. There are a growing number of discussion groups for practitioners with specialist interests, in which messages are distributed by electronic mail from a central hub.¹ The proceedings of these discussion groups are often collected into archives. A peer reviewed electronic journal of anaesthesia and critical care medicine (*Educational Synopses in Anesthesiology and Critical Care Medicine*) was established last year.

A system for referencing articles in electronic journals or the archives of discussion groups is now needed. Such a system would have to incorporate the internet address for the article (the universal resource locator) as well as the more familiar details of author, title, and date. An example of a reference to a recent article might be:

Doyle DJ. The diagnosis of brain death. A checklist approach. *Educational Synopses in Anesthesiology and Critical Care Medicine* (Internet: esia@gasnet.med.nyu.edu) 1995;3.

Referencing of items in the archives of medical discussion groups is complicated by the variety of formats that exist and the frequent lack of editorial input. The location and format of articles on computer networks are also likely to change with improvements in computer and communications technology. The attractions of this means of rapid global communication will surely, however, lead to an increasing amount of important information appearing in this form. The adoption of a standardised system for referencing and archiving medical articles on computer networks will be essential to enable full use of such developments.

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