Experience in our intensive care unit has also shown a considerable increase in the number of patients admitted after an overdose or self harm over the past three years, with the largest rise during 1993. Nine, 15, and 22 patients were admitted in 1990, 1991, and 1992, respectively. In the first 11 months of 1993, 51 patients required treatment, an increase of 566% in under three years.

Using the therapeutic intervention scoring system⁴ and a cost of £30 per point on this score,⁵ we estimate that an average of £1638 range £150-16620 was spent on each patient during his or her stay in the unit. The additional emergency workload generated by such admissions has a considerable impact on elective major surgery requiring support from the unit and often necessitates the transfer of other emergency patients to intensive care units in other districts.

This worrying trend in the local rate of attempted suicide has important cost implications for purchasers and cannot be controlled by the internal market. Social and economic issues must be addressed before the government's targets can be achieved.

D MARSH
G B SMITH
B L TAYLOR

Department of Intensive Care Medicine,
Queen Alexandra Hospital,
Cosham,
Portsmouth PO6 3LY

- 1 Kingman S. Suicide: England and Wales: the government has set targets. *BMJ* 1994;308:11. (1 January.)
- 2 Department of Health. *Health of the nation: one year on*. London: DoH, 1993.
- 3 Salmon JB, Armstrong RF, Cohen SL, Cobb JB. Schizophrenic patients requiring intensive care. *BMJ* 1993;307:508.
- 4 Keene AR, Cullen DJ. Therapeutic intervention scoring system: update 1983. *Crit Care Med* 1983;11:1-3.
- 5 Lee B. Costing intensive care using TISS. *Intensive Care Med* 1992;18:S182.

Flying and hypoxaemia at altitude

Cabin altitude should have been recorded

EDITOR,—P J Oades and colleagues describe using hypoxic challenge to determine which children with cystic fibrosis may be at risk from flying in commercial aircraft.¹ They also assessed hypoxia in the children in an aircraft flying at an altitude of 11000-12000 m. It would have been useful to record the ambient pressure in the aircraft cabin (cabin altitude) at the time of each measurement of oxygen saturation. The correlation between the aircraft's altitude and the cabin altitude depends on the pressure differential across the cabin wall. The maximum differential varies among types of aircraft (maximum typically 62 kPa for most pressurised passenger aircraft). The cabin altitude varies during the flight according to the schedule of pressurisation in the cabin.

Although Oades and colleagues' recommendations may be valid for many aircraft and flights, additional factors need to be considered. In aircraft that have an emergency oxygen supply for passengers that can be deployed automatically this is activated at cabin altitudes of 3048-4267 m² when the ambient oxygen percentage is equivalent to 14.4-12.3% of that at sea level.² Furthermore, some passenger aircraft are unpressurised. These may fly at altitudes of 3048 m without a statutory requirement to supply additional oxygen and to an altitude of 3658 m with extra oxygen provided for only 10% of passengers.³

The authors correctly point out that other factors may influence the incidence of in-flight hypoxia and note that a few children in their study showed more desaturation than expected. In addition to the factors that they mention there are the effects of immobility and restraint in an aircraft

seat, which may be associated with a reduced ability to cough, atelectasis, and hence adversely altered ratios of lung ventilation to perfusion. This altered ratio may be particularly relevant to larger passengers with chronic lung disease. Airline medical staff and specialists in aviation medicine can advise on the logistic, operational, and clinical factors that may influence the advice offered to patients by their medical practitioner and should be approached whenever there is concern.

FARNSTEIN

Department of Anaesthetics,
Edinburgh Royal Infirmary,
Edinburgh EH3 9YW

- 1 Oades PJ, Buchdahl RM, Bush A. Prediction of hypoxaemia at high altitude in children with cystic fibrosis. *BMJ* 1994;308:15-8. (1 January.)
- 2 Emsting J, King P. *Aviation medicine*. 2nd ed. London: Butterworths, 1988:106.
- 3 *The air navigation order 1989: 93. Part 1: unpressurised aircraft*. London: HMSO, 1989.

New method is more precise

EDITOR,—The hypoxia challenge test used by P J Oades and colleagues in their study of hypobaric hypoxia in cystic fibrosis¹ is based on the assumption that exposure to a particular inspired oxygen pressure at sea level simulates exposure to the same inspired oxygen pressure at altitude. It is not surprising that the oxygen saturation during the test (inspired oxygen pressure 15 kPa; equivalent altitude 2450 m) was lower than that when the children were up a mountain (altitude 1800 m; equivalent inspired oxygen pressure 16.9 kPa) and in an aircraft, which is unlikely to have had a cabin altitude as high as 2450 m at a cruising altitude of 11000 m.²

A limitation of the hypoxic challenge test is that it can predict oxygen saturation only at the altitude that has been simulated, so 15% oxygen at sea level will predict only the oxygen saturation when air is being breathed at 2450 m. Extrapolating between this and the oxygen saturation when air is being breathed at sea level may be misleading.

We have examined a new model that describes the relation between inspired oxygen pressure and oxygen saturation.³ The inspired oxygen pressure-oxygen saturation curve is based on a model of gas exchange that includes the oxyhaemoglobin dissociation curve.^{3,4} It is therefore similar in shape but is displaced downwards when there is intrapulmonary shunting and rightwards when there is inequality between ventilation-perfusion inequality (figure).³ Data points on one part of the curve determine the position and shape of the

Examples of effect of shunt (downward displacement) and ventilation-perfusion inequality (rightward shift) on position of inspired oxygen pressure-oxygen saturation curve. Curve A is a normal curve with 2% shunt. Curve B is obtained from a subject with a shift of 3 kPa more than the normal and a 7% shunt. Curve C is obtained from a subject with a shift of 7 kPa more than normal and a 2% shunt. Desaturation below 85% did not occur when subject B was challenged with 15% nitrogen in air but did when subject C was

whole curve. The curve can be used to predict the oxygen saturation at any given altitude corresponding to the inspired oxygen pressure at that altitude. If a patient's oxygen saturation lies on the steep part of the curve small changes in inspired oxygen pressure produce large changes in oxygen saturation.

The technique is straightforward. A subject inspires gas mixtures with different oxygen concentrations. The oxygen saturation is measured and an inspired oxygen pressure-oxygen saturation curve constructed with custom software incorporating an algorithm developed from the model. Using this method in 23 subjects with chronic lung disease, we found a close correlation between ventilation-perfusion inequality (assessed by a rightward shift of the curve) and desaturation at 15 kPa (the lowest inspired oxygen pressure to which airline passengers should be exposed). More importantly, we found that all subjects in whom dangerous desaturation occurred (oxygen saturation below 85%) had a rightward shift of the curve of more than 4 kPa relative to a normal curve.

We propose this as a novel, simple method of assessment before a flight. The necessary equipment—oxygen masks, pulse oximeter, and computer—is widely available. Patients with a shift of more than 4 kPa relative to a normal curve are at risk of appreciable hypoxaemia during flight and may need a formal hypoxic challenge test as arranging in-flight oxygen can be troublesome.⁵ The inclusion of oxygen saturation at 15 kPa in the construction of the inspired oxygen pressure-oxygen saturation curve increases its precision and allows oxygen saturation to be predicted at altitudes other than those to which the subject has been exposed: this is useful if a subject's destination is at high altitude.

A O C JOHNSON
R L PAGE

Leeds Chest Clinic,
Leeds LS1 6PH

D J SAPS FORD
J G JONES

Department of Anaesthesia,
University of Cambridge,
Addenbrooke's Hospital,
Cambridge CB2 2QQ

- 1 Oades PJ, Buchdahl RM, Bush A. Prediction of hypoxaemia at high altitude in children with cystic fibrosis. *BMJ* 1994;308:15-8. (1 January.)
- 2 Cottrell JJ. Altitude exposures during aircraft flight: flying higher. *Chest* 1988;92:81-4.
- 3 Sapsford DJ, Jones JG. Derivation of V/Q from the position of the P₅₀ versus SpO₂ curve. *Br J Anaesth* 1992;69:541P.
- 4 Roe PG, Jones JG. Analysis of factors which affect the relationship between inspired oxygen partial pressure and arterial oxygen saturation. *Br J Anaesth* 1993;71:488-94.
- 5 Johnson AOC, Page RL. Provision of supplemental oxygen on commercial aircraft. *Thorax* 1993;48:450.

Data in drug advertisements

EDITOR,—After Harrington's criticism of the use of unpublished data in drug advertisements¹ and Humphreys's response² I surveyed advertisements in the *BMJ* during 1993 to discover more about where drug studies are published. I analysed 48 advertisements, which contained 175 references. Fifteen advertisements (9%) referred to "data on file." This figure is in line with results of an earlier study, which found that 11% of references in advertisements in the *BMJ* in 1987-8 were of this type.^{3,4} I also examined the published references to see which type of publications were cited. Forty eight (27%) of the references were published in journal supplements, 13 were abstracts from conferences, six were published in journals that charge a fee for publication, and two were in press.

For comparison I also studied the references from the first full paper and last short report in each issue of the *BMJ* analysed (these were the Clinical Research editions of the issue closest to the 20th of each month in 1993). Of the 261 references

in these papers, nine (3%) were published in journal supplements and the remainder were full citations (that is, not from conference proceedings or supplements) in peer reviewed publications.

Harrington suggested that unpublished references are "hardly the most impartial of sources" but failed to mention that companies are obliged to supply unpublished references used to support claims in advertisements to doctors who request them.¹ The impact and prestige of references in respected peer reviewed journals are well known to marketing departments, and it seems unlikely that companies would wish to suppress or restrict the publication of findings that expressly support the claims made in their advertisements. My findings therefore add support to Massam's suggestion that "there are many more studies done than can ever find space for publication" and Humphreys's view that "most editors of refereed journals are unwilling to publish the results of therapeutic trials sponsored by pharmaceutical companies."² I plan a further study of a larger number of advertisements to see if further light can be cast on this subject.

ELIZABETH HEALING

Janssen Pharmaceutical,
Grove,
Oxfordshire OX12 0DQ

- 1 Harrington R. Drug advertisements. *BMJ* 1993;306:721.
- 2 Humphreys DM. Unpublished data in drug advertisements. *BMJ* 1993;306:1127.
- 3 Herxheimer A, Stålsby Lundborg C, Westerholm B. *Advertisements for medicines in medical journals: a collaborative international study. Report for director-general of World Health Organisation. Sweden: WHO, 1992.*
- 4 Herxheimer A, Stålsby Lundborg C, Westerholm B. Advertisements for medicines in leading medical journals in 18 countries: a 12-month survey of information content and standards. *Int J Health Serv* 1993;23:161.
- 5 Massam D. Unpublished data in drug advertisements. *BMJ* 1993;306:1127.

Knowledge is not a disease

EDITOR,—I found Graham Hills's editorial on knowledge surprising for many reasons.¹ Firstly, Hills uses such terms as "knowledge," "learning," "skills," and "reality" without defining them or making clear the denotations he applies to them. I do not believe that Hills intended a discourse on the theory of knowledge,² but he should have made clear that he was writing about theoretical knowledge—that is, information—rather than practical knowledge.

He contends that information is bad for us because it decays (an inappropriate verb that conjours up images of radioisotopes) and because old information stored in our brains prevents us from acquiring new information (just as if our brains had a 50 megabyte capacity and we would no longer be able to take in new information once that capacity was used up). Hills even goes on to blame such phenomena as prejudice and adherence to tradition on an excess of information. To describe this article as ridiculous is to accord it wholehearted praise.

"Skills are rooted in reality," Hills writes, "knowledge is not." I wonder what he means by the word "reality" and why he thinks that information does not have a basis in reality. What is more, information is not, and cannot be, a disease, irrespective of the degree of abstraction we may choose to apply to the word disease.

Information, even false information, is not a problem in its own right and cannot harm us in any way. It is the uncritical acceptance of information that is the true enemy of humankind. This is the basis of prejudice, of adherence to tradition, of the political and economic tragedies to which Hills refers. This, not an excess of information, is the real obstacle to progress. As we learn how to think we become able to convert information into (practical) knowledge and eventually into wisdom.

Information is not luggage; its acquisition is the first step on the path to wisdom.

IO AZUONYE

Claybury Hospital,
Woodford Bridge,
Essex IG8 8BY

- 1 Hills G. The knowledge disease. *BMJ* 1993;307:1578. (18-25 December.)
- 2 Ayer AJ. *The central questions of philosophy*. Harmondsworth: Penguin, 1973.
- 3 Russell B. *The problems of philosophy*. Oxford: Oxford University Press, 1912.

Nicotine replacement therapy

EDITOR,—Jin Ling Tang and colleagues' systematic analysis of randomised trials of the efficacy of nicotine replacement therapy in helping people to stop smoking¹ is an important contribution to evidence of the effectiveness of nicotine gum and patches in stopping smoking. As the authors conclude, these aids have an important part to play in helping smokers who are motivated to stop, especially those who are highly dependent on nicotine. Studies in general practice in Britain support the authors' suggestion that, for all but the most heavily dependent people, the transdermal patch is probably the product of choice.^{2,4} I concur with their recommendation that patients with cardiovascular disease who are motivated to stop smoking should consider using nicotine replacement therapy.

Evidence does not, however, support the statement that the patch "is suitable for over the counter purchases, and, since the daily cost of replacement therapy is about the same as that of a packet of 20 cigarettes in Britain, there is no financial barrier to its use." There have been no trials of the efficacy of patches provided over the counter: all studies have included some support from doctors or nurses, and it is only in this context that efficacy has been shown. Furthermore, as was recently argued elsewhere,⁵ in view of the enormous burden of ill health caused by smoking, effective ways of stopping smoking should be encouraged and nicotine patches should be prescribable on the NHS, supplemented with advice and support from doctors and nurses.

GODFREY FOWLER

University Department of Public Health,
and Primary Care,
Radcliffe Infirmary,
Oxford OX2 6HE

- 1 Tang JL, Law M, Wald N. How effective is nicotine replacement therapy in helping people to stop smoking? *BMJ* 1994;308: 21-6. (1 January.)
- 2 Imperial Cancer Research Fund General Practice Research Group. Effectiveness of a nicotine patch in helping people stop smoking: results of a randomised trial in general practice. *BMJ* 1993;306:1304-8.
- 3 Russell MAH, Stapleton JA, Feyerabend C, Wiseman SM, Gustavsson G, Sawe U, et al. Targeting heavy smokers in general practice: randomised controlled trial of transdermal nicotine patches. *BMJ* 1993;306:1308-12.
- 4 Imperial Cancer Research Fund General Practice Research Group. Nicotine patches to help people stop smoking: one-year results of a randomised trial in general practice *BMJ* (in press).
- 5 Nicotine patches. *Drug Ther Bull* 1993;31:95-6.

General practice fundholding

Delivers what patients want

EDITOR,—Steve Iliffe and Ulrich Freudenstein decry the lack of scientific evaluation of fundholding yet offer none themselves.¹ The costs of administering fundholding are less than the equivalent costs of managing a district health authority. During any period of transition some costs will be duplicated, but this will be rectified with the forthcoming changes in the configurations of both regional and district health authorities.

The political costs of "fast tracking" are a matter of opinion, perhaps coloured by ideology. My experience as a fundholder is that NHS providers, including consultants, are offering fast tracking to fundholders. We have not requested it specifically. It is surprising that so many specialists object to fast tracking (rather than it being the disadvantaged patients who object) but willingly fast track private patients.

Where is the evidence that fundholders cannot be ruthless as purchasers? Fundholders may be limited in choice, particularly in rural areas, but it is they who are making the most important changes to the way health care is provided for their patients. Increasingly they are managing extended services, providing consultant clinics and physiotherapy on site and more counselling. Many are also now developing services such as radiology, ultrasonography, colposcopy, and minor and day case surgery on site.

Fundholders will act in concert with local health policies but only if those policies have been discussed and are thought to be in the interest of their patients. It is up to district health authorities to include fundholding as well as non-fundholding general practitioners in discussions.

The changes made by fundholders, with increasing provision of services in the community, facilitate rationalisation (deinstitutionalisation) of the often inefficient secondary care system. In secondary care too many resources are tied up in underused and duplicated fixed items such as estates, equipment, and sometimes specialist staff. Patients want quick, efficient, and cost effective local services. Few district health authorities are yet delivering real change, with all their funds tied up keeping their district general hospitals solvent.

A moratorium on recruitment to fundholding is illogical. Fundholding practices are expanding and developing new services, which would be denied to non-fundholding practices, thus creating a considerable difference in their respective services. If we halt progress to keep pace with the least able we will deny patients the improved local care that many fundholding practices are achieving. Thus, far from having a moratorium we should be expanding and making fundholding easier.

TIM RICHARDSON

Old Cottage Hospital,
Epsom,
Surrey

- 1 Iliffe S, Freudenstein U. Fundholding: from solution to problem. *BMJ* 1994;308:3-4. (1 January.)

Unpopular with most GPs

EDITOR,—Steve Iliffe and Ulrich Freudenstein are right to point out the unproved claims for fundholding and to call for a moratorium on recruitment to fundholding.¹ Fundholding is still not the answer for most general practitioners: according to a recent poll, a majority of current fundholders do not support the scheme but have joined in a defensive posture.² Unfortunately, the profession's official leaders have not been in the forefront of promoting other routes whereby all general practitioners can participate in the commissioning process. Other organisations have had to do so.³

During the past year I have spoken at 16 meetings of general practitioners looking for viable alternatives to becoming fundholders. I have also participated in a local alternative scheme which involves fundholders and non-fundholders in a commissioning executive of 12 representative general practitioners. This executive liaises and negotiates directly with the district health authority on behalf of 500 000 patients. The cost for this was £16 000 in 1993 and this will rise to £50 000 in 1994—less than the cost of two fund-