Without being informed that the NHS management board had invited district general managers to "express an interest," our health authority, on 20 April 1989, debated how it might react if an instruction was given in future that it would have to choose some form of self governing status. Various options were discussed and it was agreed that if in future we were unable to remain with the status quo perhaps the best option for patient care would be for the whole district of North Devon to become a self governing trust. No formal vote was taken and the matter appeared to be hypothetical, with the assumption that there would still be much to be debated and discussed in the future.

You can therefore imagine the consternation among the medical members of the health authority when they were informed by the district general manager on 10 May 1989—the day before the *Independent* was due to publish the list of districts "expressing an interest"—that he had written a letter to the regional general manager on 3 May formally to "express an interest in forming a self governing trust for the whole district" and indicating that this application had the full support of all the medical members of the health authority.

It would be interesting to find out how many other doctors in other districts have been similarly misrepresented into becoming Mr Clarke's "willing volunteers."

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1 Warden J. Clarke steps out. *Br Med J* 1989;**298**:1478. (3 June.)

SIR,—Bassetlaw has recently been quoted in the House of Commons[1] and in the press as "expressing an interest in becoming self governing" and we are aware that pressure has been brought to bear on other districts to follow, using our own as an example. Clinicians and other staff, when consulted, have supported this on the basis that the hospital and community services would be a part of one composite unit. However, we are not prepared to support the furtherance of this idea without considerably more information.

We all believe that evaluation of the resource management initiative and application of the lessons learnt from it would be far more likely to improve patient care than would the introduction of self governing trusts and general practice budgets in the way described in the white paper. However, we have not objected to the "expression of interest" by our district for specific local reasons.

Our district was established in 1982 because of considerable local opposition to its incorporation into nearby districts. It was at the time one of the, if not the, most underfunded district in Britain and facilities for medical care were appalling. This situation has improved with the opening of the first phase of the district general hospital, and community and priority services have improved dramatically despite continued underfunding. This has occurred with persistent lobbying of those directly responsible for funding, and we are convinced that the dissolution of the district, as would happen with the implementation of the white paper proposals, would undermine our ability to provide appropriate care for our patients.

We fear that separating the district general hospital services from community services would introduce a damaging element of competition between unlike services. A situation could easily develop where patients would be discharged early to community services, which could disclaim or only grudgingly accept responsibility for their care, leading to the sort of divide between authority managed services and trusts which at present bedevils community care of the mentally ill and for which the second Griffiths report was commissioned.

Our dilemma is that of protecting specific local needs while supporting professional recommendations. The government's intention to introduce competition into the service by separating those responsible for providing the service from those operating it can probably be achieved by using lessons from the resource management initiatives. If the principle can be established that such operators must provide both hospital and complementary community services the danger of gaps arising in services would be reduced. If agreement on the maintenance of nationally determined, although inevitably more flexible, standards, pay, and conditions of service can be reached perhaps we can preserve a National Health Service. Bassetlaw most certainly does not wish to "opt out" of it.

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1 Owen D. Opposition day motion. *House of Commons Official Report (Hansard)*. 1989 April 18;**151**:cols 201-43 (No 87.)

Isoflurane compared with midazolam in the intensive care unit

SIR,—We are concerned about certain features of the study of sedation of the critically ill reported by Dr K L Kong and others.[1] They quote Geller *et al* as reporting dangerous complications from the use of flumazenil, but in this paper no untoward haemodynamic or respiratory effects were reported.[2] In one patient it was necessary to infuse flumazenil for five hours, but this cannot be considered dangerous in an intensive care unit. We have infused flumazenil for prolonged periods[3] without hazard, although it is expensive.[4,5] Dr Kong and others also correctly quote the rapid rise in intracranial pressure associated with the reversal of midazolam[6] as dangerous to the patient, but such vulnerable patients are surely a group in whom isoflurane sedation would also be inapplicable and would have been excluded from the study.

The authors also state that the effective dose of isoflurane in their study was confined to a narrow range (0·1-0·4% concentration), whereas the requirement for midazolam showed considerable variability among patients (0·014-0·140 mg/kg/hour). The dose of isoflurane will depend on many factors including the minute volume, alveolar ventilation, and cardiac output. There was no variation in the concentration of midazolam used (0·1%). The way in which the authors discussed dose equivalents is misleading.

We wish briefly to report on two patients in whom other sedatives (midazolam, propofol, ketamine, and narcotics) proved ineffective and isoflurane was useful but presented other problems. The first patient was a 21 year old girl who required sedation after combined liver and kidney transplantation that was complicated by acute tubular necrosis (managed with continuous haemofiltration and dialysis), recurrent sepsis, and life threatening gastrointestinal haemorrhage. She remained agitated and distressed while receiving a midazolam infusion at up to 15 mg/hour and bolus doses of morphine. Effective sedation was finally achieved with a combination of 0·5-2·0% isoflurane and continuous intravenous infusion of midazolam (10 mg/hour) and subsequently of alfentanil (8 mg/hour). Because of concern about nephrotoxicity from fluoride released from the breakdown of isoflurane and her potential failure to eliminate it the serum fluoride concentration was measured after six days of treatment and found to be 18 μmol/l (normal range 5·3-10·5 μmol/l). Although this is not at the toxic level (50 μmol/l), it is greater than that previously reported with isoflurane.[7,8] Will even higher concentrations be achieved in critically ill patients who receive isoflurane for longer periods or in whom an efficient method of renal replacement treatment is not used?

The second patient was a 15 year old boy who required ventilatory support for a severe asthma attack. He received 0·25-1·0% isoflurane in addition to fentanyl and midazolam or propofol by infusion.

Although it was a useful technique, ducting of the expired gases away from the ventilator was a problem. Dr Kong and others do not tell us explicitly how this was achieved. When we used it one of the limiting factors was having the patient next to a window; perhaps activated charcoal may be one answer to this problem. Cost must also be considered. The ventilators used in Dr Kong and others' study and for our patients were open circuit ventilators needing large flows of fresh gas. The estimated cost of isoflurane for our first patient was £1200 over the six days (midazolam 10 mg/hour cost £19.20 per 24 hours and alfentanil 8 mg/hour cost £107 per 24 hours), and for the second patient the total cost of isoflurane for three days was £1500. We used higher concentrations than Dr Kong and others described, and their method will result in some savings in cost.

Isoflurane will probably be a valuable addition to our therapeutic options for sedation of the critically ill, but it will require further evaluation over longer periods of time before it is introduced into routine clinical practice.

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1 Kong KL, Willatts SM, Prys-Roberts C. Isoflurane compared with midazolam for sedation in the intensive care unit. *Br Med J* 1989;**298**:1277-80. (13 May.)
2 Geller E, Halpern P, Leykin Y, Rudick V, Skorine P. Midazolam infusion and benzodiazepine antagonist for sedation in ICU: a preliminary report. *Anesthesiology* 1986;**65**:A65.
3 Bodenham A, Brownlie G, Dixon JS, Park GR. Reversal of sedation by prolonged infusion of flumazenil (Anexate, Ro 15-1788). *Anaesthesia* 1988;**43**:376-8.
4 Telford RJ. Flumazenil. *Anaesthesia* 1988;**43**:901.
5 Park GR, Bodenham A. Flumazenil infusion or repeated doses. *Anaesthesia* 1989;**44**:365.
6 Chilero RL, Ravussin P, Anderes JP, Ledermann P, de Tribolet N. The effects of midazolam reversal by RO 15-1788 on cerebral perfusion pressure in patients with severe head injury. *Intensive Care Med* 1988;**14**:196-200.
7 Mazze RI, Cousins MJ, Barr GA. Renal effects and metabolism of isoflurane in man. *Anesthesiology* 1974;**40**:536-42.
8 Dobkin AB, Ducksook K, Choi JK, Levy AA. Blood serum fluoride levels with enflurane (ethrane) and isoflurane (forane) anaesthesia during and following major abdominal surgery. *Canadian Anaesthetists Society Journal* 1973;**20**:494-8.

Acute mountain sickness

SIR,—It is disappointing that an essay by a doctor should advocate drug treatment without once mentioning simpler, much more effective measures. Dr S B Blunt suggests that acetazolamide should be indicated for the prophylaxis of acute mountain sickness; nowhere, however, does she mention acclimatisation.[1]

Acclimatisation (slow ascent) is the best prophylactic, and descent is the best treatment. Ignoring these basic facts (with or without drugs) is a main cause of illness and death on mountains. Dr Blunt's own rate of ascent on Kilimanjaro far exceeds that recommended by any standard text or mountain safety authority.

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1 Blunt SB. Acute mountain sickness on Mount Kilimanjaro. *Br Med J* 1989;**298**:1324. (13 May.)