Solving the problems with patient controlled analgesia

SIR,—Miranda Farmer and N J N Harper describe a situation in which patients do not understand the function of the activating button on the patient controlled analgesia system and house officers and junior nursing staff are allowed to programme the pumps.[1] We sympathise with the problems they have encountered, but in such circumstances problems are not unexpected; they are inevitable.

In our hospital we have followed the advice of the *Report of the Working Party on Pain After Surgery*[2] and established an acute pain team. One of our first tasks has been to introduce the use of patient controlled analgesia. We have written protocols, guidelines, and quality standards and introduced training programmes for anaesthetists and ward nursing staff. Only trained staff are allowed to change syringes or alter the pump settings. Patients are given a full explanation of the pump before operation and are also supplied with an information leaflet. We believe this approach will result in a high quality, safe service and so far we have not had problems such as those described by Farmer and Harper.

Our acute pain team is multidisciplinary and comprises a consultant anaesthetist, four part time acute pain nurses, a pharmacist, and a clinical psychologist. We see the team's remit as being far wider than simply the introduction of patient controlled analgesia. We aim to supervise the effective use of established methods of pain relief, to evaluate and introduce new methods, to provide education and training, and to audit the effects of our activities.

Farmer and Harper conclude "The introduction of a patient controlled analgesia service demands more than simply buying the equipment." We agree—but, more importantly, the provision of effective postoperative analgesia requires far more than a patient controlled analgesia service; it requires a multidisciplinary team approach using a range of techniques.

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1 Farmer M, Harper NJN. Unexpected problems with patient controlled analgesia. *BMJ* 1992;**304**:574. (29 February.)
2 Royal College of Surgeons of England, College of Anaesthetists. *Report of the working party on pain after surgery.* London: RCS, 1990.

SIR,—This department has experienced similar errors in the programming of patient controlled analgesia pumps to those reported by Miranda Farmer and N J N Harper.[1]

I recently audited use of patient controlled analgesia in 23 adults after general surgery. This showed that the drug and dose used, the lockout interval during which the patient may not receive a further dose, and whether a four hour maximum dose was preset varied among anaesthetists. This caused confusion among the ward staff. The surgical house officers often altered the settings on the machine postoperatively (to remove a four hour dose limit that was resulting in inadequate analgesia), sometimes making a mistake when doing so.

A policy of using a standard drug (morphine), dose (1 mg), and lockout interval (five minutes) was introduced and the audit repeated. The regimen proved satisfactory in almost all patients after general surgery. We now use the same settings on the pumps for all patients, but repeat audit has shown that pumps are still programmed incorrectly.

Patient controlled analgesia should be an inherently safe method of delivering opioid drugs because the patient must be alert enough to press the demand button to receive each dose. We have found that the same dose and lockout settings may be used for almost all adult patients after general surgery. Errors in programming the pump may, however, lead to the patient either receiving an overdose of opioid or being denied adequate analgesia.

Currently available pumps can be programmed to give a wide range of doses and lockout intervals, most of which are unlikely ever to be used intentionally. A four hour or similar maximum dose can be set, although this probably adds little to the safety of the technique while resulting in inadequate analgesia in patients with high opioid requirements. A simultaneous continuous infusion of opioid may be added, although this increases the amount of opioid administered without improving pain relief.[2]

A patient controlled analgesia pump designed with one preset dose and lockout interval and no additional features would require no programming. Programming errors by the operator would be eliminated, increasing patients' safety, and setting up the device would be quicker and easier. Such a simplified device would be less expensive than the present increasingly complex machines, but I believe it could provide equally effective analgesia.

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2 Owen H, Szekely SM, Plummer JL, Cushnie JM, Mather LE. Variables of patient-controlled analgesia. 2. Concurrent infusion. *Anaesthesia* 1989;**44**:11-3.

SIR,—We endorse Miranda Farmer and N J N Harper's concern about the problems of introducing a patient controlled analgesia service without adequate in service training and provision for educating patients.[1]

Although we now have experience of over 1000 patients at Derbyshire Royal Infirmary, our early attempts with patient controlled analgesia were beset by similar difficulties. The medical and nursing staff's lack of understanding of the operation of the pumps used (Lifecare, Abbott Laboratories) was exacerbated by the absence of any education for patients. The resulting inadequate treatment, manifest as poor control of pain, served only to reinforce further deeply held misgivings about the wisdom of allowing patients to administer opioids themselves. The disillusionment among the staff was so great that even those who had supported introducing this technique in the hospital questioned its continued use.

Consequently, an extensive programme of regular in service training was undertaken. It covered the practical operation of the equipment and the theory behind patient controlled analgesia and defined the roles and responsibilities of medical, nursing, and pharmacy staff in a successful patient controlled analgesia service. Structured education for patients was introduced, and use of patient controlled analgesia is discouraged unless the patient has received adequate preoperative counselling. The development of an acute pain team in the hospital, as recommended in the joint colleges' report on pain after surgery,[2] has further enhanced the monitoring and evaluation of patient controlled analgesia.

Such measures have proved effective in improving the quality of pain relief obtained by patients using patient controlled analgesia. Currently, over 96% of our patients complete their treatment with patient controlled analgesia uneventfully and are satisfied with the overall pain relief obtained. Less than 0·5% stop because of poor pain relief. The remaining 3·5% stop because of predictable side effects—for example, sickness or dysphoria.

Patient controlled analgesia is valuable and effective but, in the current financial climate, is unlikely to be available to all those who might benefit from it. Therefore, it seems inappropriate to introduce or operate such a service without careful prior consideration of the potential pitfalls.

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Intussusception in infants

SIR,—Mark D Stringer and colleagues find that death from intussusception in infancy occurs in about one in 130 patients,[1] and in a previous review Pledger *et al* found that the mortality for children aged under 4 with acute appendicitis was about one in 320.[2] These are low figures, but in the earlier analysis the authors remarked that "although death is now rare it is still a tragedy for the individual family, and for every death there are likely to be several 'near misses.'"[2]

Both these papers identify aspects in which practice could be improved, but one obstacle is the limited opportunity to build up experience. A children's hospital serving a population of 450 000 admits each year about 110 children with acute appendicitis (of whom only 5% will be aged under 3) and six or seven infants with intussusception.[3] This population is served by some 250 doctors, so their experience of abdominal emergencies in infants is bound to be thinly spread. Even in children's hospitals recognition of intussusception is delayed: in half of 630 patients treated in Melbourne[4] and 30% of 336 children seen in Toronto[5] the diagnosis was not made at the first