had already completed a degree course and could obtain no further support from their local authority.

With more recent amendments to the funding mechanism, King's College was obliged to stop offering the protected rate of fees to new entrants, although we maintained our commitment to students who had already entered the course. As a result, self financing entrants to medicine from 1994-5 onwards at King's College have been advised that they will be expected to pay the full band rate for clinical subjects. This does not, however, represent a decision on the part of the college to increase fees for clinical subjects to an arbitrary level.

The college regrets the fact that the current fees set by the government are a considerable disincentive to those students who choose to enter medicine and dentistry having already completed a degree course and "used up" their local authority grant. At King's College we have made particular efforts to recruit such students as we find that their additional commitment and maturity bring a valuable dimension to each cohort of students.

I D GAINSFORD
Dean

King's College School of Medicine and Dentistry,
London SE5 9PJ

1 Beecham L. Medical students fight increase in course fees. *BMJ* 1995;310:334. (4 February.)

Problems during infusions

Severe electrical shock occurred during use of Welmed P1000 syringe pump

EDITOR,—The Welmed P1000 syringe pump is the earliest of 15 pumps purchased between 1990 and 1993 in our intensive care unit. It is powered by both a back up battery and the mains; when static it is powered by the mains to charge the back up battery.

A male nurse who was supervising a ventilated patient grasped this pump at either end between both hands. It was attached in series with four others to a drip stand. He received an immobilising electric shock lasting roughly 15 seconds. By kicking over the drip stand he detached himself from the pump. He developed a sinus tachycardia (200 beats/min), hypertension (170/110 mm Hg), and involuntary contractions of his forearm muscles. All resolved within 40 minutes, but upper limb girdle pain persisted for three days.

When the pump was opened a small quantity of clear fluid was found around the junction between the upper and lower halves. The base mouldings contained further fluid. Over the circuit board was a protective cardboard screen saturated by fluid, which had apparently conducted the current from the mains cable to the outer metallic base plate. Insulating plastic was layered over only half of the inner surface of the base. The pump has no sealing device between the top and bottom of the casing.

Routine service examinations by our electronics department six months earlier had found small amounts of brown opaque fluid in the cases of eight of these pumps. When the manufacturer was informed it acknowledged having received similar reports from other hospitals. It had no explanation for this finding. It had, however, incorporated a seal into the new models.

We believe that, despite the inclined plane to the casing, fluid migrated by capillary attraction into the pump, having breached the junction of the case. This hypothesis is based on observation of fluid and crystallised deposits on the inner surface of the eight contaminated pumps. Leaking infusion bags or syringes are the presumed source of the extraneous fluid. Furthermore, saline solutions could promote the conduction of electrical current through the equipment.

The Medical Devices Directorate (Department of Health) has been contacted, the manufacturers alerted again, and all our pumps re-examined. Drips are positioned clear of the syringe pumps, and syringes are repeatedly checked for leaks while in use. A "non-contact power sensor" is now used to check the electrical stability of all pumps.

We wish to alert all users to this potentially fatal hazard.

P FORD
Consultant anaesthetist
D WOOD
Chief medical electronics officer

Intensive Care Unit,
Wigan Trust Hospitals,
Wigan WN1 2NN

Reply from Department of Health

EDITOR,—The Department of Health has issued safety notices as a result of reports of problems that have occurred with infusion pumps that have been subject to fluid spills or have been dropped.^{1,2} These incidents have not been related to a single manufacturer's product or model of pump. Most pumps have met all relevant national and international safety standards, including the defined degree of protection against ingress of fluid due to impact.

Owing to the nature of powered infusions it is likely that large volumes of fluid will be sited above infusion pumps and that leaks of fluid will occur. All users must therefore be aware of the potential dangers of fluid spills and of continuing to use infusion pumps that have been subject to fluid spills or have been dropped. It has been recommended that affected pumps should be removed from use and inspected or tested, or both, before being returned to use. Managers are responsible for ensuring that procedures are in place to reduce the risks to patients and users.

The Medical Devices Agency is shortly to publish a device bulletin (DB9503) on the use and management of infusion systems

A A BARKER
Senior engineer

Medical Devices Agency,
Department of Health,
London WC1B 5EP

1 Department of Health. *Infusion pump mains connectors: ingress of leaked fluids*. London: DoH, 1993. (SAB(93)51.)

2 Department of Health. *Infusion pumps: incidents caused by fluid spillage and drop damage*. London: DoH, 1994. (SAB(94)26.)

Young adults susceptible to measles

EDITOR,—The success of the national measles and rubella immunisation campaign is to be welcomed.¹ The campaign still, however, leaves a cohort (of those in their late teens and in their 20s) in which many susceptible people remain. Though they are indirectly protected by herd immunity and a reduction of viral transmission in Britain, if they visit countries where measles is common or are in contact with visitors from these countries then they are vulnerable to infection.

In the United States the shift in incidence with age towards those aged 20 or over (26% of all cases) and the importance of international importation in the spread of measles have both been recognised.² There, immunisation is recommended for all adults born in 1957 or later unless there is firm evidence of prior immunisation or infection.³ One has only to see the throngs of young people from France and Italy attending language schools in south coast resorts in Britain during the summer to realise the potential for importation. (The uptake of measles immunisation in those countries in 1992 was 69% and 50% respectively.)

Susceptible young adults could be protected in

several ways: travel immunisations should include measles vaccine when there is no definite history of infection or immunisation; the age limit for payment of an item of service fee for measles, mumps, and rubella immunisation when none has previously been received could be extended from 15 years to 30; and innovative ways should be found to offer immunisation to susceptible university and college students. Finally, the British government could advocate to its European Union partners that they should emulate our recent measles and rubella campaign.

D S G SLOAN
Immunisation coordinator

Department of Public Health,
Argyll and Clyde Health Board,
Paisley PA2 7BN

- 1 Calman KC. Measles campaign. *BMJ* 1995;310:399-400. (11 February.)
- 2 Measles—United States, first 26 weeks, 1994. *MMWR* 1994;43: 673-7.
- 3 Update on adult immunisation. Recommendations of the Immunisation Practices Advisory Committee (ACIP). *MMWR* 1991;40(RR-12):20.
- 4 World Health Organisation. *Measles control—a global battle in progress*. Geneva: WHO, 1993. (EPI update 23; 1993-92/9526.)

Reductions in defence medical services

EDITOR,—I was disheartened to read the apologia from the most senior medical officer in the defence medical services.¹ I am a medical officer in the Royal Air Force and am disillusioned by pronouncements of this kind. As a general duties doctor—a general practitioner—I am part of the "front line" of the defence medical services. In the past 12 months much uncertainty has shrouded the changes that will be wrought by the most recent cuts in the defence budget. My response to the uncertainty has been, like that of so many of my colleagues, to choose to leave the service. For me this has been relatively easy, as my commission is due to come to a natural end soon; I have chosen not to extend my service. Many doctors in all three services are not so fortunate, and I was pleased to read of the BMA's involvement in the debate over training.² If, as the surgeon general implies, the future for the defence medical services is so secure why are so many doctors—in both primary and secondary care—leaving?

The planned closure of Royal Air Force hospitals reduces the referral options I have for my patients—people in the service and their families. I now refer most of the families and a sizeable proportion of my patients in the service to local NHS units. The provision of a quick, effective health solution to the problems of someone in the service depends on an effective secondary care system. Trying to provide that solution without access to a full range of military secondary care is like being asked to practise medicine with one arm tied behind my back.

When my patients ask me what advice I can offer them for the future I am honest. I tell them that the medical service they have known in the past and have looked for help no longer exists. I am unable to provide them with the assurance that the surgeon general feels he can. And I tell them that I am leaving.

The reassurance of the surgeon general falls on deaf ears. His vision of the future of the defence medical services seems far too rosy for my tired eyes to see.

C AMBURY
Senior medical officer

Station Medical Centre,
Royal Air Force Uxbridge,
Middlesex UB10 0RX

1 Revell T. Reductions in defence medical services. *BMJ* 1995; 310:664-5. (11 March.)

2 Beecham L. Reductions in defence medical services cause BMA concern. *BMJ* 1995;310:196. (21 January.)