CORRESPONDENCE

- *All letters must be typed with double spacing and signed by all authors.*
- *No letter should be more than 400 words.*
- *For letters on scientific subjects we normally reserve our correspondence columns for those relating to issues discussed recently (within six weeks) in the BMJ.*
- *We do not routinely acknowledge letters. Please send a stamped addressed envelope if you would like an acknowledgment.*
- *Because we receive many more letters than we can publish we may shorten those we do print, particularly when we receive several on the same subject.*

Registering births

SIR,—We were moved by Dr Marek R Gabrielczyk's description of the handling of events surrounding the birth and subsequent care of his daughters (18 July, p 209).

Without wishing to add to his family's distress, we believe that it is important to clarify the position regarding registration of births in England and Wales. According to section 41 of the Births and Deaths Registration Act 1953: "Live birth means a child born alive." There is no reference to gestational age. The definition of signs of life recommended by the World Health Organisation includes beating of the heart, pulsating of the umbilical cord, or definite movement of voluntary muscles after complete expulsion of the conceptus by the mother. Any child that has been monitored and nursed in intensive care must have shown signs of life and should be registered as a live birth, regardless of whether it is considered to be previable. If the child subsequently dies the event must be registered as a neonatal death.

There are three reasons why health workers are reluctant to acknowledge that the births of such children should be registered. Firstly, they think that the parents may be upset by the official paperwork and funeral arrangements related to a neonatal death. Secondly, although hospitals can arrange a funeral funded by the National Health Service, staff worry that parents may feel obliged to fund a non-institutional funeral from limited resources with the aid of the derisory £9 government neonatal death grant. Finally, such deaths inevitably adversely affect the crude perinatal mortality rate of an institution or health district, and while this rate continues to be used as an index of quality of care staff are naturally reluctant to acknowledge as live births infants that they consider to be previable.

Dr Gabrielczyk's letter highights the increasingly accepted need for parents and staff to acknowledge the loss of a child, however premature, and the comfort received from official recognition of the event. This suggests that in the long term most patients would probably benefit from the registration of very preterm births. From the institutional point of view, as perinatal deaths due to other causes decline deaths in extremely preterm infants will form a larger proportion of perinatal deaths. For example, from 1983 to mid-1987 in maternity units in the North West Thames region of 8·92 deaths/1000 births, one in 12 was of an infant of less than 26 weeks' gestation. This emphasises that perinatal audit should be based on birthweight specific perinatal mortality rates if these rates are to be compared among units.

There is a paradox, particularly striking in the case of twins, that even before the 28th week of pregnancy all babies born with signs of life should be registered as live births, whereas a child born dead cannot be registered as a stillbirth until the 28th week of gestation. Perhaps there is a case, as in Norway, for registering the outcome of all pregnancies that last beyond 16 weeks' gestation. This would be a formal acknowledgement of the pregnancy and would also provide valuable information about the causes of fetal loss.

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** We have received several letters making similar points to this one.—ED, *BMJ*.

Seconds may count

SIR,—We agree with the claim voiced in Dr Tessa Richards's conference report (18 July, p 198) that thrombolytic treatment after defibrillation is the second major advance in the management of patients with acute coronary thrombosis. As with defibrillation, however, the greatest need for thrombolytic treatment is outside the hospital. The resistance to the institution of thrombolytic treatment outside the hospital voiced in the conference is similar to that encountered in the past.

Evidence shows that mortality in patients with acute myocardial infarction treated with streptokinase increases with increasing delay between the onset of symptoms and the start of treatment with streptokinase.[1] Similarly, infarct size increases with increasing duration of occlusion before reperfusion.[2] Accordingly, the amount of myocardium salvaged is greater the shorter the duration of occlusion before reperfusion. Hugenholtz[2] has estimated that infarct size might be limited by a further 15% if thrombolytic treatment was given 30 minutes earlier.

We have administered thrombolytic treatment out of hospital to 71 patients with acute myocardial infarction using recombinant tissue plasminogen activator. The mean time from the onset of symptoms to the start of treatment was 118 minutes. Preliminary results for patients receiving tissue plasminogen activator outside hospital show reperfusion of the blocked coronary artery (TIMI grades 2 and 3) in 70% of patients, whereas this occurred in only 63% of patients receiving tissue plasminogen activator in the casualty department, other wards, or the coronary care unit. A pilot

study (double blind, placebo controlled, crossover) comparing prehospital with in hospital thrombolytic treatment in 21 patients showed a mean global ejection fraction of 48% for those treated with tissue plasminogen activator outside the hospital and 44% for patients receiving tissue plasminogen activator on direct admission to the coronary care unit. Mean time to the start of active treatment in those receiving it outside hospital was 95 minutes, compared with 175 minutes for those receiving active treatment in the coronary care unit. No patient has suffered any serious side effects caused by the prehospital administration of tissue plasminogen activator.

Thus our results show that the administration of thrombolytic treatment by skilled mobile coronary care unit staff is feasible and safe. Prehospital administration of thrombolytic treatment can be started earlier than treatment in hospital even when patients are admitted directly to the coronary care unit without the added delay encountered in the casualty department. We believe that this early institution of treatment will result in significant improvement in myocardial function.

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1 GISSI Study Group. Effectiveness of intravenous thrombolytic treatment in acute myocardial infarction. *Lancet* 1986;i: 397-401.
2 Hugenholtz PG. Acute coronary obstruction in myocardial infarction: overview of thrombolytic therapy. *Journal of the American College of Cardiology* 1987;9:1375-84.

SIR,—We were disappointed to read in Dr Tessa Richards's report on the meeting on thrombolytic therapy for acute myocardial infarction at the Royal Society of Medicine (18 July, p 198) that the time spent in the accident and emergency department is still regarded as potentially dangerous and wasteful.

Though the quoted median time of 89 minutes between arrival in the accident and emergency department and transfer to the coronary care unit for the named district general hospital is not optimal, the enlightened view should be that the accident and emergency department is the ideal environment for the organised reception, evaluation, and stabilisation of the patient with myocardial infarction. This includes initial treatment and therefore allows the prompt administration of thrombolytic drugs.

Departments in teaching hospitals and many district general hospitals are increasingly being staffed by career accident and emergency specialists. This renders obsolete the concept of the casualty department merely as a reception area for the patient to linger unsupervised, unmonitored, and untreated.

The tendency to rush the patient with acute myocardial infarction from home to ambulance into the accident and emergency department and to the coronary care unit as quickly as possible can only increase anxiety and the risk of precipitating ventricular fibrillation. Rather than being regarded as the epitome of efficiency, this should be discouraged.

The idea of bypassing accident and emergency departments altogether would offer no advantages to the patient with myocardial infarction. It would not allow those patients with non-cardiac problems to be diagnosed and redirected early for appropriate treatment, and the present 15% false positive rate of admissions to coronary care units might well increase with such a policy.

We agree that thrombolytic treatment is the most important advance in the early management of acute myocardial infarction since defibrillation. Constructive liaison between accident and emergency departments and coronary care units is essential to avoid delay and obtain maximum benefits.

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SIR,—We would like to comment on administering thrombolytic treatment to patients with acute coronary thrombosis, as discussed by Dr Tessa Richards (18 July, p 198).

It is important that this treatment is provided quickly, and to minimise delay it was suggested that "patients with chest pain could bypass the accident and emergency department altogether." Coronary care unit staff believe, however, that too many patients are admitted under their care without a diagnosis.[1]

If this policy of bypassing the accident and emergency department were used we believe that coronary care units would be overwhelmed. In the two months from 1 August 1986 to 30 September 1986, 314 patients with chest pain were seen in one of our departments and 179 (57%) were discharged. Of the 179 discharged, 136 (76%) had referred themselves and only 43, were referred by general practitioners. Of these 43, only four were diagnosed as having ischaemic heart disease; the remainder had non-cardiac causes for chest pain. This tends to support the findings of Schor *et al*, who judged 28% of cases admitted after an initial diagnosis of myocardial infarction to be unnecessary admissions.[2]

Delay in admitting a patient to a coronary care unit does not necessarily mean delay in providing urgent treatment. It seems that the best policy would be for people with chest pain to be seen in well equipped accident and emergency departments and managed initially by accident and emergency staff with a protocol for case selection. In this way streptokinase (or an alternative) may be injected with the analgesic when the patient arrives in the resuscitation room.

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1 Shosberg B, Fink N, Gibson G. Comparative analyses of emergency department treatment of chest pain. *JACEP* 1977;6:445-8.
2 Schor S, Behar S, Modan B, *et al*. Disposition of presumed coronary patients from an emergency room. *JAMA* 1976; 236:941-3.

The correlates of research success

SIR,—Those who value medical research sufficiently highly, as young adults, to make considerable financial and other sacrifices to intercalate a BSc might reasonably be expected to value such research highly later.

The correlates of research success described by Dr D C Evered and colleagues (25 July, p 241) may largely be related to the relative importance attached by different academics to research, teaching, administration, and clinical practice. Those achieving senior academic positions without the so called advantages of a BSc or an Oxbridge background may simply regard teaching as deserving more of their energies than publishing or being cited. If this is so then opting to intercalate a degree may be associated with subsequent "research success" simply through personal attitude. Allowing motivated and able students to choose to perform a research project may be beneficial, while requiring or even persuading them to do so may be counterproductive.

The fact that the BSc group published more and were cited more often than the Oxbridge group suggests that the active desire to undertake research may be the most important predictive factor of subsequent research success.

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SIR,—The paper by Dr D C Evered and colleagues on the correlates of research success (25 July, p 241) made interesting reading, particularly the fact that only 3·6% of senior academics are women. Even though there must have been unequal numbers of male and female graduates when the current group of professors and readers were starting their careers, it still seems that a disproportionately small number of women entered research. I find it hard to believe that this was because the women of 20 or 30 years ago were not up to scratch; I find it even harder to believe of today's graduates. Yet Dr Evered and coworkers say that there are no indications that the proportion of senior women academics is increasing.

Perhaps the tide is about to turn, but I suspect that research, like some of the hospital specialties, is still not seen as an attractive career choice, perhaps partly because of the perceived (and real) difficulties of combining career and family commitments (something, none the less, that most men have seemed and still seem to manage), but perhaps also because such a career choice is to some extent seen by both men and women as somehow unfeminine.

Whatever the case, the result is that around half of the potential research talent will continue to be squandered. This seems to be at best an inefficient use of resources and at worst a perpetuation of the unwitting discrimination entrenched in the medical system. Is it not time that greater efforts were made to encourage women to boldly go where few women have gone before?

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Lymphoedema of the arm

SIR,—Professor N Browse (4 July, p 3) states that lymphoedema of the arm is rare. Primary lymphoedema may be rare, but secondary forms, usually associated with cancer or its treatment, constitute a considerable health service problem, particularly in specialist cancer centres. Unfortunately, there are no reliable epidemiological data on prevalence. The reported incidence after mastectomy varies from 7% to 63%.[1] This variation relates to different operations, addition of radiotherapy, and length of follow up as well as criteria for diagnosis. The article by Kissin *et al*, to which Professor Browse refers, gives an incidence of lymphoedema after treatment for breast cancer ranging from 7% to 38% depending on treatment, radiotherapy being the most important risk factor.[2] With more than 20 000 new cases of breast cancer each year in England and Wales, an incidence of 10% would mean 2000 patients with lymphoedema a year, and for a condition that is incurable numbers are cumulative. Such figures take no account of arm lymphoedema arising from other causes—for example, after infection or treatment for other cancers.