

failed to communicate our role to the rest of the profession.

Unfortunately, however, Ramaiah also fails to understand the role of the purchaser-provider split and general practice fundholding in relation to community hospitals. At the moment (apart from surgical care in a minority of hospitals) none of the inpatient care in general practitioner-community hospitals is purchased by general practice fundholders. If the fundholding scheme develops further, to include all inpatient care, general practitioners will have the chance to use their purchasing power to develop the facilities available at their own general practitioner-community hospitals and will certainly wish to use these hospitals, when clinically indicated, in preference to the private sector or district general hospitals. My private discussions with many fundholders lead me to believe that a powerful motive for becoming a fundholder is the hope that the scheme may allow general practitioners to develop diagnostic, therapeutic, and outpatient facilities at their local general practitioner-community hospitals. Far from being seen as a threat, the new NHS, and in particular general practice fundholding, could prove to be a great opportunity for general practitioner-community hospitals.

R W LIDDELL  
Chairman, Scottish Association of  
GP Community Hospitals

Turriff Health Centre,  
Turriff,  
Aberdeenshire AB53 7DQ

1 Ramaiah S. Community hospitals in the new NHS. *BMJ* 1994;308:487-8. (19 February.)

## Pre-hospital deaths from accidental injury

EDITOR,—In their article assessing the preventability of deaths from injuries, L M Hussain and A D Redmond present convincing evidence that some accident victims are dying because of ignorance about basic airway management at the scene.<sup>1</sup> However, their assessment that death was preventable in at least 39% of those who died from accidental injury before they reached hospital is tenuous.

Their assessment is based principally on the fact that 46 of 152 patients who died before reaching hospital had an estimated survival probability greater than 50%. The probability estimates for the survival of these patients were based not only on calculations on data that are over 30 years old, as the authors state, but also on Bull's data, which were collected only for deaths in hospital.<sup>2</sup> Bull explicitly excluded pre-hospital deaths from his calculations. Even allowing for the likelihood that survival probabilities are higher now than 30 years ago when the data were collected, it is difficult to see how "Bull's probits" relating age and injury severity score to the chance of survival after reaching hospital alive in 1961 relate to the chance of surviving until reaching hospital in 1987-90.

The authors also claim that, excluding inevitable deaths in patients with injury severity scores of 75, those who died before reaching hospital were not more seriously injured than those who died in hospital. This is not true ( $\chi^2=16.2$ ,  $P=0.005$ ).

In trauma research the practice of using "norms" or "standards," whether from England 30 years ago or, more commonly, from America 10 years ago, is widespread. Although these norms may provide a useful tool for audit, they cannot be used in research for measuring effectiveness.

JON NICHOLL  
Acting director

Medical Care Research Unit,  
University of Sheffield,  
Sheffield S1 4DA

1 Hussain LM, Redmond AD. Are pre-hospital deaths from accidental injury preventable? *BMJ* 1994;308:1077-80. (23 April.)

2 Bull JP. The injury severity score of road traffic casualties in relation to mortality, time of death, hospital treatment time and disability. *Accid Anal Prev* 1975;7:249-55.

## Author's reply

EDITOR,—I share Jon Nicholl's (and others') criticisms of mathematical models for predicting outcome from injury. Nevertheless, there is no truly objective alternative, although groups across Britain are working on discovering one.

We observed that the injury severity scores of those who died of their injuries before reaching hospital did not suggest that immediate death was inevitable. Accepted wisdom had hitherto assumed that those who died so early from their injuries must have incurred injuries so severe that death was inevitable. The injury severity scores indicated that only a fifth of those who died before reaching hospital had injuries incompatible with life. The profile of the remainder was not dissimilar to that of those who died in hospital, although we did not investigate this difference further. Our study was focused on those who died before reaching hospital. Nevertheless, I appreciate Nicholl's efforts in providing further statistical analysis of this aspect of our study, but his findings are not central to the main theme of the paper.

We showed successfully that the death of those who died before reaching hospital was potentially preventable in many cases. Moreover, death might have been averted by simple first aid protection of the airway. It was the observation that airway obstruction was a factor that led us to the earlier work of Yates, who had also investigated airway patency in fatal accidents and used Bull's probits to predict outcome.<sup>1</sup> Our concerns about using this technique were expressed in the paper, but the lack of any modern British alternative highlights the paucity of work.

Nicholl agrees that norms can provide a useful tool for audit and so presumably supports our use of them in this audit of pre-hospital deaths. We made no claims with regard to effectiveness.

We identified a group of patients thought to have been unsalvageable but who might have been saved. We were careful in the paper to identify the speculative nature of giving a total of preventable deaths, but 14 patients had injuries that would not have been classified as major trauma and many others had injuries, though serious, that would not normally be associated with a fatal outcome.

Continuing concerns about statistical methods used to predict outcome from injury must not be allowed to divert attention from the indisputable findings that pre-hospital deaths from injury are not inevitable and that at least some can be prevented by simple first aid measures.

A D REDMOND  
Consultant senior lecturer

North Staffs Trauma Centre,  
Stoke on Trent ST4 7LN

1 Yates DW. Airway patency in fatal accidents. *BMJ* 1977;iii:1249-51.

## Health and social inequality in Europe

### Classification used in paper was misleading

EDITOR,—In a recent article<sup>1</sup> Chris Power summarised the results of two studies which we did on socioeconomic health inequalities in different industrialised countries.<sup>2,3</sup> Unfortunately, the box summarising these results contains some inaccuracies which we would like to see corrected. Apart from the incorrect reference figures in the title of the box, the main problem is that our original distinctions in four groups of countries for the size of mortality differentials, and three groups

## Size of mortality and morbidity differentials by socioeconomic status among adult men

### Mortality:

Low	Netherlands, Denmark, Norway, Sweden
Medium low	Finland, United Kingdom
Medium high	Germany, United States
High	France, Italy

### Morbidity:

Low	Norway, Sweden, United Kingdom, Spain
Medium	Netherlands, Denmark, Finland, Japan
High	Germany, Italy, Canada, United States

of countries for the size of morbidity differentials, have been replaced by a simple distinction into two classes (low and high, with the intermediate groups all allocated to the low category).

This produces several misleading impressions, such as that mortality differentials in the United States (medium high in our original classification) are low on an international scale. A correct version of the box is reproduced below. The information refers to adult men only.

Our current study, sponsored by the European Union (under the Biomed-1 programme), aims at updating and extending the analyses reported above. In that context we will also explore the explanation of these intriguing variations.

JOHAN P MACKENBACH  
Professor of public health  
ANTON E KUNST  
Senior researcher

Department of Public Health,  
Erasmus University Rotterdam,  
PO Box 1738,  
3000 DR Rotterdam,  
Netherlands

1 Power C. Health and social inequality in Europe. *BMJ* 1994;308:1153-6. (30 April.)

2 Kunst AE, Mackenbach JP. *International variation in socioeconomic inequalities in mortality*. Rotterdam: Instituut Maatschappelijke Gezondheidszorg, 1992.

3 Kunst AE, Geurts J, van den Berg J. *International variation in socioeconomic inequalities in self-reported health*. 's-Gravenhage: SDU-uitgeverij/CBS-publicaties, 1992.

## Migration from deprived areas may be a factor

EDITOR,—Peter Phillimore and colleagues' paper re-emphasises the association between material conditions and mortality patterns and states that there is evidence of increasing disparity in mortality in northern England over the past decade.<sup>1</sup> I wonder whether some of this increasing disparity is due to selective migration from deprived areas.

Previous studies have confirmed the association between deprivation (the Townsend deprivation score) and ill health in Northern Ireland.<sup>2</sup> It is not possible at present to replicate the work by Phillimore and colleagues because of the absence of the enumeration district data, which are necessary to enable the construction of equivalent wards so that the 1981 and 1991 censuses can be compared. It is possible, however, to track changes in mortality by district council (local authority). All 26 district councils have shown a reduction in standardised death rates between 1980-2 and 1990-2, with the more deprived areas showing the least improvement. The percentage reduction was significantly related to the net percentage change in population due to migration between the censuses ( $P<0.001$ ). Those district councils that sustained a net loss of population exhibited the smallest