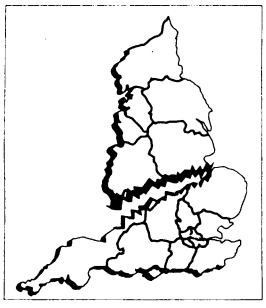
of mortality and morbidity are population based) and not being distorted by selective referral and case mix differences. Targets may conflict—for example, the wish to reduce birth asphyxia might be thought to be incompatible with lowering the caesarean section rate, and fear of litigation may motivate the obstetrician. The proper aspirations of one set of health professionals may conflict with those of another—for example, midwives and general practitioners are both expert in the care of women with normal pregnancies. Financial considerations may interfere with appropriate tertiary referral. Planning and cooperation are more likely to promote better health than the competition which is proposed.

It may be difficult to quantify "soft" outcomes such as women's perceptions of counselling and grieving after bereavement without intrusive inquiries. Long term outcomes such as the birth or survival of children with handicaps may have implications for other public and private sectors and for families but may be invisible to those purchasing health care. Full health and economic assessment of strategies for intervention is essential.

Conclusion

Promotion of good health and nutrition in childhood will improve maternal health, but pregnancy is not too late for useful intervention, and failure to provide will mean paying a heavy price in terms of the health of future generations.

1 Confidential Enquiry into Maternal Deaths. *Report on the United Kingdom, 1985-7*. London: HMSO, 1991.
2 Kline J, Stein Z. The epidemiology of spontaneous abortion. In: Huisjes HJ, Lind T, eds. *Early pregnancy failure*. Edinburgh: Churchill Livingstone, 1990:240-56.
3 MacFarlane A, Mugford M. *Birth counts*. London: HMSO, 1984.
4 Bryce R, Stanley FJ, Blair E. The effects of intrapartum care on the risk of impairments in childhood. In: Chalmers I, Enkin M, Keirse MJNC, eds. *Effective care in pregnancy and childbirth*. Oxford: Oxford University Press, 1989:1313-21.
5 Barker DJP, Bull AR, Osmond C, Simmonds SJ. Fetal and placental size and risk of hypertension in adult life. *BMJ* 1990;**301**:259-62.
6 Chalmers I, Enkin M, Keirse MJNC, eds. *Effective care in pregnancy and childbirth*. Oxford: Oxford University Press, 1989.
7 Oakley A, McPherson A, Roberts H. *Miscarriage*. London: Penguin Books, 1990.
8 Forrest GC, Standish E, Baum JD. Support after a perinatal death: a study of support and counselling after perinatal bereavement. *BMJ* 1982;**285**: 1475-9.
9 Francome C. *Abortion practice in Britain and the United States*. London: Allen and Unwin, 1986.
10 Holland WW. *European Community atlas of avoidable death*. Oxford: Oxford University Press, 1988.
11 Townsend P, Davidson N, Whitehead M. *Inequalities in health: the Black report and the health divide*. London: Penguin, 1988.
12 Carstairs V, Morris R. *Deprivation and health in Scotland*. Aberdeen: Aberdeen University Press, 1991.
13 Beral V. Reproductive mortality. *BMJ* 1979;ii:632-4.
14 Temmerman M, Buekens P. Cost effectiveness of routine ultrasound examination in first trimester of pregnancy. *Eur J Obstet Gynecol Reprod Biol* 1991;**39**:13-8.
15 Banta D. National strategies for promoting effective care. In: Chalmers I, Enkin M, Keirse MJNC, eds. *Effective care in pregnancy and childbirth*. Oxford: Oxford University Press, 1989:1449-57.
16 Frankel S. Health needs, health care requirements and the myth of infinite demand. *Lancet* 1991;**337**:1588-90.



Accident prevention

I B Pless

The consultative document offers what is described as a new approach to improving the health of the population.[1] To an outsider it seems long overdue. There is an urgent need for such an initiative in general, but especially for accidents, which remain at epidemic levels. As Mr Waldegrave points out in his foreward, the need arises because the government's recent preoccupation with the management of the National Health Service is but one indirect way to meet the nation's health needs. To do so properly other more sweeping reforms are needed, especially those that decidedly shift the emphasis from medical care alone to at least equal investment in public health.

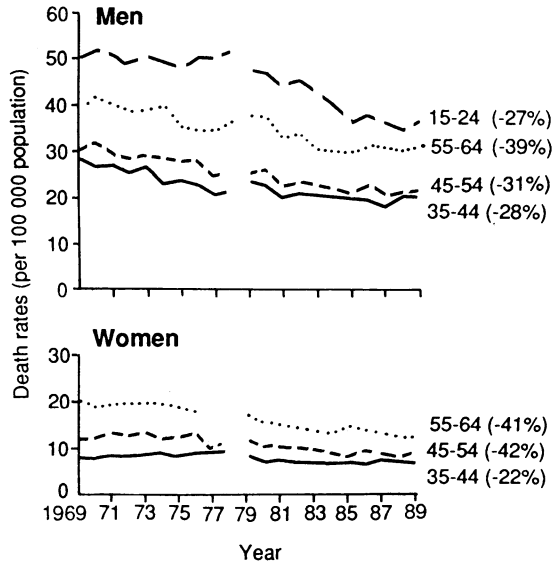
Should accidents be a key area?

The inclusion of accident reduction among the key areas is fully justified because it meets each of the specified criteria: injuries are a major cause of concern, there is wide scope for reducing them, and targets may easily be set.

Accidents are the leading cause of death among those under 30 and account for a greater proportion of years of potential life lost than cancer and heart disease combined.[2] They should also be a dominant concern because of the enormous costs to the NHS for treatment and rehabilitation.

The scope for improvement is especially compelling. A large number of proved measures await widespread implementation.[3] If there were similarly convincing evidence that equally effective means of preventing or treating cancer were available but not being implemented there would be a public outcry.

Finally, setting targets for accident reduction is easy—perhaps too easy when they reflect only aggregate figures. Although any of several global rates can be chosen, because of what is known about the epidemiological patterns of injury such figures are much less meaningful than age and cause specific targets.



Trends in accidental deaths in England, 1969-89 by age and with percentage change over the time in parentheses. Discontinuity between 1978 and 1979 due to change in coding; source of data, Office of Population Censuses and Surveys

With a combination of these three criteria a convincing case could even be made for placing injury reduction at the very top of the list of key areas.

The case against

The very use of the term accidents may imply that accidents are random events, beyond human control. This notion, however, is entirely discredited. A large

McGill University, Montreal, Canada
I B Pless, MD, *professor of paediatrics, epidemiology, and health*

BMJ 1991;**303**:462-4

body of evidence convincingly shows that injuries are predictable and subject to the same rules of inquiry as any other scientific discipline.[4-7] The persistent use of "accident" in place of "injury,"[2] however, probably reinforces the pervasive view that injuries are largely inevitable.[8] Such a view, when held by policy makers, creates formidable barriers to progress.

In addition, because injuries are non-medical in that they are not prevented by the use of vaccines or treated by drugs they could be thought to have no place in a health document. This is, of course, nonsense. Treating the consequences of injuries entails a heavy expenditure of NHS resources, and the fact that prevention is largely accomplished by physical and social engineering is little different from the strategies used so effectively in preventing cholera, tuberculosis, and malnutrition.

Finally, some might argue that because at least six other central government departments, as well as local government, industry, commerce, and the voluntary sector, are concerned with accidents, accident prevention is only marginally a health matter. On the contrary, this diffusion of effort serves to underscore the tremendous need for strong leadership and adequate coordination.

Specifying targets

The target chosen for the year 2000 is a reduction in deaths due to accidents by at least 25% (box). As a decline greater than this occurred between 1980 and 1988 in people aged 55-64, this target seems reasonable. When, however, international data on children are compared the rates in 1985 in England were nearly twice those in Sweden.[9] Thus, based on the secretary of state's view that "international comparisons indicate the possibility for improvement," it is entirely reasonable to aim for much larger reductions—about half.

But setting one target for all age groups and for all types of injuries is misleading. The epidemiology of these events is such that far greater improvements can be made in some age groups and for some injuries than for others. Each should be targeted accordingly. For example, if the wearing of bicycle helmets were as widespread in England as in Victoria, Australia,[10] and if recent data from the US about their efficacy were applied,[11] a reduction in mortality from head injuries by about three quarters in a short time would be reasonable to expect. Conversely, some proved safety measures are less age specific—for example, requiring the universal use of smoke detectors or cracking down forcefully on drink-driving and on speeding violations.

The use of a global target is also mischievous because the multifaceted case of injury prevention results in responsibilities being widely diffused. It is then all too easy to imagine one department blaming another for failure to achieve the objective.

Strategies for reaching the targets

The best general strategy for reaching the target is not, as the document suggests, a matter of "in the end, increased awareness and carefulness of individuals." It might be if these behaviours were readily modified, but this cannot be brought simply by education and persuasion alone. Instead the changes needed will require the other forms of action listed in the document. legislation, improved engineering and design, and improvements in living and working environments.

Furthermore, it is only half true to suggest that because "the range of those with the opportunity to contribute is . . . wide . . . accident prevention is *par excellence* an example of an area where the best results are achieved by cooperation and collaboration." Cooperation will work well only if the Department of Health accepts full responsibility for ensuring that the agreed goals are achieved. Although voluntary cooperation—for example, by the public—is clearly preferable, regulation, legislation, and other forms of coercion are usually more effective. Ideally, however, such steps should be taken only when the public accepts that they are necessary and wise; educational techniques serve well in this sort of pump priming operation.

The government welcomes views on targets that might usefully be set in accident prevention:

- Should the targets look only as far as the year 2000 or would long term development be better served by looking beyond that date?
- The World Health Organisation European target for accidents is that by the year 2000 death from accidents should be reduced by at least 25% from 1980 values through an intensified effort to reduce traffic, house, and occupational accidents. The indicator for this target is mortality. What scope is there for using other indicators, such as measures of temporary or permanent injury and morbidity—for example, long absence from work, and length of stay in hospital?
- Should targets be for the population generally, or for specific groups—for example, children and elderly people—or should both approaches be used?

One obstacle in determining strategies for reaching the target is the fact that the consultative document gives the appearance of having done too little homework. In similar preliminary documents produced by the US surgeons general, goals are specified in much greater detail; they reflect widespread consultation; and they are based on a thorough review of existing knowledge and current statistics.[12]

Problems in achieving the targets

As matters now stand, despite the document's many good intentions the target for accidents is unlikely to be achieved. This is because the time span is too short; there is no assurance that sufficient resources will be made available; and, above all, there is little indication that the Department of Health intends to fight the political battles that will need to be fought to achieve sufficient resources and control. Not seeking such leadership and not establishing mechanisms for truly effective coordination are tantamount to an admission of defeat.

Consider two current examples. Road accidents are the largest cause of deaths from injury yet they remain chiefly the responsibility of the Department of Transport. At a recent launch of a bicycle helmet promotion campaign the Department of Health was not even represented. Similarly, it was silent when an attempt to include random breath testing in the new road traffic bill failed. This occurred in spite of cross party support for the motion, endorsement by the Parliamentary Advisory Council for Transport Safety and the BMA, and the indisputable public health importance of this measure. Instead, the government, prompted by the Home Office, imposed a three line whip to defeat the motion. Would the new department argue vigorously that in doing so its mandate and mission were being thwarted? If not, what meaning lies behind the high sounding rhetoric about accepting responsibility? Are future transport ministers to have the final say on such matters, arguing as Mr Chope, under secretary of state, has done, that striking the right balance between the need for effective enforcement of the law and the freedom of the individual is paramount, even when public health is involved?

The Department of Health must assume ultimate

responsibility because the Department of Transport, and indeed all other government departments, have other interests to serve and other goals to meet. Only the Department of Health is influenced exclusively by health considerations. Hence a major problem in achieving a significant reduction is that the Department of Health seems not to be convinced that accident prevention lies within its sphere of interest. If it were the action plan described in the report of the National Association of Health Authorities and Royal Society for the Prevention of Accidents Strategy Group would be in the process of implementation, but it is not.[13]

It also seems that no thought has been given to creating within the Department of Health a structure similar to the Division of Injury Control in the US, which now seems essential to success in accident prevention.

Conclusion

If injuries are health problems—and because they result in death, pain, suffering, disability, or disfigurement they surely are—all key elements essential to their control must fall predominantly within the aegis of the health department. Regrettably, the document does not accept such a responsibility, nor does it give any indication that steps will be taken to affirm that in accident prevention, and indeed in all health matters, the Department of Health is first among equals.

The secretary of state wisely underscores the key role health authorities ought to have in maintaining and improving health, and elsewhere the document acknowledges that they have, in part, failed to perform this task adequately. The reasons for this are numerous and too well known to merit repetition. To address public health issues properly necessitates going beyond concerns about the NHS, requiring as well a fundamental shift in the philosophy of the Department of Health. Ironically, the document makes such a commitment: the secretary of state states that the department's task is "to *take the action necessary, or ensure that . . . action is taken*, whether through the NHS or otherwise, to improve and protect health" (my italics). This underscores the view that in the end responsibility for accident prevention lies with the department, whether or not the NHS is directly involved. This position is, as Mr Waldegrave points out, fully in line with other major historical events in public health and hence not as radical as it may at first seem. Furthermore, although, as has been stated, many other bodies have a role in accident prevention, to be effective they must be properly coordinated, and for the Department of Health to do this is a large departure from past and current practice.

Without such measures the aim of "restoring the balance between prevention, treatment and rehabilitation" is doomed. Placing greater emphasis on prevention is by no means misplaced, nor is it wrong to seek to change behaviour to promote health. The secretary of state mistakenly seems to believe that techniques for behavioural change are well developed. They are not, and until they improve greatly the balance between the role of individual people and that of government must inevitably be with the government. He further assumes that simply providing the necessary information will lead to wise, free choices and that accordingly "education is the key." This is a naive, Utopian dream that may some day come true, but not, as matters now stand, in the near future.[14]

It is easy to think that there will be no coherent preventive health programme until after the next election. But it is not just the fiddling about and the delay that should be of concern. The proposed reforms do not go far enough. The central question of how much responsibility the department wishes to assume to ensure that its objectives are met remains elusive, especially in the case of accident prevention. Perhaps this is deliberate. The issue is engulfed in a web of ambiguity and waffle. On the one hand, the document takes many of the right positions; on the other, it is far from evident that the department intends to take the steps needed to ensure that it has the power to achieve these stout intentions. To do so the tools and resources that go with central responsibility must be sharper and more powerful than any alluded to in this document.

1 Secretary of State for Health. *The health of the nation.* London: HMSO, 1991.
2 The National Committee for Injury Prevention and Control. Injury prevention: meeting the challenge. *Am J Prev Med* 1989;5:5-6.
3 Rivara FP. Epidemiology of childhood injuries. I. Review of current research and presentation of conceptual framework. *Am J Dis Child* 1982;**136**:399-405.
4 Haddon W. Advances in the epidemiology of injuries as a basis for public policy. *Public Health Rep* 1980;**95**:411-21.
5 Robertson LS. *Injuries: causes, control strategies, and public policy.* Lexington, Massachusetts: Lexington Books, 1983.
6 Waller JA. *Injury control: a guide to the causes and prevention of trauma.* Lexington, Massachusetts: Lexington Books, 1985.
7 Baker SP, O'Neill B, Karpf RS. *The injury fact book.* Lexington, Massachusetts: Lexington Books, 1984.
8 Langley JD. The need to discontinue the use of the term "accident" when referring to unintentional injury events. *Accident Analysis and Prevention* 1988;**20**:1-8.
9 Fingerhutt L, Kleinman J. Trends and current status in childhood mortality, United States, 1900-1985. *Vital Health Stat* 1989;**26**:1-44.
10 McDermott FT. Helmets for bicyclists—another first for Victoria. *Med J Aust* 1991;**154**:156-7.
11 Thompson RS, Rivara FP, Thompson DC. A case-control study of the effectiveness of bicycle safety helmets. *N Engl J Med* 1989;**320**:1361-7.
12 US Department of Health, Education and Welfare. *Healthy people: the surgeon general's report on health promotion and disease prevention.* Washington, DC: DHEW, 1979. (DHEW Publication No (PHS) 79-55071A.)
13 National Association of Health Authorities—Royal Society for the Prevention of Accidents Strategy Group. *Report. Action on accidents: the unique role of the health service.* Birmingham: NAHA, 1990.
14 Pless IB, Arsenault L. The role of health education in the prevention of injuries to children. *Journal of Social Issues* 1987;**43**:87-103.

ANY QUESTIONS

Is there any scientific or empirical method of measuring intensities of anger, joy, sorrow, and pleasure?

It is not possible to ascertain an absolute value for subjective states such as emotional intensities, but it is possible to ascertain a relative value that may be compared with the values given by other people or by the same person at other times or under different experimental conditions. Two approaches are commonly used: single items and inventories. Subjects may be given a single emotion term such as "sorrowful" and asked to rate the intensity with which they feel it on a simple scale anchored at either end with, for example, "Not at all" and "Very intensely." The scale may consist of a line which subjects mark at the appropriate point or a series of consecutive numbers—for example, 1 to 7—one of which the subject has to choose. This method is easily adapted to the needs of different investigators, but results are hard to compare across studies. For certain emotional states inventories are available that consist of several such interrelated items. From these items total scores and subscale scores are calculated, and these can be more readily compared across studies. Examples are the multiple affect adjective checklist,[1] which measures anxiety, depression, and hostility, and the state-trait anger expression inventory.[2]—C R BREWIN, *research psychologist, London*

1 Zuckerman M, Lubin B. *Manual for the multiple affect adjective check list.* San Diego: Educational and Industrial Testing Service, 1965.
2 Spielberger CD, Johnson EH, Russell SF, *et al.* The experience and expression of anger: construction and validation of an anger expression scale. In: Chesney M, Rosenman R, eds. *Anger and hostility in cardiovascular and behavioral disorders.* New York: McGraw-Hill, 1985:5-30.