Council, and the Scottish Health and Education Group the committee has brought children's accidents into the public eye through the television series *Play it Safe*. The series is accompanied by a booklet,[1] edited by Dr Hugh Jackson, and contains a foreword by the presenter, Jimmy Savile, urging that "accidents hurt children, often seriously . . . So do yourself and your kids a favour. Play it safe."

Such an appeal from a celebrity relies on people's emotions to change their attitudes, but the programme also uses facts convincingly—and for the apostles of prevention the end justifies any means.

What are the problems that the Child Accident Prevention Committee is trying to tackle? The *Play it Safe* booklet sets out some bleak statistics. Four children each day die as the result of an accident; one in six of the children in a paediatric ward has accidental injuries.

These figures raise other questions, starting with the fundamental "What are the distribution and determinants of this disease in the childhood population?" Accidents can be investigated by epidemiological techniques in just the same way as other disease. Four questions then have to be answered: Who is affected? Where does the event occur? When does it happen? and What is the cause?

Data from the Office of Population Censuses and Surveys[2] show that the proportional mortality from accidents is 3% in children under 1 year and around 26% in 1-4-year-olds. From 5 to 14 years the proportional mortality in boys is 40-45% and in girls around 28%. Analysis of data from the same source on age-specific mortality rates from road-traffic accidents shows that the peak occurs between the ages of 5 and 9 years and that boys have twice as many deaths as girls. This should lead the epidemiologist to examine in greater depth the type of road user and the mortality experience by the different groups—for example, the rates among pedestrians and cyclists. Next, we need to know where the road users' accidents occurred.

Caution is needed, however, in interpreting these findings. The analysis should recognise the problem of deciding why there are these differences both between sexes and, for example, between road-user groups. Are these real differences or are they due to increased exposure to risk? Are boys really different from girls in their concept of danger, or are they more likely to be exposed more frequently to risk because of their particular life style?

Consideration of where accidents occur to children is equally important. For example, in children's accidents on farms one important danger is slurry pits, which may look just like a rather boggy part of a field. Studies of road-traffic accidents to child pedestrians have shown that the walk or ride home from school presents the major dangers, and specifically where children have to cross at a T junction. Moreover, the relative distribution of different types of accidents plays an important part in determining where efforts should be concentrated on prevention. Should our efforts be put into home accidents, road accidents, school accidents, or farm accidents? Analysis of where an accident occurs gives an indication of the relative risks, home accidents being by far the greatest problem in the 0-4-year age group, whereas road-traffic accidents play more significance for the age group 5-14 years.

Finally, when do accidents occur? Hancock's study[3] of accidental poisonings in children found that 15% occurred between 0800 and 0900 and 27% between 1700 and 2000. Both periods are times of maximum family busyness, when the mother in particular may have to turn her attention to a range of activities and family members.

Answers to questions about who, when, and where may lead to a greater understanding of why accidents occur. Sabey and Taylor's investigation[4] of road-traffic accidents identified three factors: the road user, the vehicle, and the road environment. These provide useful analogies for all accidents. We need to ask, firstly, was the user experienced enough; did he or she understand the potential dangers? Secondly, was the object that caused the injury as safe as was possible? and, thirdly, was the environment as safe as possible?

The three factors may contribute individually, or in association with one or both of the others, to differing degrees in different accidents. Our understanding of the interaction, however, is the key to prevention.[5]

The question still sometimes asked, however, is, "Is it all worth while?" What effect can the medical profession have? Doctors can try to educate the public and give them the facts; that is what *Play it Safe* is trying to do. Next comes legislation, where the medical profession can have a powerful influence on Government thinking. Without medical commitment, or at least commitment by individuals and groups within the profession, there would be no Child Accident Prevention Committee. Without basic epidemiological studies into the effectiveness of seat belts,[6] and the ineffectiveness of educational programmes,[7] the British Medical Association and other professional bodies could not have pressed for and seen legislation introduced. Perhaps the profession needs, therefore, to reconsider where it is going and give greater thought to the possibilities of prevention rather than treatment of children's accidents; or will doctors be satisfied to carry on as usual and *Play it Safe*?

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Effect of transplantation on non-renal effects of renal failure

The patient who receives a kidney transplant is usually rapidly restored to wellbeing thanks to the return of normal renal function, which causes many of the secondary effects of chronic renal insufficiency to disappear. For example, when there are adequate iron stores anaemia resolves in six to 12 weeks and occasionally erythrocytosis occurs, and with the restoration of normal haemoglobin concentrations angina may also disappear.

About half of all transplanted patients, however, have appreciable hypertension; in most this predates the transplant and has not been improved by it. But the incidence of hyper-

tension is lower in patients who have previously undergone bilateral nephrectomy, though such a major surgical procedure has its complications.[1 2] Hypertension appearing soon after transplantation has been attributed to high-dose corticosteroids used for immunosuppression and a change to alternate-day steroids may improve it.[3] The two determinants of the hypertension, however, are the patient's original renal disease and inadequate function in the transplant.

The neurological complications of chronic renal failure, such as uraemic polyneuritis and autonomic neuropathy, are improved more by transplantation than by haemodialysis.[4 5] In some patients previously intractable pruritus, possibly due to a sensory neuropathy, resolves after transplantation. Until recently the dialysis encephalopathy syndrome, characterised by a speech disorder, apraxia, myoclonus, and progressive dementia,[6] was believed to be irreversible.[7] Improvement has, however, been reported in patients with a well-functioning kidney transplant[8] and also in those receiving dialysis using deionised water and treatment with desferrioxamine.[9]

Prepubertal children who have had transplants grow better than those having intermittent haemodialysis. Growth is retarded, however, by high daily doses of steroids. Alternate-day steroids may offer some advantage but at the expense of an increased risk of graft rejection. Cyclosporin A, the new non-steroidal immunosuppressive agent, may therefore be particularly advantageous in children. A major change in the endocrine system after transplantation is the correction of derangements of calcium and phosphorus metabolism, with healing of the bony lesions of renal osteodystrophy; but this recovery may take up to four years.[10] Tertiary hyperparathyroidism, however, occasionally appears and the patient may then need subtotal parathyroidectomy.

Sexual function may also be improved by transplantation. Half of the men in chronic renal failure who are treated with dialysis become impotent. Several factors have been incriminated, such as secondary hyperparathyroidism, depression, anaemia, antihypertensive drugs, a dependent role, loss of status in the community, zinc deficiency, and uraemic neuropathy. In addition, a few develop priapism, which despite treatment often leads to impotence. The main cause of impotence, however, is a low testosterone concentration; concentrations of luteinising hormone and follicle-stimulating hormone may be raised because of impaired renal clearance as well as overproduction from a failure of feedback at the hypothalamic level.[11] Hyperprolactinaemia (usually reversed after transplantation[12]) has also been incriminated as a cause of uraemic hypogonadism, and improvement of sexual function in patients having maintenance haemodialysis has been reported with the use of bromocriptine.[13] The number and motility of sperm are considerably reduced and testicular biopsy specimens have shown reduced or absent spermatogenesis. By itself haemodialysis does not improve testicular function as shown by serial measurements of plasma testosterone concentrations and analysis of seminal fluid.[14] Before dialysis women have similar disturbances in sexual function, with anovulatory periods or secondary amenorrhoea. With adequate haemodialysis a few patients improve, with ovulation and return of libido, but many retain low libido and are infertile. After transplantation libido and fertility often improve greatly in both sexes, but the reversibility of hypogonadism is not universal. Although Leydig cell function does improve, testosterone concentrations remain in the low-to-normal range. In a small series improvement in sperm counts was seen in half the men after transplantation.[15] Recently Handelsman *et al*[16] found improvement in gonadal function in nine of 16 patients studied after transplantation; the seven patients with continuing depression of gonadal function were those who had received dialysis for more than a year. The poor reversibility of uraemic hypogonadism may be due to permanent damage of the germinal epithelium, though the exact cause of the damage remains obscure. To avoid this potentially irreversible damage early transplantation is desirable.

With a general improvement in wellbeing comes full rehabilitation, clearly the goal of renal transplantation; some 80-85% of patients are able to work full time after renal transplantation compared with 60-70% of patients having haemodialysis. The lot of many patients who are having long-term haemodialysis could be improved by more donated kidneys.

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