

independently valuable and thus should be of adequate size. One or two well designed large trials, perhaps achieved by the collaboration of several centres, are of much greater value than numerous undersized ones.

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- ¹ Hall JC. The other side of statistical significance: a review of type II errors in the Australian medical literature. *Aust NZ J Med* 1982;12:7-9.
- ² Reed JF, Slaichert W. Statistical proof in inconclusive "negative" trials. *Arch Intern Med* 1981;141:1307-10.
- ³ Freiman JA, Chalmers TC, Smith H Jr, Kuebler RR. The importance of beta, the type II error and sample size in the design and interpretation of the randomized controlled trial. *N Engl J Med* 1978;299:690-4.
- ⁴ DerSimonian R, Charette LJ, McPeck B, Mosteller F. Reporting on methods in clinical trials. *N Engl J Med* 1982;306:1332-7.
- ⁵ Ambroz A, Chalmers TC, Smith H, Schroeder B, Freiman JA, Sharek EP. Deficiencies of randomized control trials. (Abstract.) *Clinical Research* 1978;26:280A.
- ⁶ Mosteller F, Gilbert JP, McPeck B. Reporting standards and research strategies for controlled trials. Agenda for the editor. *Controlled Clinical Trials* 1980;1:37-58.
- ⁷ Hansteen V, Møinichen E, Lorentsen E, et al. One year's treatment with propranolol after myocardial infarction: preliminary report of Norwegian multicentre trial. *Br Med J* 1982;284:155-60.
- ⁸ Aleong J, Bartlett DE. Improved graphs for calculating sample sizes when comparing two independent binomial distributions. *Biometrics* 1979;35:875-81.
- ⁹ Boag JW, Haybittle JL, Fowler JF, Emery EW. The number of patients required in a clinical trial. *Br J Radiol* 1971;44:122-5.
- ¹⁰ Mould RF. Clinical trial design in cancer. *Clin Radiol* 1979;30:371-81.
- ¹¹ Altman DG. How large a sample? In: Gore SM, Altman DG. *Statistics in practice*. London: BMJ, 1982:6-8.

Risk assessment

"Statistically speaking, flying is still the safest way to travel," Superman tells Lois Lane after rescuing her from a helicopter crash (*Superman*, the movie). Of course he may be right, but it is little compensation if your number is on the bullet: drawing conclusions about individual risk from collective experience remains of dubious validity.

Yet we are being encouraged increasingly to think in terms of comparative risk to enable us to make "informed choices" both about the consequences of individual behaviour and about the desirability of the community adopting one policy or structural design as opposed to another. In his seminal book *Uses of Epidemiology* Professor J N Morris implies a bright future for the application of informed choice as a tool of preventive medicine; for instance, the knowledge that cigarette smokers aged 35 have only a 73% chance of surviving to 65 compared with an 85% chance for a non-smoker would appear to be a useful piece of information.¹

But action by no means inevitably follows knowledge; sociological, psychological, and political-economic factors (among others) have also to be taken into account. A failure to address itself adequately to these aspects of risk assessment is one reason why the recent publication by a study group of the Royal Society is disappointing.² Despite ritual observations that values and politics are important in risk assessment the report is predominantly technical.

As a species we are risk taking animals, but we resent risks being imposed on us by others. We like to feel in control, and most people are much more worried by flying than by driving

their own car or riding a bicycle—even though car drivers are six times and cyclists 60 times more likely to be killed than passengers on a scheduled airline.

Disasters affecting many people tend to be viewed much more seriously than many small incidents affecting more people, even when the accumulations of small incidents have a consistent pattern—such as road traffic accidents when the pubs close. The question of perception is important, as too are the questions of which risks are chosen for examination by whom and who makes decisions about which ones to act on. Titmuss pointed out that a full assessment of disbenefits included knowledge of whom the costs fell on—with the implication that all of the interactions of the systems concerned needed to be charted.³ We are familiar with the attitude that new airports, gypsy camps, and nuclear power stations are fine so long as they are in someone else's backyard, but most people are less familiar with the extent to which we have exported health hazards in industry to the developing world by our willingness to import goods produced in conditions that would no longer be tolerated here—or by child labour.

So while a full knowledge of risk must be a good thing, in the wrong hands it may be misused. As with its cousin, cost-benefit analysis, the tendency is to measure things that are easily measured and ignore those which are not, even if they may be perceived as more important by those affected. Another tendency (in keeping with the BBC's approach to information) is to give equal weight to employers' and employees' views on a particular risk, even though it is the workers who are personally affected by it. In government risk assessment is being developed as a device which enables politicians to launder decisions by passing them through the technical advisers' machine with a passing nod at consultation. Devices such as the "acceptable daily intake" and threshold limit values may lend a spurious authenticity to a value laden decision which has already been made. It is no coincidence that the recent encouragement to the public to accept risk assessment seems to have begun in earnest when the nuclear power programme was seriously challenged.

Technicians working with nuclear power may feel confident of its safety because they are in control. Flying is not the safest way to travel (rail is four times as safe), but the public as a whole presumably will lose its fear of flying only when everybody is a pilot. If governments want people to act on risk assessment affecting their own lives or accept policy decisions based on risk assessment, then they should realise that paternalism will not do. People must really take part in controlling their lives and in the collective decisions which affect them. The implication of this for medicine and public health is that as health professionals we need to develop our relations with our patients as partners rather than as authority figures—in accordance with the current World Health Organisation strategy^{4 5} that "the people have a right and a duty to participate in the planning of health care."

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- ¹ Morris JN. *Uses of epidemiology*. 3rd ed. Edinburgh: Churchill Livingstone, 1975.
- ² Royal Society Study Group. *Risk assessment. Report*. London: The Royal Society, 1983.
- ³ Titmuss RM. *Social policy an introduction*. London: George Allen and Unwin, 1974.
- ⁴ World Health Organisation. *Global strategy for health for all by the year 2000*. Geneva: WHO, 1981. (Health for All series. No 3.)
- ⁵ Horder J. Alma Ata declaration. *Br Med J* 1983;286:191-4.