



How much of the money spent on medical research is wasted at successive stages.<sup>1</sup>

### 1. Ask the right research questions

Sometimes doctors do not know which treatment is likely to be best for their patients because the available options have not been properly studied. Such studies, which can have important implications for patient care, may be of little or no interest to industry or academia so important questions remain unanswered. And not answering these questions can lead to immense harm. Take one example – whether steroid drugs given to people with brain damage as a result of physical injury increase or decrease their chances of survival. Steroids were used for decades before a well-designed study showed that this established treatment had probably been killing thousands of patients with brain injury.<sup>2</sup> Proposals for this study were initially opposed by industry

and some university researchers. Why? They were engaged in commercial trials assessing the effects of expensive new drugs (so-called neuroprotective agents) on outcome measures of questionable importance to patients, and they did not wish to face competition for participants.

Another reason for tackling these unanswered questions is to help ensure that the precious resources available for healthcare are not being wasted. When human albumin solution, given as an intravenous drip, was introduced during the 1940s to resuscitate burned and other critically ill patients, theory suggested that it should reduce their chances of dying. Amazingly, this theory was not subjected to fair tests until the 1990s. At that point, a systematic review of the relevant randomized trials could find no evidence that human albumin solution reduced the risk of death compared with simple salt solutions. What the systematic review showed, in fact, was that if albumin had any effect on death risk it was to increase it.<sup>3</sup> The findings in this review prompted doctors in Australia and New Zealand to get together to do the first sufficiently large fair comparison of human albumin solution with saline (salt water), an alternative resuscitation fluid.<sup>4</sup> This study – which should have been done half a century earlier – could find no evidence that albumin was better than salt water. Since albumin is about 20 times more expensive than saline, huge sums of money from healthcare budgets worldwide must have been wasted over the past 50 years or so.

## 2. Design and conduct research properly

Stimulated by surveys revealing the poor quality of many reports of clinical trials, reporting standards have been developed and applied. Such standards make clear how many patients have been asked to participate in a study and how many declined the invitation. Results are presented according to the various treatment groups selected at the outset. But there is still a long way to go to improve: (a) the choice of questions being addressed in research; (b) the way that these questions are formulated to ensure that the outcomes of treatments chosen for assessment are those that patients regard as important; and (c) the information made available to patients. (See Chapters 11 and 12.)