

considerable 'movement' of nursing, medical and other staff.

Another source of potential gain may be the *economies of scale* that specialisation within districts could produce. However, 'the scale effects have been discussed without having been extensively identified', but 'the use of spare capacity (in the NHS and private sectors) offers scope for reducing waiting lists'.

The third source of potential gain is reduced *input prices*. Again as most of the cost is labour, whether there is much potential for reducing the wages of the major costs, both nursing and medical, is questionable. The ancillary workers have already had their wages reduced and 'any policy which transfers income from them to the taxpayers is likely to increase further inequalities in the distribution of income'.

The fourth potential benefit is 'increased consumer choice'. It is argued that an internal market would allow DHAs to offer 'different packages of care'. These could vary in the quality of both clinical and hospital care, but, 'A commitment to equality of treatment makes any deliberate decision to vary quality of care controversial'.

On the other side of the argument there are a number of problems with introducing an internal market. 'It has been suggested that increased efficiency may be obtained at the cost of unequal access'. Competition would produce greater specialisation which would produce greater concentration. Some patients and their families (and staff) would have to travel further. Some of the benefits to the NHS would be gained at a cost to the patients (which as a group are the less privileged). So it is possible that an internal market may save the NHS money but again there is a redistribution of wealth. And it is even possible that society as a whole may well be worse off.

Then there is a more obscure argument that 'greater awareness of income-generating services can lead to undue emphasis being placed on services that generate income, which may distort planning priorities and 'penalise those individuals who are dependent upon less high profile, basic services'.

The author's tentative conclusion is, 'that there is scope for reducing x-inefficiency and reaping some benefits from scale economies. But there are also dangers: more unequal access being one of the most important. Furthermore, the practical problems of implementing such a scheme are considerable. . . . 'The lack of cost

information is a serious impediment to trade.' Clinical budgeting experiments have been going on for over a decade, but progress has been very slow. As well as the economic doubts, the author also foresees political problems. To implement an internal market and make it work would need the support of GPs and hospital doctors, and as the author notes, 'doubts about the practicality of the proposals hinge as much on their political acceptability to various groups within the NHS as on the potential economic gain to be made'. So there is a need to enlist support. The author concludes that 'there is insufficient evidence to warrant adoption of the idea throughout the NHS' and calls for an experiment within a region. I agree.

DAVID ALLEN  
Senior Lecturer

Health Services Management Unit,  
University of Manchester,  
Devonshire House,  
Precinct Centre, Oxford Road,  
Manchester

## Quantitative Risk Assessment

Edited by J M Humber and R F Almeder, 278 pages, Clifton, New Jersey, £29.00, Humana Press, 1987.

In line with the work of Doll and Peto indicating that the great majority of cancers may be environmentally induced, the US National Institute of Occupational Safety and Health (NIOSH) is responsible for conducting Quantitative Risk Assessments (QRAs) intended to result in statements such as: 'The probability of the average person contracting cancer as a result of low-dose exposure (20ppm) to ethylene dibromide for eight hours a day over a 20-year worklife is between 0.73 and 0.87'. The US government requires that such risk assessments be provided, and that the measure of risk be acceptable, before any new drug or chemical is sold to the public at large. At present the burden of proof is on industries to show that the product is not harmful in any appreciable way.

QRA's are very largely based on exposing a large number of small animals to high doses of the material in question over specified periods of time. The presence or absence of cancerous or precancerous tumours, or other such signs, is noted. The results are then extrapolated, on the basis of conjectural mathematical models, from high doses

and small animals to low doses and humans.

Such extrapolations are inevitably suspect. It is stated in the introduction to this book that a senior health official noted that 'some corporations are hiring risk assessors under the conditions that the assessments provided be most conducive to the economic interest of the corporation'. In the early days of atomic weapons testing there appeared to be scientific grounds for positing the existence of a threshold dose of radiation below which no harmful effect would occur. This doctrine, now discredited, clearly suited the aims of those powers that were intent on weapons testing, and although in reality it was always at best conjectural, it was propounded at the time as 'scientific fact' by the powers concerned. In the presence of genuine uncertainty self-serving opinions have a special edge.

This book begins with four essays by practitioners in QRA. The first of these gives a most useful detailed discussion of statistical techniques as applied in a particular case - that of ethylene dibromide. The second essay brings out the need to use background scientific information to supplement the statistical analyses without, however, facing up to the difficulties in doing so.

The third points to what is perhaps the most serious unknown in the problem - the extent of 'public exposure' to a given risk, varying, as it does, over time and over people. The fourth essay discusses a further related problem - the variability of susceptibility. Pointing out that individuals with high levels of a particular enzyme are more susceptible to the carcinogenic effects of benzpyrene than individuals with low levels of the enzyme, it indicates the social and ethical difficulties in using such information in regulatory practice. It concludes: 'The present state of risk assessment does not allow for incorporation of such refinements as enzyme levels, nor many other physiological considerations, and it calls to mind the appraisal of the discipline of history offered by Herodotus, who said "I am obliged to report what I have heard, but I don't have to believe it" '.

The second section of the book consists of five essays by philosophers, together with an extract from the congressional record describing a Bill introduced to the House of Representatives in 1983 on risk assessment research and demonstration. The first two essays attack the notion that science can be regarded as 'value free', suggesting that

attempts to arrive at objectively verifiable statements of the kind required by QRA are forever doomed to failure. An opposite point of view is put in the third essay, but in a way that exhibits such abysmal ignorance as may be illustrated by the statement on p223: 'The first three holders of the chair of Eugenics (later statistics) at University College in London were Francis Galton, Karl Pearson, and R A Fisher. Their opposition to Mendelian theories of genetics (ie theories that postulated unobserved mechanisms responsible for inherited characteristics) and promotion of purely statistical approaches was notorious'. That Galton never held a Chair, and Fisher never held a Chair in statistics, are details readily found in the *Dictionary of National Biography*. However, to suggest that the man mainly responsible for reconciling Mendelism with Darwinism was a notorious opponent of the former would suggest that nothing the author says need be taken seriously. This is a pity, because his thinking, as opposed to his knowledge of facts, is a good deal clearer than that of his co-authors.

There has been an explosion of late in the literature connected with public risk assessment. The Royal Society Working Party report remains pre-eminent in its setting out of the issues to be faced. The essays in the first part of the present work make it a useful addition to the literature.

GEORGE A BARNARD  
*Department of Mathematics,  
University of Essex*

## Medicine Looks at the Humanities

J David Neville, Ira W Gabrielson, 184 pages, London, \$24.50 hbk, \$12.75 pbk, University Press of America, 1987.

This book is a celebration by the Medical College of Pennsylvania of a decade of collaboration between doctors, scientists, philosophers and teachers of the humanities. Their aim was to create a medical curriculum which included the humanities in the hope that a more mature, 'humane' physician could be created to practise in our scientific world. Humanities are defined as subjects such as poetry or philosophy which enhance our knowledge of human feelings and ways of communicating through words, art

and music.

The book is divided into five parts: Perspectives, Interpretations, Expressions, Attitudes and Prescriptions.

Part One is a collection of essays by doctors assessing what qualities can be learned from the practice or appreciation of different humanities. The development of communication skills enables the practitioner to empathise with different people in different situations. In the context of medicine when a cure is not possible the writers feel that it is important that doctors care and try to alleviate suffering.

Part Two the Interpretations, consists of four critical appreciations of four works of literature and art. The Expressions in Part Three include poems, short stories and essays which harvest the experiences of students and doctors. They present insights into some of the emotional dilemmas we face in the practice of medicine. In Part Four the survey of attitudes to the humanities in a medical community is presented clearly in tables. The interpretative essay analyses the attitudes of nurses, medical students, administrators and doctors to the arts. The final section looks at ways medical education could be developed to include humanities in its curriculum.

There is no question of compromising the clinical knowledge and skills acquired by medical students, rather the humanities faculty wants to increase the maturity of the student's application of this scientific knowledge to individuals. There is awareness that the arts can complement the sciences in the analyses and resolution of problems in medical care: as we become increasingly 'high-tech' we should become 'high-touch' doctors.

The study of the humanities may help us to know ourselves and to know what it is to be human. This book succeeds in showing us the different qualities we can learn from the study of different humanities and how useful these skills can be to the growing doctor.

For me the energy of the book lies in Part Three, where young doctors express their ethical dilemmas in poems and short stories. There was a freshness in their reflections.

The disappointment is Part Two. The critical appreciations by medical minds are at times incomprehensible; the uncorrected type-script in the essay on the 'Border-line Personality' contributes to the confusion.

Overall I am grateful to realise that there are artists and writers out there in the medical profession, and that there

are people who wish to nurture these skills in medical students and have already started doing so.

OENONE BROWN  
*Principal in General Practice  
100 Falcon Road,  
London SW11*

## Medical Ethics and Economics in Health Care

Edited by Gavin Mooney and Alistair McGuire, 159 pages, Oxford, £20.00, Oxford University Press, 1988.

At first sight the conflict between health economics and medical ethics is irreconcilable. Economists are essentially utilitarian, seeking the maximisation of social welfare. Resource allocation decisions in health care, however, are made largely by doctors whose code of medical ethics – at least as perceived by economists – directs them to maximise the welfare of the individual patient and to ignore opportunity cost (the benefit foregone by not using the resources elsewhere). Since social welfare is maximised when opportunity costs are minimised, medical ethics ensures social sub-optimality.

*Medical Ethics and Economics in Health Care* is a collection of papers presented at a workshop which brought together a multidisciplinary group, including doctors and economists, to debate the nature, extent, and possible resolution of this conflict. The papers show that there is more involved than first meets the eye. Indeed several of the authors argue that the basic conflict as presented above is oversimplistic: utilitarianism is more than the sum of the (value of) health outcomes, and medical ethics does not, in theory or practice, wholly ignore opportunity cost. The extent to which each aspect oversimplifies, however, is debatable. Examples of doctors' concern with opportunity cost, such as Raanan Gillon's case of the general practitioner who terminates a productive session with a psychologically disturbed patient because another is suffering a myocardial infarction in the waiting room, show that doctors' ignoring of opportunity cost is clearly not absolute. But proof that some doctors consider opportunity cost some of the time does not alter the fact that most do not most of the time.