States helps to explain—and, in turn, to compound—the high rate of spending. Each culture rests on wider differences in the two societies. Britain is an original sin society in which illness and debility are seen as part of the natural order of things and patients tend to be deferential. America is a perfectability of man society in which illness and debility are seen as challenges to action and patients tend to be demanding consumers. Each culture, furthermore, tends to carry its own dangers for the clinicians concerned. In Britain it is—as Aaron and Schwartz argue persuasively in the case of renal dialysis—that doctors will seek to rationalise resource constraints (and make tragic choices more tolerable for themselves) by classifying patients as unsuitable for treatment. In the United States it is that, as Aaron and Schwartz recognise but do not emphasise sufficiently, doctors will seek to rationalise their own desire to maximise their incomes by maximising treatment, and that activity will become an end in itself irrespective of the ultimate outcome for the patient.

The most convincing conclusion drawn by the study for its American audience is, therefore, that the British model is not for export to the United States. But it is important to be clear just why this conclusion is convincing. Its persuasiveness derives from the fact that the dynamics of American society, and its medical system, are incompatible with the organising principle of the NHS, which is—to return to an earlier point—that health care should be rationed according to medically defined needs, not distributed in response to consumer demands. It does not derive from the book's demonstration that the levels of activity are in some respects much lower in Britain than in the United States. This, in itself, tells us little about the overall effectiveness of the two health care systems and risks prompting misleading conclusions (particularly in the United States) about the achievements and weaknesses of the NHS.

Firstly, health care activity should not be confused with health care outcomes. Aaron and Schwartz can hardly be blamed for being unable to measure the effects of the different levels of activity in the two countries on health care outcomes, in terms of either quantity or quality of life. This is a notorious conceptual minefield, where it is difficult to disentangle the effects of medical intervention from the environmental socioeconomic factors. They might usefully, however, have emphasised this problem more in order to avoid possible misinterpretations of their evidence. Certainly, taking such crude, and hard to interpret, indicators as life expectancy and perinatal mortality, Britain does better than the United States.²

Secondly, it is a mistake to concentrate exclusively on a number of procedures—though justifiable as an attempt to explore the problems of rationing scarce resources—for this risks giving a distorted picture of the health care system as a whole. Rationing not only concerns decisions about what resources to devote to individual patients; it also entails decisions about how to ration resources between different groups of patients. The NHS forces explicit choices about the relative priority to be given to the acutely ill, the mentally ill, the old, and the young. Unfortunately, Aaron and Schwartz ignore this dimension, with the result that they present what is at best an incomplete balance sheet.

Finally, rationing is inevitable under any health care system.³ Aaron and Schwartz rightly warn their American readers that the United States faces the "painful prescription" of rationing if it wishes to put a ceiling on total health care expenditure. But they fail to point out that the United States already rations health care somewhat brutally, although in passing they note that "several million Americans

lack adequate insurance or personal means and therefore face obstacles to obtaining hospital care." The issue, in other words, is not whether to ration but how to ration; how best to devise a system which allocates what will always be inadequate resources—in the sense of falling short of permitting the medical providers to do everything technically feasible for all their patients—in the fairest and socially most acceptable way. And on this criterion the NHS, whatever its other failings, must surely be rated a success story.

But it would be wrong to end on a note of complacent self congratulation. This study does raise a major issue for the NHS. As Aaron and Schwartz point out, the dilemmas of rationing are likely to become ever sharper as new techniques and procedures become available. In turn, this may call into question the consensus on which Britain's system of rationing rests. At present this is a system for transmuting collective political decisions about how much money to spend on the NHS into individual clinical decisions about how much care to give to specific patients, thereby transforming tragic choices about who should live and die into technical assessments of the effectiveness of particular courses of action.⁴ In return for accepting this responsibility the medical profession enjoys virtually total autonomy in making clinical decisions, certainly greater autonomy than American clinicians. But if the financial constraints within which British clinicians work start biting still more they may come to ask whether the price of freedom—in terms of accepting responsibility for making tragic choices—is not becoming excessive.

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Low osmolar contrast media

In the past decade there have been major, even revolutionary advances in the synthesis of new intravascular radiological contrast media and in their clinical evaluation. For the past 30 years all radiological contrast media have been sodium (or meglumine) salts of substituted triiodinated benzoic acids. These salts completely dissociate in solution, each molecule of salt providing one anion (the benzoic acid derivative) and one cation (the sodium). Both anion and cation have equal oncotic (osmolar) effects but only the anion is radio-opaque. The solutions used in clinical radiology are very concentrated (up to 76%), so that their osmolality is extremely high—up to eight times physiological. It is the very high osmolality of the very large volumes of radiological contrast media often required (up to 200 or 250 ml) that is responsible for most (but not all) of the serious adverse reactions.^{1,2}

The first low osmolar radiological contrast medium was metrizamide (introduced in 1972), which has an osmolality of about one third that of conventional ionic contrast media at an equivalent concentration of iodine.³ Metrizamide is an excellent intravascular medium, but this use has been strictly limited by its very high cost (about 25 times that of a conventional ionic medium) and by its presentation as a

lyophilised powder, which has to be dissolved separately for each examination.

The second generation of low osmolar radiological contrast media (iohexol, iopamidol, ioxaglate) have been introduced into clinical practice within the last two years and they have substantial advantages over metrizamide.¹ They are about one sixth of its cost (but still three to five times the cost of conventional ionic radiological contrast media); they are autoclavable in solution and are therefore supplied in sterile ampouled solutions; and their low osmolality and intravascular toxicity are similar to those of metrizamide.

Low osmolar products have very substantial advantages for intravascular use. Firstly, all varieties of arteriography (including aortography and cerebral, femoral, and brachial arteriography) are rendered virtually painless.¹ The new products convert what used often to be very uncomfortable arteriography into a painless procedure, readily acceptable to the patient with the minimum or no premedication. Indeed, general anaesthesia is no longer needed for radiological vascular studies except in some special clinical circumstances (such as the investigation of subarachnoid haemorrhage). With general anaesthesia no longer needed, the overall cost of radiological procedures is reduced—so is the time spent in hospital.

Among the less obvious advantages are less cardiac depression during coronary angiography and left ventriculography,⁴ a smaller increase in the blood volume, probably slightly lower renal toxicity, and a probable reduction in those severe reactions of unknown mechanism generally called "anaphylactoid."⁵

Very high doses of radiological contrast media are known to cause deterioration of renal function (manifested by oliguria, anuria, and azotaemia) in some patients with pre-existing renal impairment, especially diabetics.⁶ The new low osmolar radiological contrast media seem unlikely to have substantially less renal toxicity, and a dose of 200 ml radiological contrast medium for a single study should be exceeded only after careful consideration of the clinical circumstances, particularly if renal function is already impaired.

The death rate from intravenous urography is probably between one in 20 000 and one in 40 000 examinations.⁷ The rate of these reactions seems lower with low osmolar radiological contrast media; the evidence suggests that the death rate has been reduced to about one in 40 000 to 80 000 intravenous urograms.

Replacing all conventional ionic radiological contrast media by the newer more physiological products has no disadvantages other than the cost—and the lesser distension of the urinary tract on intravenous urography owing to the reduced osmotic diuresis. The cost of radiological contrast media in Britain was about £4 million in 1983, of which £2.5 million was spent on conventional ionic radiological contrast media. Some half a million to one million intravenous urograms, enhanced CT scans, and arteriograms are performed in Britain each year, with about 25 deaths from adverse reactions. If deaths might be reduced to, say, 10 to 15 a year by substituting low osmolar radiological contrast media, the additional cost would be £6 million to £9 million. This suggests that the cost of preventing one death might be £500 000. For comparison, the estimated annual cost for renal dialysis is £10 000, which saves that patient's life for one year.

If, as seems likely, NHS finances are thought too limited at present to replace all conventional ionic radiological

contrast media, then some guidelines might be considered indicating those patients with a priority claim to the less toxic but more expensive low osmolar radiological contrast media. The priority groups should probably include (a) all patients undergoing painful and uncomfortable arteriograms and (b) all patients at increased risk—those who have had a previous severe adverse reaction to radiological contrast medium; those known to be allergic; those with asthma or diabetes; infants; patients with renal or cardiac impairment, myelomatosis, or sickle cell anaemia; and those who are very anxious.^{5 7 8}

Both clinical and experimental evidence suggests that giving steroids by mouth (for example, 4 mg dexamethasone) 12 and again two hours before injection substantially reduces the risk of an anaphylactoid reaction to conventional ionic radiological contrast media.^{5 9} If the cost of low osmolar radiological contrast media precludes their being given to all patients at increased risk, then administration of steroids should be carefully considered in asthmatic, allergic, or previous reactor patients if they are to be injected with conventional high osmolar radiological contrast media.

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Night and day

At least half the patients entering general surgical wards in a district general hospital are admitted as emergencies.^{1 2} By the time the family doctor has been consulted and transport arranged most of these admissions occur after normal working hours; 60% of patients needing emergency surgery reach the operating theatre between 6 pm and midnight, and 17% between midnight and 8 am. Thus three quarters of emergency surgery is carried out after most people have finished work—a fact which is familiar to every surgeon but which has received less attention than it deserves.

At the end of a full day's operating older surgeons may reasonably feel thankful that their younger and perhaps stronger colleagues will generally undertake these nocturnal duties, just as they themselves did as juniors. It is indeed essential that surgeons in training should take a full share in the care of emergency patients. The surgery of the acute abdomen is one of the few remaining disciplines in which the general surgeon is considered to be a specialist, so it is vital that junior surgeons should receive a wide and well planned training. Training is the word which must be emphasised because the unsocial hours during which most