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Organs for transplantation

Improvements needed in supply and use

Transplantation of human organs is a perverse activity. While resources of beds and staff can be expanded with more money, the supply of cadaver donor organs is finite—well people have to die so that sick people can live. Nevertheless, I am sure that all of us concerned in transplantation, including the potential recipients, would be happy to see the activity drastically reduced if deaths from, say, road traffic accidents could be abolished. But these deaths do occur; the current tragedy for patients awaiting transplantation is that access to suitable organs is limited.

Kidney, heart, liver, and lung transplantation have all become increasingly successful. The demand will continue to rise as results—longevity and quality of life—are shown to be good. The indications for transplantation of the different organ groups are being widened, further swelling the numbers of potential recipients. Cost-benefit analysis supports these demands,[1] and even for end stage renal failure—in which other forms of treatment are available—transplantation has been shown to be cost effective. The current rates of growth in demand are lowest for renal and liver transplantation and greatest for heart and heart-lung transplantation. These rates are reflected in the increasing waiting times, now up to seven months for heart-lung transplantation, with up to a quarter of patients on the waiting list dying.

Funding for transplant services and planning the activity to try to meet these demands depend on reliable estimates of potential and actual numbers of donors available. The recent paper by Gore and her colleagues, which looked at the numbers of patients certified as brain stem dead in intensive care units in England, provided data that greatly reduced previous estimates of the potential number of donors: however the sums are added up the demands cannot, it seems, be met either in theory or in practice.[2]

Before we draw any conclusions from these data some important questions need to be asked. Firstly, how representative are the first three months' figures from a two year audit? Only time and further analysis will tell. Secondly, what size is the hidden population of potential donors—for instance, those with subarachnoid haemorrhages not admitted and ventilated in the intensive care unit—and is this number substantial? If it was indeed substantial then more potential donors would be available if more intensive care facilities were funded. Gore *et al* suggest that this extra source would be of marginal importance.

Assuming that we have a reliable estimate from these early figures of the potential and actual supply of donors then the shortfall in available organs is indeed dramatic. Current waiting lists and estimates of the future need for organs are greater and rising more rapidly than the actual number of 1200 a year found by the audit of donors in England. Numbers could be increased: in 26% (106/407) of patients with a possible diagnosis of brain stem death the diagnosis had not been made by the time they died. Furthermore, of those patients in whom brain stem death was confirmed and who were suitable on medical grounds for organ donation, 37% were not used as donors for various reasons, the most important being refusal from the relatives (66 out of 234). This means that, overall, nearly half of potential donors do not become actual donors; it is on this deficit that we should now focus to try to maximise the use made of a finite resource.

Why are tests for brain stem death not performed? The reasons are complex; they include ignorance of transplant requirements, time, competition for beds and staff, attitudes, and finance. Reluctance to undertake donor referral activity is in some ways understandable if, for instance, local lists have to be cancelled and hard pressed staff have to put in extra effort for no direct benefit for their own patients. Funding to hospitals for donor activity seems one sensible response. Reimbursement might be arranged through already existing budgetary systems and monitored through the audit of transplantation by the United Kingdom Transplant Service. Frank obstruction, jealousy, and pigheadedness are hopefully not acceptable attitudes and occur in only a few cases. A supplementary inquiry by Gore's audit team will throw further light on these issues.

The second important cause of the loss of potential organs is that consent for donation may either not be requested or not be given (14 and 66 out of 234, respectively). Why should this happen and what should be done? Those relatives not asked about transplantation should have been. Although in Gore's series there were few it is nevertheless important when donor organs are in short supply. For many years the argument has continued whether Britain should maintain an encouraged voluntary donation system or introduce "required request" legislation. This concept seemed at first an encouraging step forward, but it has had differing and patchy results from state to state in the United States and may not be the best solution. A recent review from Belgium suggested that presumed consent, or an opting out system, was more effective.[3] The advantages and disadvantages of legislation of this sort should be investigated further.

For the moment more important is the issue of refusal by relatives. The style and professionalism of the approach to relatives are paramount. Tired, half hearted, untrained, uninformed, and embarrassed requests fail. Referral to transplant coordinators or other identified trained staff within the hospital helps both the staff and the relatives who are faced with difficult decisions at times of great personal stress. Such referrals reduce the number of organs refused, and Gore and her colleagues have suggested that they should be "required." Many relatives, having refused donation, regret the decision later. This is doubly tragic and could be avoided by a sensitive and professional approach.

Having attempted to maximise the total available number of donors, how best are we to use the organs? Firstly, we must make sure that these are usable. The quality of donor organs reflects the standards and quality of donor care. This is particularly important for heart, lung, and liver grafts, which need to function fully immediately after transplantation. Not all of the donors identified in Gore's paper would have been suitable on grounds of size or age, and many would have had unsuitable organs as a result of trauma, resuscitation efforts, and general deterioration. The patient with brain stem death has loss of vasomotor tone, temperature control, and hormonal imbalances, and care is not easy; an unknown number of organs become unsuitable for transplantation because of inadequate care at the donor hospital. Extra facilities and education would reduce this number—again, further audit may identify whether this number is substantial. Fortunately, multiorgan donation from a single donor is on the increase, but within Britain the proportion of donors offered for organs other than kidneys varies from region to region. Overall, the figure quoted by Gore *et al*—60%—is encouraging, but it could be improved. Nevertheless, within the total number of potential donors identified not all would be suitable for multiorgan donation as stricter criteria are necessary for heart, heart-lung, and liver transplantation. Limitations on ischaemic time vary for the different organs—up to four hours for heart and lungs and eight to 12 hours for livers compared with more than 24 hours for kidneys.

Other sources of difficulty are the inadequacies and inequities in the organisation of the distribution and use of donor organs within Britain. The functions of transplant coordinators need to be more clearly identified and the career structure improved. The United Kingdom Transplant Service is not a statutory body, and though it is expected to monitor and guide the use and supply of donor organs, it has neither the power nor the facilities to run a comprehensive national system. Much is being achieved, however, with the recent introduction of registration of transplants and an increase in staff so that the service is better able to provide 24 hour cover.

Clearly, however, even with all these potential improvements in the supply of organs many patients will not receive transplants and will remain chronically sick or die. The best use must be made of the available organs, and that implies careful and accurate audit. Such assessments may highlight conflict between the needs of an individual patient and the overall best use of the organs available. For clinicians faced with sick patients this is a dilemma that may worsen as the gap widens between the demand for transplantation and the supply of organ donors. Transplanting moribund patients and those at high risk is not the best way of using donor organs except in particular circumstances (for instance, sometimes in liver transplantation). The objective should be to have most donor organs functioning five to 10 years after transplantation. Deterioration in the condition of patients waiting long periods for donor organs is another factor that may affect eventual outcome both in terms of additional risks to the patient and extra resources needed to nurse sick patients in intensive care after transplantation.

Transplantation of human organs is and will continue to be a restricted activity, and transplantation services need to be planned and monitored to ensure the greatest long term benefit to the maximum number of patients. Unplanned activity for apparent local benefits may dilute both experience and skill. The ultimate goal must, however, be to find an alternative to human allograft transplantation. Research and interest are now being focused more intensively on transplantation from animals with the prospect of organs of reliable quality being available in bulk. Only then will transplantation be available "when you want it, where you want it, and by whom you want it." Until that time, every organ is precious and should be used efficiently and wisely.

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1 Buxton M, Acheson RM, Caine N, Gibson S, O'Brien B. *Costs and benefits of the heart transplant programmes at Harefield and Papworth Hospitals*. London: HMSO, 1985.
2 Gore S, Hinds CJ, Rutherford AJ. Organ donation from intensive care units in England: first report. *Br Med J* 1989;**299**:1193-7.
3 Roels L, Vanrenterghem Y, Ware M, Gruwez J, Michielsen P. Effect of a presumed consent law on organ retrieval in Belgium. *Transplant Proc* (in press).

Mental health for all?

We should identify discrete targets

The World Health Organisation's Alma Ata declaration invited the nations of the world to attain "health for all by the year 2000." Though there may be doubts about its realism, this objective has certainly stimulated debate, particularly about public health strategies. The many issues that the slogan raises are especially difficult in psychiatry.

The first question is just what is meant by "mental health." Psychiatrists have agonised for decades over the problem of defining health and disease, although colleagues in other disciplines appear to have little interest in the formal delineation of the concept of disease. Yet within psychiatry no satisfactory formulation has been reached—possibly because the concept of disease sheds little direct light on the "normal" or "abnormal" processes that concern us. The essential task for both the clinical psychiatrist and the researcher is to understand how social, somatic, and psychological processes interact and how they sometimes lead to feelings of distress. If and when such a systematic understanding is reached a secondary distinction may then be drawn identifying those types of distress that are appropriate for the medical disciplines, broadly defined, and those that are not. Such a division will inevitably be influenced by a host of moral assumptions, historical determinants, and social constraints. At the end the designation of disease will act as a pointer to