coxiella prosthetic endocarditis seems to be curable medically; this indolent infection by cell-dependent organisms was previously thought to incurable except by surgical excision combined with tetracycline treatment.

Despite this awesome list of causes of disaster most patients with artificial valves are tolerably pleased. The long-term results of aortic valve replacement with a mechanical valve are usually first class, and the more mixed results of mitral and multiple valve replacement are now at least better understood.

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- ¹ Macmanus Q, Grunkemeier GL, Lambert LE, Starr A. Non-cloth covered caged-ball prostheses. The second decade. *J Thorac Cardiovasc Surg* 1978;**76**:788-94.
- ² Björk VO, Henze A. Ten years' experience with the Björk-Shiley tilting disc valve. *J Thorac Cardiovasc Surg* 1979;**78**:331-42.
- ³ Hetzer R, Hill JD, Kerth WJ, et al. Thromboembolic complications after mitral valve replacement with Hancock xenograft. *J Thorac Cardiovasc Surg* 1978;**75**:651-8.
- ⁴ Oyer PE, Stinson EB, Griep RB, Shumway NE. Valve replacement with the Starr-Edwards and Hancock prostheses. Comparative analysis of late morbidity and mortality. *Ann Surg* 1977;**186**:301-9.
- ⁵ Salomon NW, Stinson EB, Griep RB, Shumway NE. Mitral valve replacement: long-term evaluation of prosthesis-related mortality and morbidity. *Circulation* 1977;**56**, suppl II:94-101.
- ⁶ Jamieson WRE, Janusz MT, Miyagishima RT, et al. Embolic complications of porcine heterograft cardiac valves. *J Thorac Cardiovasc Surg* 1981;**81**:626-31.
- ⁷ Williams JB, Kirklin JW, Kouchoukos NT, et al. Considerations in selection and management of patients undergoing valve replacement with glutaraldehyde-fixed porcine bioprostheses. *Ann Thorac Surg* 1980;**30**:247-58.
- ⁸ Magilligan DJ, Lewis JW, Jara FM, et al. Spontaneous degeneration of porcine bioprosthetic valves. *Ann Thorac Surg* 1980;**30**:259-66.
- ⁹ Oyer PE, Miller DC, Stinson EB, Reitz BA, Morenocabral RJ, Shumway NE. Clinical durability of the Hancock porcine bioprosthetic valve. *J Thorac Cardiovasc Surg* 1980;**80**:824-33.
- ¹⁰ Cohn LH. Surgical treatment of valvular heart disease. *Am J Surg* 1978;**135**:444-51.
- ¹¹ De Bond AHB, English TAH, Milstein BB. Heart valve replacement in the elderly. *Br Med J* 1978;iii:917-9.
- ¹² O'Rourke RA, Crawford MH. Timing of valve replacement in patients with chronic aortic regurgitation. *Circulation* 1980;**61**:493-5.
- ¹³ Copeland JG, Griep RB, Stinson EB, Shumway NE. Long-term follow-up after isolated aortic valve replacement. *J Thorac Cardiovasc Surg* 1978;**74**:875-89.
- ¹⁴ Hultgren H, Hubis H, Shumway N. Cardiac function following mitral valve replacement. *Am Heart J* 1968;**75**:302-20.
- ¹⁵ Kennedy JW, Doces JG, Stewart DK. Left ventricular function before and following surgical treatment of mitral valve disease. *Am Heart J* 1979;**97**:592-8.
- ¹⁶ Schuler G, Peterson KL, Johnson A, et al. Temporal response of left ventricular performance to mitral valve surgery. *Circulation* 1979;**59**:1218-31.
- ¹⁷ Peter CA, Austin EH, Jones RH. Effect of valve replacement for chronic mitral insufficiency on left ventricular function during rest and exercise. *J Thorac Cardiovasc Surg* 1981;**82**:127-35.
- ¹⁸ Rahimtoola SH. The problem of valve prosthesis-patient mismatch. *Circulation* 1978;**58**:20-4.
- ¹⁹ Breyer RH, McClenathan JH, Michaelis LL, McIntosh CL, Morrow AG. Tricuspid regurgitation: a comparison of nonoperative management, tricuspid annuloplasty and tricuspid valve replacement. *J Thorac Cardiovasc Surg* 1977;**72**:867-74.
- ²⁰ Macmanus Q, Grunkemeier G, Starr A. Late results of triple valve replacement. A 14-year review. *Ann Thorac Surg* 1978;**25**:402-6.
- ²¹ Copans H, Lakier JB, Kinsley RH, Colson PR, Fritz VU, Barlow JB. Thrombosed Björk-Shiley mitral prostheses. *Circulation* 1980;**61**:169-74.
- ²² Curcio CA, Commerford PJ, Rose AG, Stevens JE, Barnard MS. Calcification of glutaraldehyde-preserved porcine xenografts in young patients. *J Thorac Cardiovasc Surg* 1980;**81**:621-31.
- ²³ Barratt-Boyes BG, Roche AHG, Whitlock RML. Six year review of the results of freehand aortic valve replacement using an antibiotic sterilized homograft valve. *Circulation* 1977;**55**:353-61.
- ²⁴ Oakley CM, Doherty P. Pregnancy in patients after valve replacement. *Br Heart J* 1976;**38**:1140-8.
- ²⁵ Hall JG, Pauli RM, Wilson KM. Material and fetal sequelae of anticoagulation during pregnancy. *Am J Med* 1980;**68**:122-40.
- ²⁶ Wilson WR, Jaumin PM, Danielson GK, Giuliani ER, Washington JA II, Geraci JE. Prosthetic valve endocarditis. *Ann Intern Med* 1975;**82**:751-6.

Measles eradication policies

The United States is moving steadily towards its declared aim¹ of eradicating measles by October 1982. Only 2961 cases were reported² in the first 48 weeks of 1981, a reduction of 78% from the 13 255 cases reported in the same period of 1980. Canada now has a similar objective.³ In England and Wales, on the other hand, we are limping along with a vaccination rate of around 50% and measles running at an average of nearly 100 000 notified cases a year in a population less than a quarter that of the United States's. Why is there such a contrast in attitudes?

Firstly, is any national policy of measles eradication warranted at present? Without doubt measles vaccination is highly cost effective in developed countries. This seems to apply not only to the United States^{4 5} but also⁶ to Finland, Russia, and Sweden, and the estimated ratio of benefit to cost is in the order of 10 to one. But it does not necessarily follow that it is cost effective to eradicate the disease. Beyond a certain stage the effort required to eliminate the last few cases is not worth while in terms of cost. Moreover, a form of unilateral declaration by one country of the intent to eradicate a disease that is highly communicable and highly prevalent elsewhere in the world suggests political motivation more than medical necessity. With the constant high probability of importing the disease, already a cause of some concern to the North Americans,⁷⁻⁹ continuous and sustained high vaccination rates will be necessary if measles is not to return there. Another reason for questioning the timing is that the World Health Organisation's commendable expanded programme of immunisation is still in its infancy. The eradication of measles is not yet one of its officially stated goals. The programmes in the United States and Canada will have their value, however, in showing the world that with energy, efficiency, and high motivation measles is eradicable.

Nevertheless, even if we do not need to set our sights so high the British do seem to have a curiously apathetic attitude towards measles vaccination. However one calculates the cost-benefit equations it must still make practical sense to raise the present measles vaccination rate at least to the 80% or so attained for diphtheria, tetanus, and polio vaccination. The belief¹⁰ that the public acceptance of all vaccines dropped as a result of the whooping-cough controversy is, in fact, mistaken and should not be allowed to excuse our poor vaccination rate for measles. The national vaccination rates for diphtheria, tetanus, and polio have not fallen.¹¹ Moreover, rates only slightly lower than for diphtheria, tetanus, and polio have been attained for measles vaccination by one highly efficient area health authority,¹² even though their rates of pertussis vaccination fell. The reputation of measles vaccine may still be suffering from the problems caused by side effects and efficacy of the early measles vaccines; it has never really recovered from the loss of impetus that resulted.

Measles vaccination rates can be improved in several ways. One practical step is the use of computers, which have been shown^{11 13} to be valuable as an aid to vaccine administration. The poor reputation that this excellent vaccine has among mothers,¹⁴ health visitors, clinics, and family doctors^{15 16} (many of whom also, erroneously,¹⁷ see measles as an innocuous and inevitable infection) suggests that some vigorous health education is required. Selective immunisation¹⁸ is clearly not the answer.¹⁹ An integral part of the success of the United States towards eliminating measles has been the enforcement of laws requiring immunisation against measles before school entry.²⁰ The Netherlands,²¹ however, has achieved a measles

vaccination rate of more than 90% without such laws, and the present social climate in Britain makes it extremely unlikely that such laws would be accepted here. Nevertheless, vigorous encouragement at school entry¹⁹ is a policy worth considering.

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- ¹ Center for Disease Control. Goal to eliminate measles from the United States. *Morbidity Mortality Weekly Report* 1978;27:391.
- ² Centers for Disease Control. Measles—United States. Weeks 45-48 1981. *Morbidity Mortality Weekly Report* 1982;30:621-2.
- ³ National Advisory Committee on Immunization. Measles surveillance. Statement on elimination of indigenous measles in Canada. *WHO Weekly Epidemiological Record* 1980;55:305-7.
- ⁴ Albritton RB. Cost-benefits of measles eradication. Effects of a federal intervention. *Policy Analysis* 1978;4:1-21.
- ⁵ Witte JJ, Axnick NW. The benefits from 10 years of measles immunization in the United States. *Public Health Rep* 1975;90:205-7.
- ⁶ Creese AL, Henderson RH. Cost-benefit analysis and immunization programmes in developing countries. *Bull WHO* 1980;58:491-7.
- ⁷ Yorke JA, Nathanson N, Pianigiani G, Martin J. Seasonality and the requirements for perpetuation and eradication of viruses in populations. *Am J Epidemiol* 1979;109:103-23.
- ⁸ Rutstein DD. Controlling the communicable and the man-made diseases. *N Engl J Med* 1981;304:1422-4.
- ⁹ Frank JAJ, Hoffman RE, Mann JM, Crowe JD, Hinman AR. Imported measles. A potential control problem. *JAMA* 1981;245:264-6.
- ¹⁰ Smith H. Measles again. *Br Med J* 1980;280:1616-7.
- ¹¹ Department of Health and Social Security. *Health and personal social services statistics for England*. London: HMSO, 1978:184, tables 10-3.
- ¹² Bussey AL, Holmes BS. Immunisation levels—need they decline? *Lancet* 1977;ii:970-1.
- ¹³ Bussey AL, Harris AS. Computers and the effectiveness of the measles vaccine campaign in England and Wales. *Community Med* 1979;1:29-35.
- ¹⁴ Wright HJ. Acceptance of measles vaccine. *Lancet* 1977;ii:554.
- ¹⁵ Wilkinson P, Tylden-Patterson L, Gould J. Professional attitudes towards vaccination and immunisation within the Leeds Area Health Authority (Teaching). *Public Health* 1979;93:11-5.
- ¹⁶ Adjaye N. Measles immunization. Some factors affecting non-acceptance of vaccine. *Public Health* 1981;95:185-8.
- ¹⁷ Miller CL. Severity of notified measles. *Br Med J* 1978;ii:1253.
- ¹⁸ Smith H. Measles again. *Br Med J* 1980;280:766-7.
- ¹⁹ Miller C. Measles again. *Br Med J* 1980;280:1451.
- ²⁰ Robbins KB, Brandling-Bennet D, Hinman AR. Low measles incidence: association with enforcement of school immunization laws. *Am J Public Health* 1981;71:270-4.
- ²¹ World Health Organisation. Incidence of 5 vaccine preventable diseases and immunisation coverage. *WHO Weekly Epidemiological Record* 1981;56:369-72.

What has happened to charity?

Though many charitable people within and outside the profession continue to help, public distrust and medical indifference are causing a crisis in organ transplantation. Last year saw 596 renal transplant operations—a 24% fall compared with the 784 in 1980. Yet results are improving and this potentially lifesaving treatment for young people with disease of the kidneys and other vital organs could be made much more widely available. Dialysis units are overworked and most have difficulty in accepting new cases. The selection criteria for treatment have become more restricted, and some patients with renal failure cannot be admitted. The inadequate number of transplantations has overstrained the resources devoted to dialysis by a health service already suffering from impaired funding.

The new immunosuppressive drug cyclosporin A has improved the one-year functional survival of kidney grafts from unrelated cadaver donors from a previous 50-55% to over 80% and has permitted transplantation of the heart and both lungs for the first time.^{1,2} Kidney grafts can lead to full

rehabilitation and restore activity without the restrictions of regular dialysis, but none of the 30 transplant centres in Britain is fully occupied. Most units are performing fewer than half the operations for which they were designed. The alternative of kidney transplants from live related donors has never been popular in Britain; it accounts for about 10% of the grafts performed, despite the fact that for a well-matched sibling donor graft the five-year functional survival is around 80%.

In Britain at the end of 1981 the waiting list for renal transplants was 2273, an increase of 30% compared with two years ago, and 1500 new cases are added each year. The current annual number of operations needs to be doubled to treat the new patients and begin to reduce the backlog. There could be more than enough cadaver donors to supply all the transplantation needs. In theory, 8000 kidneys could come from the 4000 patients with brain death each year. In practice, some of these patients would not be suitable donors owing to the circumstances of death and the associated injuries.^{3,4}

The causes of the shortfall are not difficult to find. The fragile flower of public support and confidence was flourishing, nurtured by the medical profession's acceptance of a role in co-operating in organ donation, and refusal to give consent by relatives of the deceased was rare; then the growing plant was viciously uprooted by the BBC. Its first programme on brain death, on *Panorama*, was like a trial in a totalitarian country—a prosecution with no defence and with irrelevant witnesses—and it undermined the British criteria of brain death. The television debate that followed some months later was disrupted at the last moment by one of the opponents of the British criteria, who claimed to know of two patients satisfying those criteria who had subsequently recovered fully. These two powerful exploitations of public fears undermined the integrity of the profession and the reliability of its methods of diagnosis. The harm could scarcely be expected to be undone by a letter in the *Lancet*⁵ by the doctor concerned stating that he was withdrawing unreservedly the statement made on television. The British criteria of brain death have been fully vindicated,⁴ and the general care of patients with severe brain damage has improved throughout the country as a result of their acceptance. These criteria have nothing to do with transplantation but merely indicate when further attempts to resuscitate a dead person are futile, can only cause distress, and should be abandoned.

All hospitals in a region send patients with renal failure to the regional transplant centre, but some shirk the responsibility to help with organ donation. Some institutions where relatives previously almost always gave consent now have a high incidence of refusals. Some doctors seldom co-operate in organ grafting, and their prejudices have been reinforced with the excuse that the public does not want transplantation. This enables them to avoid an issue that would otherwise require extra work and harrowing emotional interviews.

What, then, can be done to improve this sad picture? Firstly, the BBC, having caused a grave injury with the misuse of its immense power, has a moral obligation to put the record straight. That requires both scientific documentaries and portrayals of the plight of the many young patients who are at present being denied treatment. Each month patients are dying from renal disease because they have not been able to find spaces on dialysis programmes owing to the lack of throughput with transplant operations.

Secondly, doctors working in neurosurgical and intensive care units should accept as an ethical medical obligation the need to help with organ donation; and those removing kidneys