

Tufo *et al.*⁸ concluded that low blood pressure during operation and prolonged time on the cardiopulmonary bypass machine were both strongly correlated with brain damage and delirium. Experiments with dogs have shown that the passage of blood through a bypass machine alters its physical properties so that many microemboli are present, causing a fall in the cerebral circulation and a persisting reduction in cerebral oxygen usage.¹⁰ Microemboli must presumably be a major cause of impairment of brain function after cardiac surgery, as they are in the delirium of cerebral malaria.¹¹ Tufo *et al.*⁸ point out, however, that it is difficult thus to account for localization of lesions found in fatal cases; there are small, multiple brain lesions but the most common finding is anoxic damage in the hippocampus.

Happily, the incidence of delirium after cardiac surgery is diminishing, and this has been attributed to reduction in bypass time and to improved provision of a calm, structured, but less disturbing intensive care unit, allowing rest and peace for the patient.^{12 13} The delirium itself is now also being managed better with phenothiazines—and by staff who understand the special environmental and emotional needs of their patients.¹³

¹ Knox, S. J., *Journal of Mental Science*, 1961, 107, 1078.

² Bennet, G., *Lancet*, 1973, 2, 747.

³ Oswald, I., *Sleep*, Penguin, Harmondsworth, 1974.

⁴ Woods, N. F., *Nursing Research*, 1972, 21, 347.

⁵ Johns, M. W., *et al.*, *British Journal of Surgery*, 1974, 61, 377.

⁶ Gross, M. M., *et al.*, *Journal of Nervous and Mental Disease*, 1966, 142, 493.

⁷ Haider, I., and Oswald, I., *British Medical Journal*, 1970, 2, 318.

⁸ Tufo, H. M., Ostfeld, A. M., and Shekelle, R., *Journal of the American Medical Association*, 1970, 212, 1333.

⁹ Morse, R. M., and Litin, E. M., *American Journal of Psychiatry*, 1971, 128, 111.

¹⁰ Brennan, R. W., Patterson, R. H., and Kessler, J., *Neurology*, 1971, 21, 665.

¹¹ Arieti, S., *Archives of Neurology and Psychiatry*, 1946, 56, 79.

¹² Heller, S. S., *et al.*, *New England Journal of Medicine*, 1970, 283, 1015.

¹³ Taylor, D. E. M., *International Journal of Nursing Studies*, 1971, 8, 47.

and this cannot be prevented by inserting progressively larger sizes of catheter.

Urethral catheters used for the long-term control of incontinence may offer several advantages. They are certainly the only "appliance" which is at all satisfactory in women. By preventing a patient lying in a wet bed or sitting in wet clothes the incidence of bed-sores may be reduced, the problems of nursing incontinent patients eased, and the patient's comfort improved. If the correct length of catheter is attached to a leg urinal, patients who are ambulant can be fully mobile.

Recent reports⁹ of the use of unsterile, intermittent self-catheterization provide evidence that urinary infection is no longer an obstacle to the control of incontinence by urethral catheterization. The vogue for suprapubic cystostomy has declined, since fewer problems are now associated with the newer, more inert urethral catheters. No recent study of the long-term use of indwelling urethral catheters has been published, but the fact that urological wards are not full of patients with the complications of such use is evidence that permanent sequelae are uncommon. Until a satisfactory appliance is developed for the control of intractable urinary incontinence in women the use of an indwelling urethral catheter may provide the only means of controlling a symptom which causes much distress to patients and much hard work to people who look after them.

¹ Shackman, R., and Messent, D., *British Medical Journal*, 1954, 11, 1009.

² Bultitude, M. I., and Eykyn, S., *British Journal of Urology*, 1973, 45, 678.

³ Lapides, J., *et al.*, *Journal of Urology*, 1972, 107, 458.

⁴ Pyrah, L. N., *et al.*, *Lancet*, 1955, 11, 314.

⁵ Miller, A., *et al.*, *Lancet*, 1958, 11, 608.

⁶ Zinner, N. R., Kenny, G. M., and Weinstein, S., *Journal of Urology*, 1970,

104, 538.

⁷ Brehmer, B., and Madsen, P. O., *Journal of Urology*, 1972, 108, 719.

⁸ Miller, A., *et al.*, *Lancet*, 1960, 11, 886.

⁹ Lapides, J., *et al.*, *Journal of Urology*, 1974, 111, 184.

Catheters and Incontinence

Control of urinary incontinence presents a problem for medical practitioners in most branches of practice. Thorough investigation will identify those patients whose symptoms may be alleviated by surgery, physiotherapy, or chemotherapy, or by a mechanical or electronic device. But there remain a substantial number of patients with intractable incontinence for whom urinary diversion is unacceptable or inappropriate but whose symptoms are sufficiently severe to warrant such a drastic measure. No suitable appliance has yet been designed which adequately controls incontinence of this kind in women—those, for instance, suffering from multiple sclerosis and elderly bed-ridden or chair-bound patients. In this group the use of an indwelling urethral catheter may prove to be of value.

Urethral catheters have some disadvantages. Urethritis is almost inevitable,^{1 2} though the modern latex and Neoplex catheters are far less irritant than the old rubber ones.¹ Urinary infection is common, but it often started before the catheter treatment in those patients who may have moderate or large residual urines despite their incontinence.³ Closed urinary drainage,^{4 5} the maintenance of an adequate volume of urine, bladder irrigation,⁶ meatal antiseptics and antibiotics,^{7 8} aseptic techniques, and systemic antibiotics² all combine to reduce the incidence and severity of urinary tract infection. Changing the catheter every six weeks appears to prevent encrustation with calcium phosphates. The one big drawback which remains is that some urine may leak round the catheter,

Shortage of Kidneys

Professor R. Y. Calne's announcement last week¹ that kidney transplantation had ceased at Cambridge because of lack of donor organs has drawn attention to the difficulties facing transplant surgeons in Britain. At present almost all cadaver kidneys come from victims of road accidents. The Department of Health donor card scheme has not produced many organs, and live donors are little used.² At Cambridge the coroner apparently takes the view that formal consent from the relatives is needed before kidneys can be removed from someone killed in an accident, and naturally enough the hospital staff have been reluctant to seek a confrontation with him. By no means all legal opinion agrees with the coroner's view, however; our legal correspondent's interpretation³ of the Human Tissue Act 1961—supported by cogent evidence—is that "if at the end of the time available to the hospital the authorities have performed their best efforts to get in touch with relatives and have no reason to think there would be objections, then . . . they ought to be protected under the act if they go ahead with the removal of the organ."

This difference of opinion among lawyers is not the only problem for transplant surgeons. There is now abundant evidence of the benefit to patients of successful kidney transplantation, but at least 3,000 kidneys are needed each year in Britain if every patient who could be treated is to be offered the chance. The figures from the National Organ Matching Service in Bristol⁴ suggest that disappointing results of transplantation may well be due to the poor quality of the kidneys

used; but such is the shortage of kidneys that surgeons have to make the best use of what they can get.

If we believe in a policy of treating renal failure by transplantation then surgeons need to be offered many more than 3,000 kidneys a year, so that they can select the most suitable for each case on the basis of tissue-typing as well as the warm and cold ischaemia times.^{5 6} One reason for the shortage of kidneys is the reluctance of doctors in other disciplines to ask for organs for transplantation. No-one likes the job of interviewing the relatives of a seriously ill patient and discussing the removal of organs after death: but the results are worthwhile and most relatives see the task in that light. The position would be greatly eased, however, if there were greater public awareness of the facts about kidney transplantation.

The present unsatisfactory situation has dragged on for too long, and whichever party forms the next government should take action urgently. In many other countries the medical profession and the public have accepted the concept of brain death, and part of the success of surgeons such as Shumway⁷ is based on their use of organs removed before the heart has stopped beating. For the time being such a policy would probably be unacceptable in Britain, but interpretation of the Human Tissue Act should be clarified so that surgeons may know in which circumstances they can remove organs from an accident victim whose relatives cannot be traced. More publicity should be given to donor cards and other means of informing the public of ways in which they can help by providing organs after death.

At present many people favour a "contracting in" scheme, by which individuals willing to donate organs after death would inform the National Organ Matching Service which would keep details on its computer. Certainly such a scheme would help, but what is needed, surely, if prospects for kidney transplantation in Britain are to improve, is further change in public attitudes so that surgeons can remove organs as soon as there is clear evidence of brain death, combined with a "contracting out" scheme, by which those unwilling to have their organs removed after death have to register their objection.

¹ *The Guardian*, 13 September 1974.

² *British Medical Journal*, 1974, 2, 344.

³ *British Medical Journal*, 1973, 3, 361.

⁴ Nelson, S. D., and Tovey, G. H., *British Medical Journal*, 1974, 1, 623.

⁵ Hall, C. W., et al., *Lancet*, 1974, 1, 532.

⁶ Tanaka, N., Stevens, L. E., and Terasaki, P. I., *Transplantation*, 1971, 12, 348.

⁷ Graham, A. F., et al., *Circulation*, 1974, 49, 361.

Controlling Quality

The widening gap between the financial demands made by medical services and the money available from government is a problem facing all Western countries—it is by no means unique to Britain and the N.H.S. The expenditure by the U.S. Federal Government on Medicare and Medicaid in 1974 is estimated at \$20,000 million, and in an attempt to reduce that drain on the national income the U.S. health authorities are pressing ahead with their programmes of P.S.R.O.s—professional standards review organizations.¹ The aim of these programmes is to cut down on unnecessary treatment and investigation of patients—or in the American idiom "provider-induced overutilization of medical resources."

On this side of the Atlantic doctors have tended to see the American system of medical audit as an effective means of

monitoring the quality of medical care and maintaining high standards. Too much should not be expected from control systems, according to Dr. Richard Greene, of the Harvard School of Health, who gave a brief seminar on the subject at the Centre for Studies in Social Policy in London last week. The concept of P.S.R.O.s had been sold to the public as a means of controlling the quality of medical care, but there was no good evidence that they would achieve it.

Assessment of the care given to a patient for even a simple condition could concentrate on three areas, said Dr. Greene. It could examine the generally accepted, textbook management and ask how much of it had been validated by reliable, objective tests; or it could construct a standard protocol of investigation and treatment and ask how closely the patient's treatment had approached that standard; or it could simply look at the outcome of the treatment and ask if it was satisfactory. Each method had its advocates: yet when they were applied to a single group of patients treated for hypertension the proportion whose management was rated satisfactory varied from 2% to 63%, depending on which test was applied and how strictly.

At present it seems that voluntary or semi-voluntary audit methods within hospitals can be useful and effective in encouraging critical self-examination and preventing doctors from becoming professionally isolated. Audit control of patients' records by nurses or similar health professionals brought in from outside is another matter. Any transfer of data from the original casenotes to an assessment form introduces errors; and the best that can be hoped from these systems is some control over excessive stay in hospital and, perhaps, identification of really gross departures from a basic minimum standard of medical care.

No external audit of medical treatment can control its quality effectively while individual opinions differ so widely on what should be included in a standard protocol. Even in common acute disorders much of what is accepted treatment rests on no more than widely held judgements. Validation—or refutation—of these judgements by objective tests is needed if there is to be any prospect of effective control of the quality of medical care in the future.

¹ Sanazaro, P., *British Medical Journal*, 1974, 1, 271.

Outside Medicine

"I do not know a better training for an author than to spend some years in the medical profession. The doctor, especially the hospital doctor, sees life bare." Somerset Maugham's view¹ may be widened, for, judged by the scope of the careers of many medical men who abandoned work as doctors, medicine is a good training for almost anything—success in the arts, basic sciences, and politics. This week we start an occasional series of "Medical Practice" articles on doctors whose contributions outside medicine have had an impact on knowledge or developed new attitudes in society. Among others these will deal with John Locke, the philosopher; Thomas Young, the founder of modern Egyptology; William Gilbert, the discoverer of magnetism; and Sir William Petty, who applied statistics to Government and started the modern economics of money. The first article, by Professor S. Piggott, concerning William Stukeley, doctor, divine, and antiquary, is printed at page 725.

¹ Maugham, S., *The Summing Up*. London, Heinemann, 1937.