

technical and require long training against a background of poor memory and a tendency to "switch off" about problems of incontinence. Viewed against the size of the problem, the number of stoma therapists trained and available is quite inadequate and detailed knowledge woefully restricted among the caring professions.

Four final hurdles await the child with spina bifida who survives to adult life. Firstly, he must persuade those who have cared for him as a child to "let go." This is relatively certain if the support is institutional and withdrawn at a fixed age, and if the young person is sufficiently mature to want to cope alone. If the bonds are closer they may be impossible for both sides to break and result in a state of permanent childhood, satisfying emotional and physical needs in both parties. The "Mum does it" syndrome is still probably the commonest single bar to maturity encountered in centres assessing disabled school leavers. Secondly, he must find accommodation where he can live, usually in his wheelchair; but there is no stock of housing with adequate access and facilities, and modifications to the family home tend to postpone rather than solve the problem, leading to inappropriate hospital admission on the death or illness of a parent. Thirdly, he faces increasing problems of mobility: very few sufferers can use public transport or drive an unmodified vehicle. The withdrawal of the special vehicle service and the substitution of the mobility allowance has been a disaster. Ten pounds per week is unrealistically small in terms of hired transport for work and leisure. The Motability scheme does not even provide the full cost of an unmodified Mini 1000, and the adaptation of vehicles under the scheme demands private means which these sufferers are less likely than average to possess. Fourthly, finding a job is problem enough for the able-bodied in a world where work is still equated with dignity; for the disabled it is even more difficult. As automation increases able-bodied people in developed countries will increasingly need to make their leisure time meaningful. The problem is one which faces the disabled teenager now.

With such a catalogue of physical, mental, emotional, and social hazards facing survivors, it is not surprising that a society which is accepting abortion as a solution to many difficult problems and a Health Service starved of resources should hail the development of a method of detecting alpha-fetoprotein in the blood as a solution to the problem of spina bifida.¹² This will allow the detection of affected babies in utero and allow their parents to be offered termination of pregnancy—though no one seems to have asked spina bifida sufferers themselves what value they put on their own lives. But we must not allow the prevention of some at least of future births of children with spina bifida to excuse a failure to provide for those growing to maturity now—provision which at present is too little, too late, and too disorganised.

Diagnosis of autonomic neuropathy

Autonomic neuropathy is a complication of long-term diabetes which at its worst is disabling. In the past diagnostic tests were complex and disagreeable and not easily performed at the bedside (apart from the Valsalva manoeuvre). More recent tests of autonomic function include observation of heart rate changes using an electrocardiograph (ECG), and taken together with simple clinical criteria these are sufficient to establish a diagnosis.

Many diagnostic features may be discovered by a careful clinical history and physical examination. The most common symptoms are those due to a characteristic diarrhoea¹ and postural hypotension² (a fall in systolic pressure of over 30 mm Hg). Vomiting from gastroparesis and bladder dysfunction due to autonomic neuropathy are seldom seen, but a gastric splash or painless distended bladder are helpful clinical signs. Facial sweating (gustatory sweating) which occurs immediately after chewing tasty foodstuffs, especially cheese, is characteristic and almost specific for the presence of autonomic neuropathy.³ A persistent and otherwise unexplained tachycardia at rest is a feature of vagal cardiac denervation.⁴ Sometimes there is a history of cardiorespiratory arrest at the time of operation⁵—a phenomenon which may contribute to the high mortality rate of these patients⁶ and should encourage careful monitoring during surgery. Male impotence is usual in established autonomic neuropathy, but when impotence is an isolated symptom its cause is more difficult to discover.

In theory, examination of the pupils should be a simple method of detecting autonomic neuropathy, though in practice it is rarely helpful. Simulation of Argyll-Robertson pupils is rare. At page 924 Smith and colleagues describe with great precision the pupillary abnormalities of diabetic neuropathy, which include small pupil diameters, diminished pupil fluctuation (hippus), and reduced light reflex responses. Unfortunately none of these interesting observations lends itself to any simple bedside test, and even accurate measurement and assessment of pupil size present difficulties.

The use of continuous heart rate monitoring has led to important advances in the measurement and diagnosis of autonomic neuropathy, since the variation in heart rate at rest and after various stimuli is impaired or even absent in autonomic neuropathy.⁷⁻⁹ Sensitive heart rate monitors which record directly every R-R interval are ideal for these tests (which can also be analysed by computer),¹⁰ but they can be performed using standard ECG apparatus. With change in position from lying to standing there is normally an "overshoot" tachycardia after standing up; this is lost in autonomic neuropathy. Quantitative assessment of these changes is possible with an ECG by measuring the ratio of the R-R interval of the 30th to the fifteenth beat after standing,¹¹ the peak heart rate acceleration, or simply the rate after 15 seconds, when overshoot is lost.⁷ Variation in the heart rate during deep breathing depends on an intact vagus nerve, and measurement of these changes is probably the most sensitive test,^{7,8} and should be easy to adapt for use with an ECG. A Valsalva ratio can be obtained quite simply by comparing the shortest R-R interval during the test with the longest one immediately afterwards.¹² The increase in heart rate during sustained firm hand grip is less reliable, but if the diastolic blood pressure fails to increase by over 10 mm Hg this indicates autonomic neuropathy.¹³ This test requires special apparatus and more co-operation than some patients can give. Sweat tests¹⁴ are

¹ Eckstein, H B, in *Operative Surgery*, 3rd edn, ed C Rob and R Smith. London, Butterworths.

² Sharrard, W J, et al, *Proceedings of the Royal Society of Medicine*, 1963, **56**, 510.

³ Sharrard, W J, et al, *Archives of Disease in Childhood*, 1963, **38**, 18.

⁴ Lorber, J, *Developmental Medicine and Child Neurology*, 1971, **13**, 279.

⁵ Guiney, E, *Irish Journal of Medical Science*, 1977, **146**, 260.

⁶ de Lange, S A, *Developmental Medicine and Child Neurology*, 1974, **16**, suppl 32, 27.

⁷ Eckstein, H B, *Zeitschrift für Kinderchirurgie*, 1977, **22**, 476.

⁸ Stevens, P S, and Eckstein, H B, *British Journal of Urology*, 1975, **47**, 631.

⁹ Eckstein, H B, and Cooper, D G W, *Zeitschrift für Kinderchirurgie*, 1968, **5**, 309.

¹⁰ Tsingoglou, S, and Eckstein, H B, *Journal of Neurosurgery*, 1971, **35**, 695.

¹¹ Dorner, S, *Archives of Disease in Childhood*, 1976, **51**, 439.

¹² Brock, D J H, Bolton, A E, and Scrimgeour, J B, *Lancet*, 1974, **1**, 767.

cumbersome and disagreeable and probably contribute little other than confirmation that a peripheral neuropathy is present.

The clinical importance of these tests is that they provide at the bedside simple and quantitative evidence for the existence of autonomic neuropathy. The results are usually abnormal when autonomic symptoms such as diarrhoea are present⁷; and if they are not some other diagnosis should be sought. They are also often abnormal in patients with peripheral neuropathy but without autonomic symptoms.⁷⁻¹⁵ The ability to make a quantitative assessment of the autonomic damage also makes it possible to examine the natural history of autonomic neuropathy. From such studies we now know that once autonomic abnormalities are present they are permanent, sometimes showing progressive deterioration, but rarely if ever improving.

¹ Scarpello, J H B, Greaves, M, and Sladen, G E, *British Medical Journal*, 1976, **2**, 1225.

² Bennett, T, Hosking, D J, and Hampton, J R, *British Medical Journal*, 1975, **2**, 585.

³ Watkins, P J, *British Medical Journal*, 1973, **1**, 583.

⁴ Bennett, T, et al, *British Medical Journal*, 1976, **1**, 1250.

⁵ Page, M M, and Watkins, P J, *Lancet*, 1978, **1**, 14.

⁶ Ewing, D J, Campbell, I W, and Clarke, B F, *Lancet*, 1976, **1**, 601.

⁷ Page, M M, and Watkins, P J, *Clinics in Endocrinology and Metabolism*, 1977, **6**, 377.

⁸ Bennett, T, et al, *British Heart Journal*, 1977, **39**, 25.

⁹ Gundersen, H J G, and Neubauer, B, *Diabetologia*, 1977, **13**, 137.

¹⁰ Cashman, P M M, *Journal of Medical Engineering and Technology*, 1977, **1**, 20.

¹¹ Ewing, D J, et al, *British Medical Journal*, 1978, **1**, 145.

¹² Ewing, D J, et al, *Lancet*, 1973, **2**, 1354.

¹³ Ewing, D J, et al, *Clinical Science and Molecular Medicine*, 1974, **46**, 295.

¹⁴ Guttman, L, *Postgraduate Medical Journal*, 1947, **23**, 353.

¹⁵ Sharpey-Schafer, E P, and Taylor, P J, *Lancet*, 1960, **1**, 559.

Expanding role for pharmacists

Pharmacists in general practice face difficult choices in balancing the commercial and professional aspects of their practice. This dilemma has been highlighted in the recent interim report¹ of the working party on the future of general pharmacy appointed by the Council of the Pharmaceutical Society of Great Britain in 1975. The working party recommendations are important for general medical practitioners as well as for pharmacists. Among the more radical proposals are that patients should be required to register with a particular pharmacy for dispensing prescriptions, that pharmacists should keep patient medication records, and that a limited counter prescribing service might be introduced by pharmacists within a patient registration scheme.

The pharmacist of the future will, the report suggests, advise both doctors and patients about prescribed medicines, monitor adverse drug reactions, consult with doctors about prescribing and dispensing procedures, advise members of the public about over-the-counter medicines, and expand his function in primary care by giving more advice to individuals in response to the description of symptoms. Pharmacists may also contribute to health education, take part in diagnostic screening procedures, and provide domiciliary pharmaceutical services to housebound patients and nursing homes.

These recommendations are in line with evidence submitted by the Pharmaceutical Society to the Royal Commission on the National Health Service in 1977, which emphasised the future expanded role of the pharmacist and his potential

contribution to primary health care.² The submission recommended that the general public should be encouraged to seek from pharmacists advice on the treatment of minor ailments, that pharmacists should be able to supply certain prescription-only medicines, that the pay of pharmacists should take into consideration their health care advisory role, and that pharmacists should be included in health care planning teams and participate in health education.

Traditionally pharmacists have been concerned with the procurement, preparation, and dispensing of drugs and related items. Many of these functions are now carried out by pharmaceutical manufacturers, and most pharmacists now do little more than the routine dispensing of prepacked medicines; there is little opportunity for extemporaneous dispensing or the application of their special knowledge and skills. At the same time the number, types, and complexity of medicines have grown enormously, and there is widespread concern about their use by both doctors and patients. Pharmacists have become increasingly discontented, believing that their knowledge and skills are being underused, yet despite this their education has become ever more scientifically based. The expanded role which pharmacists are seeking comes under the title "clinical pharmacy," which describes a wide range of ideas, attitudes, and activities but is principally concerned with the appropriate and safe use of drugs.³ To many pharmacists this provision of clinical services is seen to be synonymous with professionalism.⁴

Hospital pharmacists are not faced with the same commercial dilemma as their colleagues in general practice. Even so, any move to expand the role of either hospital or community pharmacists will inevitably encounter resistance as it encroaches on the traditional territories of doctors and nurses. Hospital pharmacy is, however, making progress with the development of ward pharmacy and drug information centres—a change whose impetus came from the Noel Hall Report in 1970,⁵ which asserted that "the hospital pharmacist today has a continuing and heavy responsibility for ensuring with his medical and nursing colleagues that drugs are used safely, effectively and economically."

Without doubt deficiencies exist in the application of knowledge about drugs to the everyday treatment of patients, in the education of doctors about drugs, and in the information given to patients, who are often left in total ignorance about their disorders and their treatment. Hence there is a good case for hoping that doctors should look forward to any contribution that future pharmacists might make to the safe use of medicines. But future pharmacists must also recognise the clinical knowledge and skills of the doctor and his ultimate responsibility for the care of his patients and must understand that drugs are part of a patient's treatment. Drug prescribing cannot be considered in isolation: diagnosis and treatment are interdependent.

The new generalist and specialist roles for the pharmacist will have to evolve slowly, for both pharmacists and doctors will need to recognise that there are substantial differences between present knowledge and skills and those required for these expanded functions. The speed and ease of the evolutionary process will depend on how much doctors encourage pharmacists to take on their new responsibilities in patient care and how much each is willing to contribute to the other's education and training. Many of the problems faced by pharmacists have been created by their educational isolation from health care—compounded by their not speaking the language of doctors or sharing their medical knowledge. This communication gap can be closed if pharmacists learn about