Cardio-Thoracic Surgery and Intensive Care in Natal

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The concept of intensive patient care, while not new, has, in the past decade, become fashionable. Intensive Care Units are in general of two types—those which are part of a general hospital, in which a wide range of both medical and surgical emergencies is likely to be treated, and those which are part of special units, such as Thoracic Surgical or Neuro-surgical Units, or Renal Units which specialise in kidney transplants, in which the range of lesions managed is much smaller. One of the misconceptions which attaches to intensive patient care is that the primary requirement is a vast array of machinery which monitors and records. While some of this machinery is of value it must be kept clearly in mind that the machinery can, in fact, do no more than monitor and record, and that intensive care hinges precisely on the availability and devotion of the medical, nursing and paramedical staff. The purpose of this paper is to outline the scope, function and structure of the Cardio-Thoracic Surgical Service in Natal and to outline the place of physiotherapy in this service.

In 1964, the Natal Provincial Administration and the University of Natal recognised the need for, and undertook to establish a full-time Cardio-Thoracic Surgical Service for the Province of Natal, and a Department of Cardiology, the prime function of which would be to investigate patients with a view to cardiac surgery. The decision to establish such a service was prompted by the knowledge that techniques of cardiac investigation and surgery were advancing rapidly; that the expense involved in the purchase of apparatus required for detailed investigation of heart disease and the safe conduct of surgery with cardio-respiratory by-pass precluded the establishment of a Unit on any basis other than full-time; and that, by inclination and training, most surgeons able successfully to deal with cardiac disease were also trained in the management of surgical diseases of the lung and oesophagus. The structure, scope and function of this Unit have been described in detail elsewhere (le Roux and Ormonde 1967).

It was recognised at the inception of the Unit that, in order to use surgical staff most economically and avoid duplication of equipment, it would be necessary to deal with all races in the same precinct. A hospital was, therefore, selected in which it was possible, by its situation, to deal with all races and yet conform with the Group Areas Act. The hospital selected was of the hutted variety, and this proved a particularly suitable choice because of the facility with which such a hospital can be modified, as opposed to the almost insuperable problems involved in the modification of a multi-storied building. A hospital of the hutted variety with widely disseminated buildings imposes on the staff the need to walk considerable distances, and this too has proved only beneficial, particularly in a climate where slothfulness is the rule. Existing wards were reorganised to provide 85 beds, 50 for the use of non-white patients (Indian, Coloureds and Africans), and 35 for white patients. Two Intensive Care Units, one for each of the broad race groups, and each of six beds in which patients of either sex were treated, were designed and constructed. Construction was by modification of existing buildings and design hinged on the principles of untrammelled access to all patients at all times; the constant availability of skilled medical attention; a high level of nursing care—numerically, intellectually and in practical application; and the availability of equipment which would facilitate the management of all respiratory and cardiac emergencies. The structure, equipment and function of these units has been described elsewhere (le Roux, Ormonde and Servant, 1967).

A Department of Clinical Biometrics was designed to collaborate with and provide a monitoring and biochemical service for the Thoracic Surgical Unit. The surgical staff of the Unit comprised two thoracic surgeons; three surgical registrars; two technicians trained in the maintenance and management of machinery used during surgery with cardio-respiratory by-pass; and two haematological technologists particularly skilled in the management of coagulation problems. At least one full-time cardiologist was constantly in attendance. Nursing duty rosters were so arranged that there were never fewer than three and usually four skilled Staff Nurses in the Intensive Care Units. It is planned in the future to alter the split-shift system to that of an eight-hour shift. The relatively small numerical increase in staff which such an arrangement requires is more than compensated for by increased efficiency and the increased availability of skilled nurses who are married and who are disinclined to work a twelve-hour day, with an inconveniently-timed break of four hours, but who are willing to organise their lives in such a way that they are available for a continuous period of eight hours following which they are free to attend to their domestic duties. It was also envisaged that at least one physiotherapist would be in constant attendance in the intensive care areas, but shortage of suitably trained physiotherapists with sufficient enthusiasm has frustrated this object.

Over a continuous period of over 30 months just short of 800 patients have been treated in the two Intensive Care Areas. Every patient submitted to an elective or an emergency thoracic surgical procedure is transferred immediately from the operating theatre to one of the Intensive Care Areas, no matter what surgical procedure has been undertaken. Many of the more seriously ill patients submitted to cardiac catheterisation are also returned from the X-ray Department to the Intensive Care Area. The duration of stay of each patient in the intensive care area has varied from a few hours to more than a week. Emergency procedures such as the management of post-operative haemothorax or of cardiac arrest have been undertaken in the intensive care areas, which are constantly managed and maintained as if they were operating theatres. The overall surgical mortality has been less than 5 per cent; 67 emergency thoracotomies on 59 patients have been undertaken in the intensive care areas and 10 of these patients failed to survive. The range of elective surgery undertaken has included all operations on the lung, oesophagus, proximal part of the stomach and neck, and the full range of cardiac procedures, both closed and open.

When staffing requirements were originally considered, the need was recognised for nursing staff, physiotherapists and anaesthetists specific to the Unit. Nowhere in the practice of surgery is there place for the occasional exponent. Surgery with cardio-respiratory by-pass and other aspects of thoracic surgery are of a degree of complexity which demands constant practice for success, because there is so little room for error, and which further demands technical support the level of which deteriorates during long periods of idleness.

Furthermore, to justify expenditure on a full-time surgical staff and on equipment and technicians a minimum number of three operations with cardio-respiratory by-pass should be undertaken each week, quite apart from an average of 10 to 15 standard thoracotomies for closed cardiac, pulmonary and oesophageal surgery and 10 to 20 therapeutic and diagnostic endoscopies. To ensure that a surgical team orientated particularly to surgery with cardio-respiratory by-pass is kept busy, anaesthetic, nursing and physiotherapeutic services must be consistent. Shortage of any of the ancillary services affects the working of the team. For example, an anaesthetic pool, provided it is full may well be the most economic way to supply the anaesthetic service in a particular region. It is when an anaesthetic pool is understaffed and becomes a puddle that the shortcomings of such an arrangement are made clear. All surgical undertakings have arbitrarily to be limited. Moreover anaesthetic care does not terminate with the return of conciousness at the end of an operation and the calibre of anaesthetic services envisaged includes heavy involvement in the management of patients in the field of intensive care. The purpose of a specialised unit is frustrated if it depends upon occasional anaesthetic help. It follows that a Cardio-Thoracic Surgical Unit should not depend upon an anaesthetic pool but requires its own anaesthetists whose services are augmented, and whose knowledge is disseminated by rotation through the special unit of junior anaesthetic staff in training, who may well be part of an anaesthetic pool. The same criteria apply to nursing staff and physiotherapists. It is quite pointless for the nursing activities in an intensive care unit to be dependent upon activities elsewhere in the hospital and nurses must be specific to a unit. In precisely the same way, for the requirements of physiotherapy to be dependent upon a physiotherapeutic pool means that the number of physiotherapists available in a unit that is supplying a service will hinge on requirements elsewhere in the Province and a variable level of physiotherapeutic help is unacceptable. The contributions of good physiotherapy to pre-operative management, to early post-operative care and to rehabilitation are inestimable, but these must be consistent. Physiotherapists vary greatly in their capacity for work and in their calibre and a particular interest in the management of patients who require or have been submitted to thoracic surgical procedures is not necessarily a requirement for a physiotherapist to be well qualified and good at her job. That not all are prepared to supply the calibre of service required and which extends over a 24-hour day, does not necessarily detract from their usefulness in other spheres of physiotherapy. But where there are available physiotherapists whose interest is specifically that of thoracic surgery and who are prepared to devote themselves to the job, they should be seconded to an appropriate unit and not remain part of a pool, and for the proper handling, by physiotherapists, of the material available in the Province of Natal at least three physiotherapists are required to staff the Thoracic Surgical Unit and its intensive care areas.

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Physiotherapy in the Surgery of Respiratory Disease

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The purpose of this paper is to define the place of physiotherapy in a Thoracic Surgical Service and to outline methods of treatment with reference particularly to physiotherapy before and after surgery for respiratory disease.

Are physiotherapists necessary? Since much of their task is physical, would strong men rather than slender and often attractive, but not necessarily physically robust women be more appropriately employed? Could the duties of physiotherapists in the ward not better be undertaken by an augmented nursing staff? Should a physiotherapist be specific to a unit and not peripatetic throughout a hospital? Over what period of the 24-hour day should a physiotherapist be available? At least a partial answer must be supplied to these fundamental questions before the place of physiotherapy in a Surgical Service can be defined.

In the past academic and social distinction may have existed between nurses and physiotherapists, but these distinctions are now largely arbitrary, although educational requirements for training in physiotherapy are a little different from those required for training as a nurse. For most girls the decision to embark on either training is probably little more than personal predelection. The decision once made, training in the basic sciences and in the wards is entirely different in the two services, and the recently qualified nurse is not trained to do the ward work of a physiotherapist, nor is the recently qualified physiotherapist trained to nurse. Close contact in the wards will, however, have taught both the elements of patient care, and it would probably make little extra demand on an augmented nursing staff, provided there is both willingness and intelligent application, to undertake the ward duties of a physiotherapist in relation to pre-operative preparation of a patient for thoracic surgery and early post-operative care. The duties of a physiotherapist in the department of physiotherapy, where specialised equipment is used, will always remain beyond the scope of the nursing staff. However, there is everywhere a nursing shortage, and it is, therefore, entirely academic to envisage the possibility of an augmented nursing staff for the purpose of physiotherapy in a thoracic surgical unit, and it can only be accepted with gratitude that there are two disciplines—both understaffed—whose function may overlap a little, but which in the end provide a level of skilled paramedical labour able, with difficulty, to cope with the volume of work. Suitable men are rarely attracted to physiotherapy, are unsuitable for use in female wards, and, on the whole, elicit less effective response from male patients. Skill and sound training have proved effective alternatives to physical strength in the achievement of successful physiotherapy and, just as good nursing will always remain the prerogative of a woman, so will good physiotherapy.

There can be no doubt that a trained physiotherapist should be specific to a unit and that only trainees and recent graduates should move about the hospital. Ineffectual physiotherapy is not only useless, but imposes an additional burden on the patient, and, as in all other aspects of patient care, success hinges precisely on the calibre, skill and devotion of the individual. The efficiency of any unit hinges