

An Experience of a Life-Time

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Special leave to visit Organ Transplant Units, Cardio Thoracic Surgical Units and Intensive Care Units in Europe, Britain and the United States of America was requested towards the end of 1968 and granted.

John Ackermann, who now holds the Professorship of Experimental Surgery at the Vanderbilt University Nashville, Tennessee, was really the man behind all this. When the S.A.S.P. approached me about being prepared to have my name submitted to read a paper at the 6th International Congress of the W.C.P.T. in Amsterdam in 1970, I turned to John Ackermann with my customary call —“Help!” and, at the same time, did he think Province might permit the opportunity and assist me to visit Transplant Units after the Congress? A few days later he was back suggesting that such a visit would only be valuable immediately in order to glean all available knowledge prior to the Congress should, in fact, my paper be accepted. An outline of the letter to the Medical Superintendent requesting leave was already prepared.

Then commenced a mammoth task—

- (a) which units would be valuable to visit?
- (b) how long should be spent in each unit?
- (c) how to plan the most economic route financially and timewise?
- (d) how to attempt to arrange week-ends to enjoy some scenic advantages?
- (e) how to organise flight connections bearing in mind the added problem of flying from East to West and the time difference?

I have long ago given up expecting a travel agent to have bright ideas or crafty manoeuvres and have decided that this may well be a profession for me should I ever search for an alternative occupation. Hours were spent over maps and little remained for the travel agents other than flight numbers, connections and hotel reservations.

At the same time some 40 letters initially had to be typed to the various heads of transplant and other programmes requesting permission to visit their hospitals on given dates. Typing facilities for such purposes were non-existent in our department. In response to these letters, replies flowed in, but with this several further letters, to a variety of persons, followed and the file gathered some 100 letters.

Lectures on our work were requested by a few units and for this slides, to illustrate an informal talk, had to be prepared. When finally I boarded the aircraft on the 26th April, 1969, it was with nothing less than relief. At least I had eight hours to recuperate en route to Paris, the first stop.

To attempt to cover all I did and all I saw in the 73 days would require another 73 days, which none of us can afford. From Paris the route included Montreal—a Saturday night at the Niagara Falls—Denver, Colorado; San Francisco; Los Angeles; Palm Springs—an unforgettable

Friday night in Las Vegas and then the memorable sunset and sunrise over the Grand Canyon—Houston, Texas; Richmond, Virginia; Washington, D.C.; Baltimore, Maryland; Cleveland, Ohio; Boston, Massachusetts; New York; Boston; and onto the United Kingdom—Edinburgh, Cambridge and London—and back to Johannesburg. Some cities included one hospital only while others had anything from three to nine hospitals.

I can only attempt to give you an overall impression of the trip, the observations I made and some comments on the findings in the time permitted. Perhaps the most important feature of the extensive study tour was that I learned very little of what to do and an enormous amount of what not to do. From the mistakes, short comings and probable ignorance of prophylactic respiratory physiotherapy, as we know it in transplantation, cardiac and general surgical units, I learned a great deal.

I must stress most emphatically at this point that I am covering only the small and specialised section of physiotherapy in the following comments. Rehabilitation and physiotherapy in these units are of the highest standard and here one could learn a great deal, but time did not permit my including this speciality on this visit.

Many facets were exposed and valuable information acquired and perhaps the most important was that I stopped and considered our treatments; our programme and as a result have come back stimulated to strive even harder to improve our setup in the field of transplantation.

THE UNITED STATES OF AMERICA

The Reception of the American Doctors

This is something quite unbelievable, gratifying and completely overwhelming and something which one seldom meets in our hospitals. In virtually every hospital in the U.S.A. the Professors, Physicians, Surgeons and Anaesthetists in charge of the units gave up of their valuable time to show me around, discuss pertinent problems and answer my many queries. Never did I feel that information was being withheld and quite openly they discussed reasons for their failures. This honest, direct approach to someone so far removed from their status level was an eye opener, rewarding and commendable and particularly gratifying as physiotherapy does not enter into transplantation, cardiac surgery or intensive care units (I.C.U.). Even were they to play an active part in such programmes, my feelings remain rigid in that medical information ethically should only be divulged to a visitor by medical men and not by physiotherapists.

Prophylactic Respiratory Physiotherapy

Physiotherapy as is known and taken for granted here in South Africa and the United Kingdom, does not exist in the U.S.A. The values and uses of this is not understood

and "Expense" is thrown at one as the excuse, where "Ignorance" would be more appropriate. To quote a South African doctor now working in the U.S.A. "Physiotherapy in South Africa was a service accepted and taken for granted. Here in the U.S.A. it is a luxury which is just not made use of. For one, the value and benefits of such a service are not known, understood and appreciated. What chest physiotherapy is done, is of such poor quality that the nurses truly cope equally well". A quote from a Sister: "We are trained in breathing exercises and are best able to judge what the patient can do—the inhalation therapist and physiotherapist would not be able to do so". A U.S.A. trained physiotherapist: "in our four year training we had a total of two hours theoretical training in chest physiotherapy, but no practical classes". And, finally, "this type of physiotherapy is not used as it is not as good or as developed in our country as in yours". A further quote: "Chests are something all renal transplant patients develop although not all so serious that it implies death. Atelectasis and pneumonia are common as the patients are admitted in a debilitated state and the procedure of bilateral nephrectomy, splenectomy and transplantation at one outing is a formidable procedure. (A thoraco abdominal approach is then extended to the iliac fossa.) No physiotherapy is used for these patients".

A possible reason for this may be the exorbitant and frightening cost of hospitalisation in itself. At one centre a patient pays \$135 (R100) per day for nursing care, bed and food only. All medication, dressings, X-rays are an extra charge. In contrast, physiotherapists are demanding a starting salary of \$10,000 (R7,200).

That people are not prepared to spend vast additional sums on prophylactic therapy which might not be necessary, is understandable and yet there are means of getting around this problem. Several insurance schemes do not cover "chest physiotherapy" in surgery, or occupational therapy in the psychiatric patient. Artificial limbs and kidney machines for home use are only starting to be accepted.

Means of Overcoming this Problem?

A few anaesthetic departments employ physiotherapists to care for all pre and post operative work and they work completely separate from the "regular" physical therapist. This service to the patient is included in the anaesthetic fee.

One cardio thoracic unit had an arrangement with a neighbouring rehabilitation unit to cover the thoracic work. Here the influence of Canadian and British trained medical men with their physiotherapeutic orientation was evident. Another unit of interest had been built in 1966 and had 115 cardiology and cardio thoracic surgical beds. Here 16-20 operations were performed per week but no physiotherapy post existed.

I feel strongly that this lack of specialised physiotherapy could be changed if only our medical men, ambassadors of the country, would include the word "physiotherapy" in papers they read or write. This surely would be the necessary stimulus to ask "What is physiotherapy?" "What does physiotherapy do?"

Physiotherapy Training

The physiotherapy training in the U.S.A. appears to consist of a four-year university training with little emphasis on the practical aspect of physiotherapy. In response to my many queries on the advisability of this, the teaching fraternity insisted that those applying to train as physiotherapists one hoped had an average intelligence and that, therefore, adequate theoretical knowledge was the most essential requirement. The application thereafter should present no problem. There are now training centres for

physical therapy aides and assistants. The assistants receive a two year college training at the end of which they are permitted to work under a professional physiotherapist—that is treat but not evaluate cases or programme plan. The aides are trained on the spot—in the hospital—and work only together with physiotherapists and never alone. They have no fear of abuse of physiotherapy and the aim is to enable the physiotherapist to further her training—get a master's degree and do more research programming.

Physiotherapy is basically a practical occupation and I would make a strong plea that, if and when the training here were to alter, the emphasis on the practical approach continues and physiotherapists not statistical robots, are produced.

Clinical Physical Therapists with the added responsibility of student supervision and clinical teaching are almost all without fail jointly employed by the hospital authorities and the universities and the salaries are accordingly higher than at an equivalent hospital with no students. Lecture demonstrations are frequently given by clinical staff in their speciality but always for a fee. This is long overdue in our country where clinical staff carry a heavy load with weekend duties, night duties and then have the additional trials and frustrations not to mention the responsibility for students and yet earn the same as a non-teaching hospital. The doctors have overcome this and one wonders how much longer physiotherapists will have to fight for some acknowledgement.

In the U.S.A. the subdivision of the physiotherapists appeared far more advantageous than our present set up. Posts, nowhere numbered our quota, but no acute work is dealt with except by anaesthetic physiotherapists. An example of this is:—

1 Charge
2 Assistant charges
6 Seniors
17 Basic
—
26 Total at a hospital with 1,070 beds.

Several other units had this style of subdivision which appeared to give a better working set up than our present set up with virtually two divisions only.

Inhalation Therapy

Acute and preventative respiratory physiotherapy as already mentioned is virtually unknown. This has led to the introduction of inhalation therapists and inhalation therapy. With physiotherapy being known only as rehabilitative, the inclusion of inhalation therapists was inevitable. They started as technicians responsible for maintenance and servicing of respiratory equipment and appear to me to be what we term an anaesthetic technician. Their training progressed to include respiratory physiology and pharmacology and are now regarded as indispensable people in an I.C.U. In following these inhalation therapists around for hours, my shoe soles wore thin, feet ached and I became more and more disillusioned. Basically they assemble respirators, check equipment, supply clean tubing, etc., measure tidal volume and do blood gasses, a valuable and necessary task. They may instruct the patient in the use of the respirator but no actual "treatment" in the form of assisted coughing, postural draining or re-education of breathing was ever seen given at one unit. A perfect example of the ratio of inhalation therapists and physiotherapists was seen at a 450 bedded hospital where there were 24 inhalation therapists to eight physiotherapists!

My feelings became more strong as the trip progressed that I.P.P.R. cannot substitute conservative chest physio-

therapy and can surely only be of value in conjunction with the postural drainage, breathing re-education, etc. Expensive equipment may look good but cannot replace the personal persuasive approach of the physiotherapist. A mucolytic agent in the nebulizer may well produce a cough and may even be quicker and less exhausting for the physiotherapist but is it fair to make the patient rely on this to clear a routine post operative chest? Does one for convenience administer drugs to induce sleep?

As always there are exceptions to every rule — one magnificent unit where the two paramedical professions worked hand-in-hand with the mutual interest — the patient's welfare — was to be found. Here the nursing team in the I.C.U. turned the patients hourly from side to side, to flat to sitting to 90 degrees. The I.P.P.R. was given at set times by the inhalation therapists and this was immediately followed by postural drainage, vibrations, re-education of breathing by the physiotherapist. Equipment was the sole responsibility of the inhalation therapist.

A strong plea is that the inclusion of inhalation therapists, as is known in the U.S.A., is kept as far removed from our institutions as possible.

Dieticians

Dieticians attached only to renal units were rewarding and the advantages seen were manifold.

- (1) Food was prepared in smaller quantities and therefore with personal attention.
- (2) Foods liked by the patient could be prepared for them, provided that they complied with the permissible diet intake.
- (3) The dietician supervised the mealtimes and were well aware of anyone not eating adequately which is detrimental to the patient's well being.
- (4) The meals were delectable and pleasantly served.
- (5) Much help in home diet planning was available.

A particularly pleasing set up was found where the National Institute of Health runs the renal unit on a research grant and this includes dieticians (no physiotherapists). There are three fully qualified dieticians and eight full time aides. The aides commence duty at 6.45 a.m. with breakfast preparations having checked the cardex for any new orders or alterations in diets. Following breakfast the patients are visited and permitted to select their menu for the following day from a selection of available food. Salt free diets from the main kitchens are used while all the extra and special foods are prepared in the unit. The main hospital has a three week diet programme which changes every three months reducing the monotony considerably. Many little extras are made in the kitchens such as salt free fudge, bourbon balls made from margarine, sugar and bourbon which is all high in calorie intake.

Patients are permitted full normal diets the evening prior to dialysis provided that the Blood Pressure is stable.

Recovery Rooms and Intensive Care Units

I.C.U.'s were unbelievable — here they have everything that opens and closes and does the work with minimal effort and where money is no object. How wonderful to have transplanted such units to our town? A recovery room is an absolute necessity.

All patients go directly from the operating room into a recovery room or I.C.U. where they remain from 6-48 hours and longer. Here there is an anaesthetist on duty all the time.

All patients return from the operating room with endotracheal tubes and respirators for varying lengths of time. This is said to minimize pulmonary complications as the patient is well humidified and well ventilated in the early drowsy period.

A common method of clearing bronchial secretions following removal of the endotracheal tube is by instilling sterile water by means of an entra cath and thereby initiating a cough reflex. Bronchoscopy is still an accepted easy means of clearing a post-operative atelectasis.

In many I.C.U.s visited the relationship of nurse-patient is dead and instead one has a robot which monitors all the vital signs and changes. Gone is the nurse who reports that patient A is off colour today, eating with less enthusiasm, vomited their breakfast, etc. No monitor at present records these changes. With the inclusion of inhalation therapists and mechanical means of respiration, gone is the person to detect the early and subtle changes in the pulmonary state of the patient. In the day of mechanization the greatest care will be needed not to allow our I.C.U.'s to become over mechanized robots but ones with, I stress, human beings in charge aided and assisted when and where ever possible by mechanical apparatus.

The Bird

The Bird Institute in Palm Springs was another eye opener of a different nature. The respirators are manufactured in San Francisco, but it is in Palm Springs that all the experimental work is done. Palm Springs is a health resort and has a breathing clinic which offers free treatment. The term I.P.P.R. is not acceptable and here they call it Topical Pulmonary Chemomechanical Therapy (T.P.C.T.). The Bird Mark 7 is the commonest in use and all are driven off compressed air and not oxygen. Here they advocate a low sensitivity, 5-7 a pressure of 10-15 only, which is said to be more than enough as the rate of flow is more vital in getting the air to the periphery of the lung than the pressure of air. In other words a low pressure and a slow rate are the important features. At the height of inspiration the patient is told to hold the breath, to get the maximum perfusion. With a flow rate of seven all I could tolerate was a pressure of less than 15.

Where the expiratory retard cap fits a length of red tube is connected to a bag. This served as a "Muffler" and at the same time is said to prevent contaminated air being blown through the room.

After a magnificent luncheon my day's visit was completed by a trip up the Palm Springs aerial tramway which is the largest double reversible passenger tramway in the world. From Palm Springs at a level of 2,643 feet above sea-level we rose to an elevation of 8,516 feet in 20 minutes. The temperature in Palm Springs had been in the 90s and up the mountain the snow lay thick and plentiful. There are three "Birds" run from oxygen at the top station for those who find the air too rarified!

Operating Rooms

Most staggering was the lax atmosphere seen in some cardiothoracic operating rooms. At one Hospital for instance, one enters the theatre complex only after stripping and donning theatre garments — in my case it required travelling in the public elevator to reach the theatre. Once in the operating suite one can wander into any and every operating room as one pleases. The doors to the theatres were wide open at all times. Only the surgeons and sisters directly concerned were gloved and masked, everyone else came and went as they pleased. According to the senior staff at this unit infection was no problem and they felt this was so because their theatres dealt with only cardio thoracic problems and no other type of surgery. Here they performed 3-4 open heart valve replacements, 3-4 Vineberg's (mammary implants) and 1-2 thorocotomies daily.

Of interest was the way sternal splits and thorocotomies were left "open" after the first 24 hours provided that there was no oozing. A pressure bandage was in situ for the first 24 hours and then surgispray replaced this. Wound sepsis

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was not a problem and I wondered whether our institution is one of the record holders for infections within its walls. This technique was seen in several units.

The Problem of Infection

The precautions regarding transplants comes into review by all transplant teams. The general feeling in the U.S.A. now appears to be that the problem of infections post-transplant are not a result of infections introduced by visitors to units but auto-infections which the patient carries pre-transplant and which flare up as a result of the steroids. Steroids increase the risk of infection and, as hospitals are reservoirs for bacteria, a certain disciplinary precaution is required but not rigid theatre precautions. Chest infections were most common occurrences and these I feel may be prevented to some degree by:—

- (a) elimination of mechanical respirators which are a potential source of infection;
- (b) better active ventilation immediately post-operatively and removal of secretion. It is too late once there is an atelectasis;
- (c) Adequate pre-operative explanation of the post-operative regime;
- (d) the strict adherence to a limited personnel permitted into the post-operative area.

A Few General Points of Interest

The psychological approach is a common word in many departments. A patient recovering from a head injury was asked whether he would mind rolling over. To the reply of "no" he was asked whether he would like to walk to the speech therapy department. With a second negative the therapist agreed that, for today, they would call it a day. I quote: "It is bad psychology to persuade anyone to do anything they do not feel inclined to do".

Similarly, at one renal unit I found no active physiotherapy in progress. There were several transplant patients with excellent renal function attending the department because, for various reasons, they were bedridden. These patients were only treated if they felt inclined to do any exercises. Patients were, I quote: "never treated on dialysis as they are too difficult to motivate". From my limited experience, patients commencing on a dialysis programme are uraemic, irritable, lethargic, ill and often have a varying degree of muscle wasting and need to be encouraged in this early stage to hasten their rehabilitation to that of a fully ambulant rehabilitated person prior to transplantation. A great deal of patience, help, persuasion and insistence is often required to achieve these worthwhile results. The programme has to be modified and altered to each individual's requirements, capabilities and state of health but all patients can do something. There is often more of a mental strain on the therapist, in having to be persuasive and insistent to a tune of constant moans. How much easier it would be to say we will try again tomorrow!

Disturbing was the cursed television blaring forth from early morning till late at night throughout treatments too. I found myself grossly distracted and most patients kept half an eye and ear that way too. Background music is bad enough but the film accompanying it makes it still more difficult to exclude without switching off.

A favourite means of rehabilitating the cardiac transplants was found to be a "Bicycle". The inventor of this piece of apparatus would be a multi-millionaire from cardiac transplantation alone. Every transplant patient is put on this as exercise and buy their own for home use on discharge. It is also used by the renal transplant patients with muscle wasting, where mechanical support is still quite a common feature following transplantation.

An amusing discussion took place in one institute where a pilot study was carried out to see if pre and post-operative physiotherapy was of any value. A series of 20 patients had been taken at various post-operative phases (when ever the patient was referred).

It was decided that:—

- (a) No physiotherapist would last out long with such a boring task;
- (b) it was a thankless and unrewarding task.

This was the unanimous feeling after 20 cases!

Several units were adamant about their decision not to use live donors for transplantation despite the superior results in comparison with cadaver grafts. They felt that with the prospect one can offer, i.e. the limited length of good renal function, it was not justifiable to expose a relative to the loss of a kidney. End results are still too nebulous to deprive a healthy individual of a kidney that may only serve 2-3 years.

THE UNITED KINGDOM

Dialysis Units

At one U.K. Dialysis Unit complications are said to be minimal. There are seldom infected shunts and this is put down to being almost fanatically meticulous about sterility. The unit is scrubbed from ceiling to floor after each night's session by the nursing staff and all machines are sterilized. No outdoor clothes enter the unit — clean coats and special shoes for this unit have to be put on before entering. While working with shunts both patients and staff are masked. All bed linen is autoclaved as is the paper towelling. Dressings of shunts are soaked in soframycin. The average use of a vein is nine months and an artery 18 months. Chest complications are negligible and only seen in cases of peritoneal dialysis. The longest survivor commenced dialysis in March, 1964.

An innovation which I found stimulating was a so-called "pre" ward round. At a chest hospital, the consultant surgeons, physicians, anaesthetists, radiologists, registrars, ward sisters and physiotherapists meet in the clinic room. Here they discuss each case, indications for surgery, operative findings, X-ray findings and plan the course of management for each and everyone. At the conclusion of this pre round, a ward round is done and the patients examined, when indicated, and the necessary details are given to the patient. This eliminates the ever-frightening discussions which occur at the foot of the patient's bed — more often than not, not even concerning their illness.

Here endotracheal tubes are left in situ via the nose or mouth for up to three weeks in preference to performing a tracheostomy. The tubes are changed every two to three days. Their feeling was that this would minimize pulmonary infection and also tracheal stenosis.

GENERAL COMMENTS ON TRANSPLANTATION

Fully Rehabilitated Persons

The most active healthy patients seen on the entire trip were found to come from units where night dialysis was the procedure. These patients lead full normal lives except for two nights per week when the machine ties them to a bed. At one U.K. Unit I saw a medical practitioner from High Wycombe in Buckinghamshire on the Home training programme. This doctor had a busy practice as well as sessions at the local hospital.

An anaesthetist in the U.S.A. worked on the Renal Programme with a Scribner shunt in situ and also was dialysed at night. These people could not be classed as anything but normal people. All these units encouraged