

ANAESTHESIA IN PRIMITIVE CONDITIONS*

ERIC WEBB, M.D.†

IN A HIGHLY SOPHISTICATED anaesthetic situation, the patient, during the operation, is the sole responsibility of a physician. This physician has a broad experience in all branches of the medical art, and has been trained in those basic sciences bearing upon the anaesthetic care of the patient. He is capable of a discerning choice between a wide variety of techniques, any and all of which are at his disposal. A full supply of drugs and accessories are on his shelves, gas equipment is dependable and well serviced, monitoring devices are his for any desired parameter, and personnel capable of preoperative, operative and postoperative care and assessment are on duty or call throughout the day and night. Provision has been made for administrative cohesion, teaching at all levels, clinical and pure research, and interdisciplinary liaison. Satisfactory returns of a material, spiritual, and intellectual nature are ensured to the anaesthetist.

As these ideal conditions are eroded away, we return to a situation where the patient has to grin and bear it, or at least bear it, even if the grin comes hard. Many people find themselves in this unhappy predicament.

Using my recent exposure to the Nigerian medical situation as a background, I propose to discuss the problems of the under-doctored, developing area. Some few figures are worth consideration.

Nigeria's population is close to 60 million. In September 1964, the Parliamentary Secretary to the Ministry of Health reported that there were 1575 physicians registered in the country, of whom 511 were Nigerians. This gives an uncorrected physician-patient ratio of 1:35,000. There are many on the North American continent who decry a ratio of 1:1000 as low. However, there are corrections to be made in the Nigerian figures. Some of those registered have gone back to their own countries, some have died, some are on study leave. Education has been the key to positions of responsibility and authority, and it is no doubt right that many officials, business men, and politicians have been those with medical training. Nevertheless, they are not available for patient care. A proportionately high number of the physicians are attached to the medical schools and their teaching hospitals—228 actually in the spring of 1966. These men participate in patient care, but their load is small because of teaching demands. Making the necessary adjustment, others more alert to the finer facets of the problem than I am have arrived at a physician-patient ratio of 1:60,000 for this large and populous country.

The medical service of the country is modelled on the old colonial medical

*Presented at the Annual Meeting of the Canadian Anaesthetists' Society, June 25-30, 1967.

†Department of Anaesthesia, University of British Columbia and Vancouver General Hospital. Dr. Webb was Senior Lecturer in the Department of Anaesthesia, University of Lagos Medical School, and Honorary Consultant, Lagos University Teaching Hospital, Lagos, Nigeria, from July 1964 to June 1966.

service, augmented by private hospitals, mission hospitals, and the two Teaching Hospitals which act as the main consultant areas for the whole country. A goodly number of the hospitals have one medical officer attached to them, and his time is in some measure taken up by administrative responsibilities. Many of the Nigerian doctors work in frightening isolation, particularly frightening for the recently graduated newcomer to the tropics. The anaesthetic problems that are encountered are only a part of the difficulties.

Even in the hospital with two doctors, the second doctor will be busy with work in the wards or the numerous outdoor clinics, and will be denied the dubious pleasure of acting as anaesthetist for his surgically-minded colleague. There are some larger hospitals, in Port Harcourt in Umahia, for example, that have specialists with fellowship and with years of tropical experience. They are decidedly not the rule.

In the peripheral hospital, where the doctor administers the anaesthetic and proceeds to do the surgery, spinal anaesthesia is deservedly popular. Epidural anaesthesia is creeping in with many disadvantages, and to little profit. One of my friends props up a text book of regional anaesthesia and follows the outline word by word. Another experienced gynaecologist operates on three women a week under infiltration anaesthesia for ruptured uterus. Many patients receive poor anaesthesia, the death rate is sometimes higher than necessary, and the surgery is frequently compromised by the anaesthesia.

One sees many a Boyle machine, covered by a cloth. The machine has become a status symbol, many of them are not used, and if used, not well used. Less than 20 per cent of a surveyed group of hospitals had equipment for endotracheal anaesthesia, and where available, it was rarely used because of inexperience.

It is discouraging to see an infant resuscitator worth £500 in a small hospital and no self-inflating bag. The same hospital had a set of laryngoscopes worth about £100, without blades that should be found in any reasonable kit, and without simple apparatus for general anaesthesia.

Until I had been in Lagos some six months, I had considered the draw-over type of ether vaporizer a silly bit of equipment that I could with great difficulty imagine a use for. I hasten to add that my experience with the EMO was nil. It became very apparent that this kind of ether vaporizer is ideal for the semi-skilled anaesthetist who suffers from either lack of training or lack of supplies.

Add to the fundamental draw-over vaporizer the inflating bellows, and the fixed dosage halothane unit produced by the team efforts at Oxford, and you have apparatus with which the simplest to the most sophisticated type of general anaesthetic can be given with the utmost comfort and precision. With endotracheal intubation and a proper appreciation of ventilatory needs, excellent anaesthesia can be given for any type of surgery.

Our first experience with the EMO quickly convinced us that volatile agents were to be preferred to intravenous barbiturates for induction. Although in our own unit we had halothane in quantity, we tried to consider economy, and we found that on the unit described by Bryce-Smith, chloroform out-performs halothane, and is to all intents and purposes free. Halothane cost two shillings and sixpence per induction dose, and chloroform cost six shillings for 160 inductions, less than a penny per trip.

Undergraduate medical students were introduced to this approach to anaesthesia as soon as they came to us, and frequently the first anaesthetic a fourth-year lad gave was for upper abdominal surgery, using ether with the EMO. Respiratory assistance as needed was given with the bellows, checked with a respirometer in the circuit.

An interesting aspect of tropical practice is the deterioration of drugs packaged in ampoules, kept under somewhat less than ideal conditions. Drugs that one would expect to be quite stable were almost completely without effect. Powder storage with reconstitution immediately before use was of particular importance with succinylcholine. Multiple-dose rubber capped ampoules also gave us trouble. The finish of apparatus and accessories requires careful assessment and adjustment if the product is to last in the tropics. Built-in longevity is appreciated when servicing facilities are scarce and slow.

Having decided that we will recommend certain types of anaesthetic techniques and equipment, we are still faced with the almost insoluble problem of the lack of manpower. Large and powerful world organizations in our field wish to create schools, staffed by rotating faculties from the more developed countries. These schools are to create university teacher anaesthetists out of non-existent students in a year or two. One such school is already under way, in South America, and another due to start in the Phillipines. Presently there are some 15,000 doctors practising in the United States from the South East Asian countries, many of them in anaesthesia, while their countries cry out for medical men.

In most developing countries, anaesthesia, radiology, and pathology are not popular fields. My own feeling is that the financial returns in these specialties make them unattractive, compared to those fields allowing of ready private practice. The extreme shortage of physician anaesthetists puts the onus for most of the clinical load on the nurse.

I feel strongly that one of our responsibilities is not the administration of clinical anaesthesia to routine surgical patients. When setting out to prove one's ability, demonstrating certain features of our approach, this may be necessary and worthy. But anaesthetizing the day-to-day surgical list is a stopgap, and leaves nothing behind when one retires from the picture. Three responsibilities come to mind:

First Responsibility

The medical student in the developing country must get a much broader exposure to anaesthetic principles and practice than the student in North America or European and British medical schools. For many years, graduates will be working on their own, and will have to know the practical aspects of our work. Therefore the student must be taught spinal anaesthesia and regional blocks of the more practical nature and must be capable of administering general anaesthesia through an endotracheal tube. At Lagos, Professor Fleming had achieved the tremendous feat of getting into the fourth-year programme a period of eight solid weeks that the students spent full time in our department. When they left the service, they had had considerable personal experience with all the outlined types of anaesthesia, combined with as much training in fundamental principles as we could manage to instill by lectures and theatre teaching.

Second Responsibility

The second responsibility is to train in the local teaching hospitals those post-graduate students that we have been able to interest in the specialty. Most of this training must be carried on in the developing country, and if we participate in this programme it should be by supplying skilled and experienced teachers who are willing to spend time learning the local needs. Practicality is a virtue too. After a time spent in local training, at the same time helping in the care of local patients under the conditions in which he will later work, the student, wisely screened, may be sent to some polishing centre, North American or European. These polishing centres must not consider the candidate as another F.R.C.P. candidate, but continually orient themselves and the student to his local needs. It is foolish for a country such as Nigeria to continue to import the doctors needed to man their medical posts, while their own young men make one trip after another overseas on study leaves that become almost a career.

Third Responsibility

The last and most important responsibility is to re-assess medical care and anaesthesia. Is anaesthesia becoming a cult? Is the care of the ill best served by refining medical care to the point where until both kidneys have stopped functioning completely, the physician finds it impossible to be interested in the patient, at the same time completely neglecting large numbers of the world's population? Can we justify on the North American continent the approach that we must steal our medical men from Britain, mid-Europe, or any place from which we can entice physicians to our shores? Whence then comes the European care? From those much-needed doctors only too glad to leave their own poorly paid and arduous situations in steamy equatorial jungle villages? I think we should realize the ratio 1:375 which we enjoy in Vancouver is as much wrong on the one hand as the Nigerian 1:60,000 ratio is wrong on the other.

There always has existed, I suppose, the feeling that simple routine anaesthetics need not be the personal responsibility of a highly trained physician. This does not offend me, but I feel there are many other situations in medical practice that are similar. The paediatrician wastes much of his valuable training when he spends a half hour with a healthy baby and its mother, or when he personally gives the injections of the prophylactic preparations. All internists could use auxiliaries. Ophthalmologists need not do their own refractions. Much of the time spent by obstetricians in prenatal visits, and indeed in delivery rooms, is wasted. Having watched surgeons work for nearly 25 years, I am amazed that we do not take skilled cutters and sewers (non-physicians) and with appropriate supervision, cut our operating time in half, and make our surgical procedures neater and tidier.

It is impossible to foresee a time in the future when the Nigerian medical manpower will be sufficient to make the doctor-patient ratio anywhere near desirable. I can never see the time when a physician working in the general structure of the medical service will be able to opt as his task the giving of one anaesthetic at a time for the routine surgical case. The nurse anaesthetist, or as Dr. Parkhouse prefers, the anaesthetic nurse, is with us whether we like it or no.

The same argument may be applied to many medical situations in British Columbia, and throughout the whole North American continent. Many places in Europe, for example Denmark, have accepted this philosophy.

The theatre nurses whom I met in Nigeria are men who are very dedicated, and who tried hard to improve under instruction. Time spent in their instruction was always well spent. Our official attitude was that only doctors should be taught, and that they in turn could teach their own nurses. This is double talk. If the nurse is to do the work, he should receive the instruction from the best teacher available. The introduction of a middle man introduces too much slippage.

There is a growing feeling that medical care in countries such as Nigeria must be indefinitely postponed unless and until we realize that increasing use of the medical auxiliary is to the advantage of all. Obstetrics in Nigeria and in Britain is the domain of the midwife. Community health is the domain of the trained case worker. The picture may well develop that at the centre of a geographical and medical wheel is the doctor. Trained in his own work, but especially trained to work effectively with his auxiliaries, he guides the unit's work, and steps in when his extra skill and judgment are needed. The anaesthetic nurse is regarded as an important member of his team.

SUMMARY

The needs of anaesthesia in primitive conditions are: (1) emphasis on simple apparatus, agents, and techniques; (2) a corps of teachers—either expatriate aid or indigenous; (3) anaesthetic instruction for undergraduates (basic instruction plus extensive experience with simple techniques), postgraduates (in their home countries, and as teachers, not purely clinicians), and nurses in vast number, trained by the anaesthetist.

ACKNOWLEDGMENT

The author's tenure in Nigeria was under the auspices of the External Aid Office of Canada.