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A Paediatric Special Care Unit in a Tropical Hospital.

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SUMMARY

A special care Unit was recently opened in the Paediatric wing of the University Teaching Hospital Lusaka, and its first year of operation is discussed.

INTRODUCTION

The Paediatric wing at U.T.H. admits all medical Paediatrics except neonates born at that hospital. It comprises 3 wards, 2 general and 1 infectious (Measles, Polio, TB). It is about ½ mile from the main modern hospital complex, being housed in the old private wing. Annual admissions for 1975 10,000 and in 1976 12,000.

Before September, 1975 any "Intensive Care" or special procedures had to be carried out on the main Wards. Lack of nurses and overcrowding meant this was rarely done properly and very few patients survived if they needed ventilation.

Against this background it was decided to set up a "Special Care Unit" in a sideroom with its own complement of nurses.

Equipment

The Unit is self sufficient for all equipment, drugs etc. There is one bed, one cot and an incubator (stored when not in use).

There are two ventilators, a Bird MK8 and a Vickers respirator 'nevent 90' (the latter arrived after 6 months operation, previously there was a Vickers 70 which has no humidifier).

There is one ECG monitor with ratemeter and alarm facilities (Hewlett Packard) an oxygen tent (store) and a Boyles machine.

There are all the normal accessories for intubation, and for tracheostomy in emergencies.

Nursing Staff

The unit has had a complement of 5-6 nurses enabling there to be at least one nurse on duty at all times. None of the nurses are I.C.U. trained, all training is done by Senior Staff on site.

Medical Staff

The Unit is under the continuous supervision of one of us (M.J.M) who supervises care in conjunction with the admitting firm.

Criteria for Admission

1) Intensive care — patients requiring close monitoring or intervention with respiratory support in whom such support is felt to be appropriate and likely to help the patient.

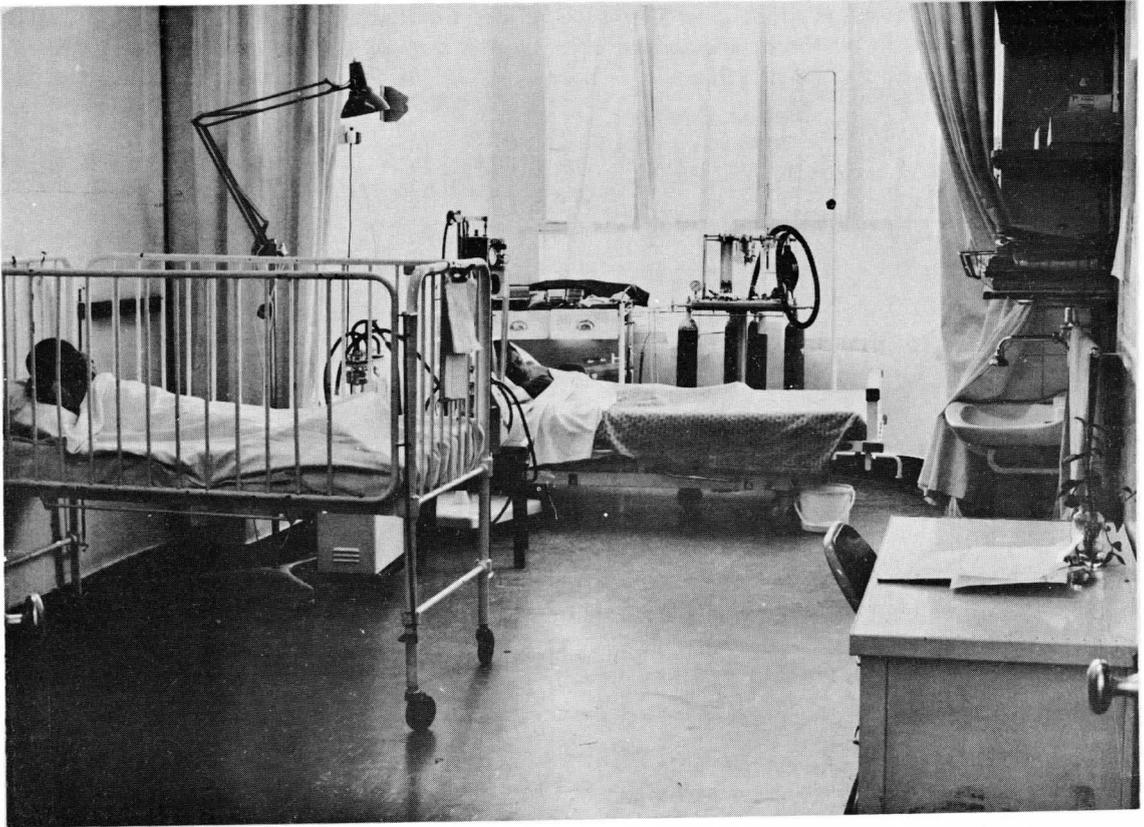
2) Special procedures — subject to availability beds are also used for certain special procedure needing close supervision during or after their performance, (e.g. underwater — seal chest drainage, peritoneal dialysis etc).

3) Monitoring — patients requiring close monitoring of vital functions for diagnosis.

In all cases category (1) patients have absolute priority for beds, category (2) Having priority over category (3) No patient in category (1) is moved out except on clinical grounds.

RESULTS

Table (1) shows detailed results of patients admitted during the first year of operation. It must be noted that during this time the first group of nurses



were being trained and equipment was not complete for 6 months.

I Pneumonia

Most of these cases were small infants with hypothermia and LRTI. Older children who were ventilated had generally a respiratory arrest prior to admission. With the availability of a humidified Vickers ventilator our results on these small infants have improved dramatically, especially during a recent broncholitis epidemic.

II LTB

The majority of these children had measles. In these cases the upper airways obstruction (UAOD) lasts for about a week. We have no means of humidifying inspired air except through the ventilator – and the aerosol humidification of the Bird in our experience is not satisfactory. Consequently management of LTB with continuous endotracheal intubation is fraught with danger. In these cases we recommend that intubation should only be a short term measure prior to tracheostomy.

No child with a tracheostomy has died from subsequent airways obstruction on the unit (one has when nursed on the main ward). On the other hand at least two children managed with portex E-T tubes died subsequent to blockage of the tube, and several

others have in another unit where intubation alone has been practised.

The two post-tracheotomy deaths were both due to concurrent pneumonia.

III Tetanus Neonatorum

Results here are uniformly bad. Only severe cases were transferred to the unit and those ventilated all had respiratory arrest and in two cases anoxic cardiac arrest. With the new ventilator we are considering taking poor prognosis (1 week old) cases and ventilating/curarising earlier.

IV Septicaemia in Neonates

Results have been poor, probably because of late intervention.

V Marasmus and Gastroenteritis

These were all severely ill children with profound metabolic disturbance. All three of the G.E. cases had serum sodiums greater than 170, two (deaths) greater than 200. The marasmic children were all moribund with incipient respiratory arrest. It proved impossible to reverse the process despite ventilatory support. Several of them developed terminal tachyarrhythmias when ventilated. Lack of rapid laboratory monitoring makes management of these children more difficult.

TABLE I

	Total	Ventilated	Intubation Only	Tracheostomy	No Ventilatory Support
Total	250 48%	146 78%	2 50%	9 33%	93 25%
LRTI	25 56%	9 77%	—	—	16 44%
LTB	24 38%	9 33%	2 50%	8 25%	5 60%
Tetanus Neo	17 76%	5 100%	—	—	12 66%
Sepsis neo	9 66%	5 80%	—	—	4 50%
Marasmus	8 100%	6 100%	—	—	2 100%
G.E.	3 66%	—	—	—	3 66%
Tetanus	2 50%	1 100%	—	—	1 0%
CNS Infection	10 60%	4 75%	—	—	6 50%
Encephalitis	7 71%	4 100%	—	—	3 33%
Convulsions	2 50%	1 0%	—	—	1 100%
Coma? Cause					
	1 0%	—	—	—	2 0%
Post. op. neo.	2 100%	—	—	—	2 100%
Empyema	18 8%	—	—	—	12 8%
Dialysis	3	—	—	—	3 0%
Other procedures	2 0%	—	—	—	2 0%
Others	21 24%	3 100%	—	—	18 11%

Neo = Neonates

Nos. = Total admissions

% = Mortality

VI CNS DISORDERS

Life support had no effect on prognosis. The one survivor had prolonged febrile convulsions necessitating anaesthesia. He is subsequently well with no obvious sequelae.

VII Poisoning

Both cases were organophosphorus poisoning.

VIII Post-Op Neonates

Both children had pre-operative hypothermic shock. The transfer to the Paediatric wing did not help.

IX Procedures

The one death was a malnourished child with empyema and pneumonia.

Sterility

No sterilisers are available, gas carrying tubes, equipment etc are "sterilised" by

1. Wash with soap and water
2. Savlon soak (6 hours)
3. Hot rinse

4. Dry with sterile gauze, stored dry covered with gauze i.e. a high standard of "social cleanness" is maintained rather than asepsis. We have not (yet) had any serious cross infection problem.

DISCUSSION

We expect with improved selection and earlier intervention to get better results in the second year of operation. Nursing skills and equipment are improving.

The most useful areas of operation are

1. Management of upper airways obstruction
2. Management of small infants with hypothermia
3. Management of infants with LRTI
4. Special procedures.

Where close laboratory control is needed our poor access to emergency laboratory facilities precludes intensive care being effective. Where there is CNS damage there appears to be no place for life support where respiration is failing (this is probably

true for most units).

The number of nurses involved is small and if they were distributed on the wards they would make no noticeable impact on the generally poor nurse/patient ratio.

The centralisation of ventilators etc. has ensured that their maintenance and survival time is much improved. Generally equipment is supervised by medical staff.

While there is much room for improvement there is no doubt that some children owe their lives to the existence of the unit and none have died who would have otherwise survived. The facilities available if distributed throughout the wards would have

doubtless by now have been lost, broken or discredited by misuse. Also the nurses who have left the unit have gained from the personal instruction and experience gained therein.

We would like to recommend this small special care Unit in Children's Hospitals with a high admission rate especially in the developing countries to decrease mortality in Children at risk especially from medical emergencies.

LRTI	Lower respiratory tract infection
G.E.	Gastro-enteritis
LTB	Laryngo-Tracheo-Bronchitis