

INNOVATIONS IN A MISSION HOSPITAL

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When working in a mission hospital expense and time are important considerations. The necessary revenue is obtained from Provincial and Government subsidy and patient fees, assisted by public donations. However, these funds barely meet the essential needs and the staff often have to be satisfied with minimum requirements and to improvise. We have thus decided to relate some of our experiences at improvisation and to pass on suggestions from our experience.

Finance

Salaries. Staff salaries still form the major financial drain and little can be done to change this. The use of many untrained nursing staff provides for the average need of the patient at the lowest outlay. These, however, are carefully selected and usually have passed at least Standard 6.

Feeding. Mealie-meal porridge is the basic food eaten by the rural Bantu and it thus forms a large part of their hospital diet since it is cheap and filling, though lacking in protein and vitamins. To supplement protein and vitamins we make great use of skimmed milk, Pronutro (Hind Bros.' protein supplement) and high-protein soup powders used as soup or gravy. Cheap meat is used as a stew. The local farming packhouse very kindly allow us to fetch surplus oranges, so that during the winter months the patients get plenty of these. An outside covered eating room is provided for ambulatory patients which operates on the cafeteria system. This reduces the staff required at meal times and keeps the wards tidy and clean.

Saving on Treatment and Investigations

Drugs. Seed packets are used for dispensing tablets and a deposit is paid on medicine bottles to encourage their return by the patients. The drug bill is kept as low as possible without undertreating the patients. Ninety percent of the patients are treated with the following drugs:

1. Morphine which is cheaper and as effective a sedative as pethidine, aspirin compound and aspirin.
2. Vitamin B compound and brewer's yeast.
3. Streptomycin and INH (which can be obtained without cost from the State Health Department for the treatment of tubercular patients), sulphonamides, Mandelamine, penicillin (which can likewise be obtained without charge for patients with venereal disease), while chloramphenicol is the broad-spectrum antibiotic of our choice because of its general effectiveness and comparative low price.
4. Digoxin, ergotrate and stilboestrol.
5. Stock mixtures for coughs, diarrhoeas and iron tonics almost complete the list.
6. Whitfield's ointment, *ung. meth. sal* and zinc ointment are the ointments in commonest use.

Because the patients are illiterate, red cellotape serves to mark bottles containing poisonous medicines or those not intended for internal use. Many overseas firms have given us donations of drugs, in particular the Astra Drug firm in Sweden.

Blood transfusions. Endemic bilharzia, malaria, venereal disease and malnutrition prohibit us from running our own blood transfusion service for donors. Blood transfusions are given to deserving patients, using blood from the South African Institute for Medical Research since this costs half the price of blood from the South African Blood Transfusion Service. This latter service is more expensive since they rely entirely on blood as a source of revenue to pay for their staff and overhead expenses. Oral and parenteral iron therapy is used extensively.

Radiography and pathological examinations. The cost of X-ray examinations of the chests of suspected tubercular patients is covered by the Republic's Health Department. Fractures are not re-examined by X-rays if there is obvious clinical union. A clerk has been trained as a very useful radiographer and does clerical work in addition.

Use is made of the Clinistix, Albustix and Tes-Tape in testing for urinary albumin and sugar. Apart from microscopic

examination of urine, haemoglobin estimations, Heaf tests and determining blood sedimentation rates, other tests are sent to the SAIMR laboratories. Many of these tests are paid for by the Department of Health: (1) malarial smears; (2) sputum and CSF examinations; (3) stool and urine examinations for typhoid; (4) bilharzial complement-fixation tests, if done in the first 8 weeks after contact; (5) stool and urine examinations for bilharzia; (6) antenatal blood grouping, Rh determination and Coombs tests; (7) WR and GC complement-fixation tests. A lowveld cancer survey is being conducted by the SAIMR and all histological examinations are done free of charge for the 5-year period of the survey.

Outpatients

Records. Keeping satisfactory records presents a problem since patients often have similar names and often change their names. They cannot remember dates or birthdays and lose vouchers. A system of zoning them according to the district they come from is used but this is also unsatisfactory. We would welcome suggestions.

The church is used as a waiting room for the outpatients (it also provides a useful hall for occasional film shows).

Clinics. Outpatient clinics away from the hospital are largely subsidized by the Government. They save patients needless trips to the hospital and reduce the numbers of outpatients roaming around the hospital grounds and outpatient department.

Mortuary. An old refrigerator is used for preservation of cadavers and an old operating theatre table serves as a post-mortem slab.

Paediatrics

Four potassium chloride tablets of $\frac{1}{2}$ G each or Kallisol tablets and a sodium chloride tablet of 40 gr. (one level teaspoonful) in a pint of water makes a cheap half-strength saline—potassium supplement for patients with diarrhoea—the addition of 1 tablespoon of sugar makes this more palatable. As many small isolation units as possible are used for new patients to stop the spread of infectious diseases since these tend to kill already ill patients and increase hospital expense. The duty room is centrally situated and has glass on three sides in order to make observation of all the wards possible. Name tags of Elastoplast are adhered to the patients' backs between the scapulae. This serves as an identification method when there is overcrowding. This site is hard to reach for probing fingers.

Shelving racks and picture hooks fixed to the wall make good dripstands. There are small lavatories for the children which obviates the staff having to attend to all the children's toilet requirements. Tying the patient's hands together with a bandage and fixing this to the napkin, allows a baby to move about without being able to pull out nasogastric or intravenous fluid tubes.

Obstetrics

Cots. Grocery delivery baskets are fixed to poles at the end of the beds used by confinement cases and used as cots. Bantu women would often rather have the child in bed with them so if the basket is not used as a cot, it can store the patient's possessions (Fig. 1). The poles can also be used as lithotomy poles. Mattresses covered with rubberized material or plastic stop blood from seeping in and are easily cleaned.

Symphiotomy is resorted to fairly often to save repeat caesarean section.

Sterility poses a big problem to the Bantu and most patients complaining of infertility are given instruction on the fertile period. Treatment with penicillin and sulpha drugs is initially given and followed up with dilatation and curettage and insufflation if they do not fall pregnant within 6 months after treatment with drugs. The insufflation is done with a Baumanometer bulb and insufflation tube using air, since we feel that



Fig. 1. A grocery basket used as a cot.

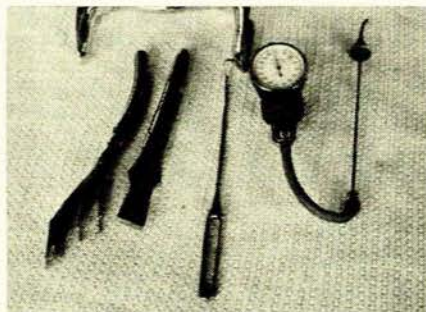


Fig. 2. Instruments for investigating infertility.



Fig. 3. Catheters being kept in a hosepipe.

this is cheap and effective and the chance of air embolism is small indeed (Fig. 2).

Plastic sponge rubber is used for swabbings and is rewashed and sterilized for re-use.

Medical

1. Brandy bottles make cheap, good drinking-water bottles for the patients.

2. Quilts and sheets, made into one with the blankets in between (like a pillow-slip) keep the blankets clean and the wards tidy.

3. Lockers built into a wall contain the patients' possessions, save space and keep the wards tidy.

4. Wooden strips of 3 in. thickness, attached to the corridor walls, prevent trollies from knocking plaster off the walls.

5. A laundry chute can quite easily be made from wooden boards.

Anaesthetics

Many local, regional and spinal anaesthetics are used to save having to call out an anaesthetist. Even fractured jaws are attended to under a local anaesthetic while the patient is under sedation. Gas and oxygen is used for opening abscesses, this being a quick, cheap method with the patient recovering consciousness soon after the procedure. The circuit absorber soon pays for itself, particularly when halothane is used.

Surgical

1. Disposable gloves and fingerstalls are used for vaginal and rectal examinations to save the time and labour of cleaning gloves.

2. Plastic material is extensively used: for drainage bags for urine, as syringes, drainage tubes and plastic stitch-removing sets which may be re-used after sterilization. Some plastics are sterilized by boiling, and others in Hibicol. Instruments are packed in plastic packets, the contents of which are clearly visible and ready for use. Specimens sent for histological examination are fixed with formalin and then sent dry in plastic bags to the laboratory for section.

3. Hosepipe forms a very useful container for ureteric catheters when sterilized with formalin tablets (Fig. 3). Hosepipe also efficiently insulates lithotomy and anaesthetic screening poles when diathermy is used.

4. Clean greaseproof paper makes a useful pack for sterilizing bowls and abscess-opening sets. The paper can then be discarded.

5. Cellulose wadding is cheaper than cottonwool and is often used for dressings in its place.

6. Newspaper is extremely useful for keeping the plaster theatre clean if spread out before applying plaster-of-paris. It is likewise used, in the minor and septic theatres, to spread under patients who are likely to bleed a lot or who are regarded as very infective.

7. Cut-up tyres make good walking heels for plaster casts.

8. Old plaster-of-paris tins of various sizes make good bed elevators and are less unsightly than bricks. They are also useful for storing suction bottles so that the bottles do not break if they are kicked or bumped. They are useful when plaster-of-paris spicas are applied to small children (Fig. 4).

9. Bags filled with sand make good traction weights.

10. If there is a shortage of Balkan frames in the children's ward a piece of wood with a couple of large cup hooks placed between two cots forms a useful compromise. The patient is put in a crib or mattress on the floor (Fig. 5).



Fig. 4. Plaster-of-paris tins employed as a spica saddle.

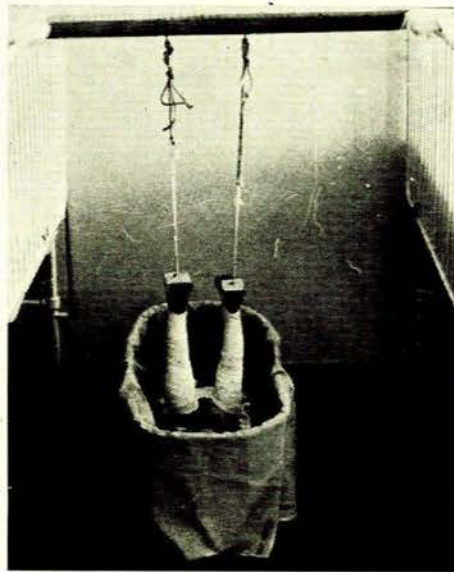


Fig. 5. Improvised gallows' splint.

11. Wire coat-hangers make useful frames for hanging urine containers onto the bed. The wire is also of an ideal thickness, if bent, to form a good Kühnthscher nail extractor.

12. The 'Silvers' skin-graft knife, which uses ordinary safety razor blades, has soon paid for itself and gives us a constant, sharp cutting surface.

13. Theatre lamps are expensive and a number of correctly placed fluorescent lights with reflectors provide a good substitute.

14. A Steinmann's pin stirrup with some cut Steinmann pins or other pieces of metal can be used for head skeletal traction instead of a Blackburn or Crutchfield's caliper.

15. Urology suction bulbs attached to tubing provide good suction drainage for wounds and these can readily be emptied.

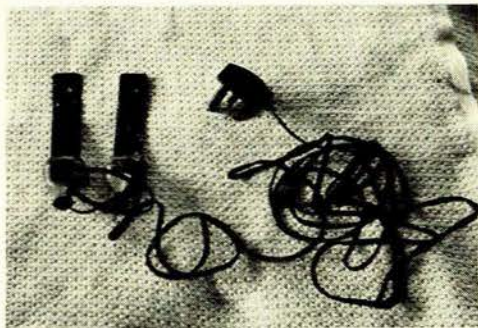


Fig. 6. Home-made defibrillator.

The suction bowls can be used in the maternity section for aspiration of the newborn infant.

16. Two metal plates or steel tablespoons attached to an insulated wire and insulated handle makes a good internal AC defibrillator (Fig. 6) if the current is momentarily switched on and off.

18. Useful crutches can be made cheaply from split broomsticks.

Visiting Services

We are indeed fortunate to have the services of a visiting ophthalmic surgeon and an orthopaedic technical team. These help considerably, but we feel that similar teams of radiologists, orthopaedic and plastic surgeons, cardiac and chest physicians may render a great service to our and other rural hospitals and thus avoid patients being transferred unnecessarily to bigger centres. These teams need only come once in 2 or 3 months and patients could be collected for such clinics.

SUMMARY

We have attempted to summarize some of the ideas which help in the running of the hospital in which we have the pleasure to work. We hope that others similarly employed may benefit by our experiences and may be led to relate some of their financial and time-saving devices.