NEW APPLIANCES

Peritoneal Dialysis Tubing Assembly

Mr. R. W. LLOYD-DAVIES, Mr. R. H. PYNE, and Mrs. V. A. TIDY, Department of Urology and the Central Sterile Supply Department, St. Thomas's Hospital, London S.E.1, write: The essence of the technique of peritoneal dialysis is that it is a safe, inexpensive, and simple manoeuvre which may be carried out in any general ward.

There is at the present time no entirely satisfactory apparatus commercially available for delivery and drainage of peritoneal dialysis fluid.

The equipment shown here was made up as a set in the central sterile supply department of this hospital and sterilized by gamma irradiation at the radiation branch

of the United Kingdom Atomic Energy Authority at Wantage.

The assembly (see Fig.) is composed of the following items, which are costed, and takes about 10 minutes to be made up:

	s.	d.
1 Baxter solution administration set ...	5	10
36 in. (91 cm.) Portex tubing No. 10 ...	9	½
1 Portex connector M/Y1 ...	10	
1 Aldon drainage bag, 3-litre ...	5	9
1 Sterilwrap, 20 in. (50 cm.)		
1 Bag, code G		
1 Irradiation indicator spot		2
4 in. (10 cm.) Sellotape		
	13	4½

Peritoneal dialysis tubing assembly.

If two-litre cycles are preferred a Baxter BR.10Y double giving set may be used at an extra cost of four shillings. The Aldon three-litre bag is used, as it combines the advantages of a non-return valve at the bag entry point and also has a drainage line.

This equipment is now in standard use, together with the McGaw Trocath, for all patients receiving peritoneal dialysis. New sets are used for each day of dialysis, and routine bacteriological investigation of samples from the first and last dialysate is carried out.

Low-cost System of Peritoneal Dialysis

Dr. JAMES A. RICHARDSON, Dr. PETER E. PHILBIN, and Dr. GEORGE R. HERRON, of the Research Hemodialysis Center, Public Health Service Hospital, San Francisco, California 94118, write: In recent years peritoneal dialysis has become a reliable tool for the treatment of acute renal failure. Though less satisfactory than haemodialysis for the long-term management of chronic renal failure, peritoneal dialysis is effective in allowing at least some such patients to lead reasonably active lives (Stevens *et al.*, 1964; Lasker *et al.*, 1965; Palmer *et al.*, 1966; Vertes *et al.*, 1967; Levin and Winkelstein, 1967). The procedure has also proved useful as a means of maintaining patients awaiting renal transplantation (Cohen and Percival, 1968).

Peritoneal dialysis, while less expensive than

haemodialysis, is still a major item in a hospital budget, particularly when materials marketed especially for peritoneal dialysis are used. The cost of the procedure may be reduced considerably by employing dialysis solutions prepared in the hospital pharmacy and by repeatedly reusing the amber latex rubber tubing. Faced with a limited budget and a growing number of patients who could profit by peritoneal dialysis, we began the preparation of dialysis solutions in our hospital several years ago. This report describes our low-cost method of preparing, sterilizing, and dispensing peritoneal dialysis solutions. Experience with 304 dialyses is briefly recounted.

Our procedure for peritoneal dialysis is based on the techniques developed by Boen

and associates (Boen, 1961; Boen *et al.*, 1964; Tenckhoff *et al.*, 1967), with considerable modifications to reduce costs and to adapt the methods to existing facilities.

PREPARATION OF DIALYSIS FLUID

The dialysis fluid is prepared in the hospital's pharmacy with reagent-grade sodium, calcium, and magnesium chloride and sodium acetate. The chemicals are purchased in relatively inexpensive bulk quantities, weighed in batch amounts, and mixed with distilled water in a 100-gallon (455-litre) stainless-steel tank. During the initial mixing a 5% excess of distilled water is added to compensate for the amount of water evaporated during subsequent autoclaving. Because of its greater stability, acetate, rather than bicarbonate or lactate, is used as the source of base. Sterile dextrose and potassium chloride solutions are added in amounts dictated by clinical circumstances just before dialysis is begun.

After being mixed, the fluid is pumped from the steel tank through a Millipore filter into a clean carboy. Disposable Millipore filters eliminate particulate matter and are available in several pore sizes. The 0.22-micron filter excludes the smaller bacteria but results in extremely slow flow rates. We routinely use the 0.45-micron pore size, which removes most particulate matter and provides an acceptable flow.

Pyrex carboys, 45-litre capacity, are used to store, dispense, and collect the dialysis solutions. The bottles are manufactured with vertical and horizontal seams which serve as reference points for applying a length of adhesive tape calibrated in litre increments (Fig. 1). Once a reference tape

FIG. 1.—Incubator box, its door open, containing a filled carboy. Tubing, thermometer, calibrated tape, light bulbs, and heat shields are seen.