A New Automatic Peritoneal Dialyser

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To be successful a peritoneal dialyser must improve on the manual technique, it should not be unduly complex and should be capable of performing a 24 hour period of dialysis with a minimum of attention.

Such a machine has the advantages of releasing busy nursing staff for other duties, and as cycling is automatic it is noticeable that a more consistent and larger throughput of dialysing fluid is achieved, resulting in improved dialysis. The use of larger containers of dialysis fluid reduces the frequency of introducing needles and, therefore, reduces the risks of infection.

DESCRIPTION

In the design of this machine it was considered important that both the inflow and outflow should be by gravity and not pumped. A pumped inflow is potentially dangerous, whilst a pumped outflow often results in the cannula being occluded and the outflow ceasing before complete emptying of the peritoneum.

The machine accurately meters inflow volumes adjustable from 100 ml to 1,000 ml.

A timer on the inflow cycle operates an alarm allowing an early warning of a blocked cannula.

A dwell timer provides up to 30 minutes dwell periods.

The outflow is also measured allowing the effluent to be discharged directly to waste, without first collecting in effluent containers, although this can be undertaken if required.

When the outflow timer elapses, the next inflow cycle commences if a pre-set volume has been drained. If this volume has not been reached an alarm is sounded.

Over-ride switches are provided to operate the inlet and outlet solenoids should manual operation be required.

Completely disposable lines are used. The use of a standard one litre
peritoneal dialysis fluid bag obviates the need for a reservoir container requiring autoclaving.

There is provision for five 10 litre dialysis fluid containers. In most cases this is sufficient fluid for a 24 hour period of dialysis. The empty containers can be replaced with the machine in operation without disturbing the inflow/outflow metering.

ADVANTAGES

1. The use of completely disposable lines.
2. The capability of use for paediatric dialysis.
3. The effluent can be discharged directly to waste.