

closed in returning the thread. Thus a leak of any consequence is virtually impossible to create by simply putting a pin through the membrane since it has a selfsealing characteristic.

The advantages of the newly described membrane are:

1. Safer from a leakage standpoint.
2. Not as delicate; can withstand greater abuse in handling.
3. Does not present as rough a surface to the blood cells to impinge upon.
4. Takes a more even coat of silicone membrane on the threads.
5. Gives a higher burst pressure point per the amount of silicone applied to them.
6. Allows an increased passage of oxygen gas across into the blood and CO_2 gas passage out of the blood.

Summary and Conclusion

A false understanding about the number of threads per inch effect on a membrane used for oxygenation has been laid bare and cleared up. From the findings gathered from actual oxygenation studies with a multi-filament dacron cloth, a new and much improved oxygenation membrane has been developed.

References

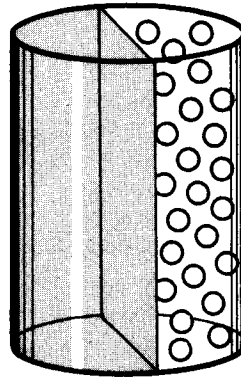
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MEDICAL MONITORS

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Pump-Tech Wanted

On or about July 1st, 1969, a pump-oxygenator technologist is needed in Houston, Texas. Anyone who is interested in this position may contact Beryl Harberg, M.D., at 1418 Medical Towers Building, Houston, Texas 77025. A clinically qualified individual is desired.



Dialysis

The removal of toxins and substances capable of reaching toxic levels in the bloodstream of man is not a new concept. But, indeed, the technique of dialysis has reached practicality only within this decade. The technique is applied to those individuals who have ingested a dialyzable poison or who have suffered the loss of normal kidney function. Of these patients, some have only acute or short term disorders which can be corrected by only a few treatments.

Those who are chronically ill and have suffered permanent renal impairment must undergo dialysis on a continuing basis, receive a kidney transplant, or die. This opens the door to many questions, some old and some new, to evaluate the application of the concept and the inter-relationship of the complex factors which affect it.

The basic techniques are two: hemodialysis utilizing an "artificial kidney" machine, and peritoneal dialysis, in which the patient's peritoneum acts as the membrane awash with the dialyzate solution. Are these techniques clinically applicable as "treatments of choice" for renal disorders and certain poisonings? Is chronic dialysis, as practiced today, an accepted clinical entity or still in a highly experimental stage?

In disrupting the body's delicate balances by the introduction twice-weekly of an extra-corporeal circuit composed of foreign bodies, certain physiologic parameters shift in response to dialysis. Is medicine, at the present state of the art, fully capable of diagnosing, evaluating, and compensating for these shifts and/or metabolic imbalances? What chance does the patient have to lead a normal, productive life though dependent upon treatment?

In institutional programs, the personnel cost is the greatest cost factor while in home programs it is the cost of materials. The psychological makeup of the patient and his family are a limiting factor in determining whether he remains institutionally oriented or can attempt home dialysis. What percentage of the existing chronic dialysis patients could benefit from home dialysis and be released from the more expensive institutional programs? Would it be possible to dialyze more people at home if a technician could assist with their treatments?

The Wall Street Journal article, which has been reprinted in this issue, emphasizes the cost factor in dialysis. This has been of great concern ever since Dr. Scribner completed his first time/efficiency studies. What are all of the factors that affect cost? What areas can and are being investigated to lower the cost per treatment per patient? Could the application of sound business practices, such as volume group purchasing, etc., reduce costs?

What part can the engineer and manufacturer play in making affordable dialysis treatment available to a greater number of candidates? Could an industry-wide price cut see its compensation in profits from increased volume? Are there any steps industry can take in the future to assist in this cost reduction? Would government subsidies to industry to reduce equipment prices coupled with private or insurance funds for the patient have any merit?

The technologist enters as the individual most familiar with the details of operation and the opportunity to develop an insight into improvements in the technique and equipment. What can

Research

Notes

As mentioned in some of the other specialty sections, instrumentation for the collection, processing, and storage of data is on the scene and is being used more and more in experimental programs and research facilities than elsewhere. Will the trend towards more instrumentation/physiologic measurements result in the collection and utilization of more data from fewer experiments? Will the computers be programmed to encompass all or almost all of the variables that exist in a particular experimental project?

What effect will this have on the use of experimental animals? Will it be possible to actually extract more usable data from fewer animal studies? Will it be possible to adjust to new avenues of exploration with less wasted effort? Or will it be necessary, as in the past, to do large groups without change to reflect statistically greater accuracy of observation?

What effect does "computerized" research have on the levels of personnel involved? Is there today a greater demand for the highly-trained, specialized technologist in research than in clinical applications of the Technology? What opportunities and challenges are there available for these technological specialists in research? What is the future demand for the "Jack of all trades" type of research technician that has been the backbone of research in the past? Is there also more opportunity for him to grow into a more specialized, a more valuable individual?

Could it be possible that the clinical specialist is more self-limited than the technological specialist in research? Does the fact that there are more categories of technologist utilization in research point up greater opportunity as a fact? Or are these categories functional rather than actual areas of opportunity and challenge?

Dialysis

his role be in the reduction of costs without sacrificing the quality of the service? Can the cost of personnel be lowered by more efficient utilization? Could, for instance, there be deployment of personnel based on the needs of particular levels of patient care requirements—such as Intensive, Moderate, Minimal, and Home—with more patients assigned to fewer people as the care requirement level became less critical?

Proper medical treatment is under the direction of the doctor, of course. Medically, what role does he play, what factors are under his direct control, and what changes are possible from the medical viewpoint to improve the efficiency of treatment and the quality of patient care while reducing costs?

The services provided for the program by the institution are another major cost factor. What avenues are

open to the institution to improve and expand this patient service? Would more automation, possibly computerized monitors or the like, be an answer? What ideas could be explored in such areas as the more efficient use of personnel laboratory services, room costs, and other program support services?

What does the future hold for the candidate for chronic dialysis? Can the funding be found and the cost lowered to make such treatment feasible? What roles are envisioned for kidney transplantation, "wearable" portable dialyzers, "bowel loop" dialyzers, and chronic peritoneal dialysis? Or, are we awaiting a breakthrough? Is chronic dialysis, as it is practiced today, just an interim service for a small number of patients awaiting the outcome of research to provide a treatment capable of giving service to all potential candidates?

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