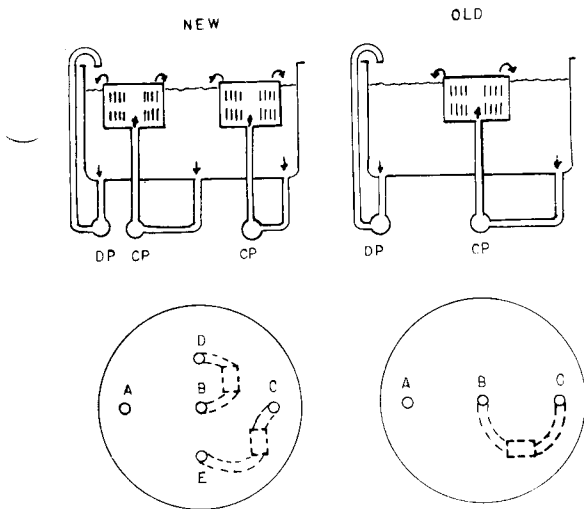


The Conversion To Dialyze Two Patients Simultaneously

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- A Drainage system--Unchanged
- B New dialysate intake orifice
former canister holder stand pipe site
- C Dialysate intake orifice--Unchanged
- D & E New canister holder stand pipe sites
- DP Drain pump
- CP Circulating pump

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An additional Sigmamotor pump was placed on a cart near the artificial kidney and power supplied through the electrical system of the artificial kidney. An additional bubble catcher monitoring system was added to the system. Two additional holes were cut along the edge of the tank cover to allow for separate inflow and outflow tubes from the new coil.

Two selected patients can be simultaneously dialyzed each with a twin coil, a bubble catcher monitoring system, a bath circulation system and Sigmamotor pump; but a common bath. The artificial kidney can still be used for dialyzing only one patient if desired.

The modified machine allows the operator considerable flexibility in control of each patient in that the pressure of the bubble catcher as well as the speed of the Sigmamotor pump can be changed to meet individual requirements. The dialysis of two patients at the same time requires a bath change every one and a half hours instead of every two hours when a single patient is dialyzed.

The conversion has these advantages: The patient load can be doubled with a minimal increase in personnel in the dialysis team; no increase in space, except for the additional patient bed, is necessary for the increased patient load; the cost of dialysis per patient is reduced considerably.

The length of dialysis time remains the same per patient, and no appreciable difference in efficiency has been noted.

VARIOUS modifications of artificial kidney machines have been made to meet varying demands. The conversion of the Kolff Twin Coil at the University Hospitals in Madison, Wisconsin, was one of these modifications.

The hemo-dialysis program at University Hospitals was started in 1961 under the direction of Arvin B. Weinstein, M.D. During the first few years only short term dialysis support was provided for patients with acute renal failure.

In 1966 with the development of the transplant program and the dialysis of chronic patients it became necessary to be able to accommodate more patients and for longer periods of time.

Several expansion plans were studied and the decision was to convert the Kolff Twin Coil Artificial Kidney to accommodate two separate disposable twin coils. The conversion as suggested by Travenol¹ was similar to the conversion used by N. M. Simons, et al, at Passavant Memorial Hospital and Northwestern Medical School, Chicago, Illinois.²

The conversion was done in the hospital machine shop. The stainless steel stand pipe on which a coil canister is mounted was removed from the center of the tank (B) to (D) a point halfway between the center and the edge of the tank and at a 45° angle from the drainage outlet. Another stand pipe was mounted on the opposite side of the tank to accommodate the second coil canister (E). The hole in the center

of the tank (B) was converted to a dialysate intake opening and was connected through the original circulating pump to one of the canister holder stand pipes. An additional circulating pump was mounted below the tank in the area of the original circulating pump. The original intake opening was connected through this pump to the second canister holder stand pipe. The electrical supply was controlled through a switch independent of the original pump. The drainage system was not changed.

Several weeks were spent in obtaining necessary materials and making preparations for the conversion but the actual time the artificial kidney was inoperable was only part of a day.

¹Travenol Laboratories, Inc., Morton Grove, Illinois.

²Vol. X, Trans. American Society Artificial Internal Organs, 1964; p. 183.