Experiences with the Capillary Film Artificial Kidney

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The capillary film artificial kidney (Figure 1) is a disposable kidney of the size of half a cigar box. Since its description in last year's EDTA Proceedings several important modifications have been introduced, resulting in great simplification of manufacturing technique. The kidney is supplied dry and sterile, and after flushing with 500 ml of saline is ready for use. Priming volume is only about 20 ml. At the end of dialysis 100 to 150 ml of saline is sufficient to rinse the kidney almost completely free of blood. In 20 consecutive dialyses passive blood flow without a blood pump has averaged 242 ml/
min the lowest value being 120 ml/min, the highest 430 ml/min. In an average dialysis time of 4 1/2 hours NPN has fallen from an average of 100 mg/100 ml to 56 mg/100 ml. The average weight loss was 1.8 kg, ranging from 0.6 kg to 5.1 kg. Due to the fine membrane support high negative pressures

![Graph of Ultrafiltration](image)

**Figure 2.** In vitro ultrafiltration. 1 Atmosphere = 760 mm Hg

![Graph of Chloride Clearance](image)

**Figure 3.** In vitro chloride-clearance with different negative dialysate pressures
on the dialysate side are possible, resulting in high ultrafiltration rates (Figure 2), while at the same time — contrary to many currently used dialysers — clearance values tend to increase (Figure 3).

Due to its high efficiency and simplicity of operation this kidney would be very well suited for more frequent and shorter dialyses in centre or at home. The capillary film artificial kidney should also be useful for dialysis in children because of its low priming volume and the avoidance of volume shifts into the extracorporeal circuit. For example, in a 6-year old boy NPN was lowered from 184 mg/100 ml to 42 mg/100 ml, creatinine from 9.0 mg/100 ml to 3.8 mg/100 ml in a passive flow 4-hour dialysis.