A Brief History of Chronic Dialysis in the 1960s and early 1970s: Seattle, where it all began

Christopher R. Blagg
Turkish Society of Nephrology
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Pim and Janke Kolff
in 1941 when they
moved from
Groningen to Kampen
after the German
occupation of Holland
Kolff and Berk’s first artificial kidney with a drum of aluminum slats and static open dialysate bath, 1942
Patient #17, Mrs. Sophie Schafstadt, Kampen, 1945 – the first patient in the world whose life was clearly saved by the artificial kidney
John Merrill (1917-1986) used a kidney from Kolff to establish an acute renal failure program in Boston in 1948.
“Scrib” - Belding Scribner 1960
Wayne Quinton, 1960
The prototype arteriovenous cannula system – “the shunt”
Clyde rehabilitated
The Kiil dialyzer ready for use, 1961
1960-62: complications – hypertension, peripheral neuropathy, pseudo-gout and calcium deposits
Rehabilitation

“If the treatment of chronic uremia cannot fully rehabilitate the patient, the treatment is inadequate”

Scribner, 1963
The Seattle Artificial Kidney Center (SAKC), 1962

- The first 4 patients were treated in University Hospital
- and when Scrib asked to start more patients, the hospital administration refused
- In 1961 he asked the President of the King County Medical Society (KCMS), Jim Haviland, for help and with support from the KCMS and Seattle Area Hospital Council, the SAKC was established in Swedish Hospital’s Nurses Residence
- It opened on January 8th, 1962, as the world’s first community supported not-for-profit out-of-hospital dialysis center where nurses did dialysis
Medical miracle and a moral burden
They Decide Who Lives, Who Dies

By SHANA ALEXANDER

Jim Marr was known as the 

leader of a small 
committee who makes the 

life-or-death decisions 

in a hospice setting.

Marr's 

father, John \nMarr, was critically 
ill with cancer, 

and the hospice 

staff recommended ending 

treatment. Marr 

decided to 

fight for his 

father's 

life. 

In the end, 

Marr's 

father passed 

away peacefully.

The Admissions and Policy Committee, 1962
Patient selection
March 1960 - February 1963

- 1960 - 4 patients started at the UW
- 1961 – 4 patients started at the UW and transferred to the SAKC in January 1962
- January 1962 – in the next 13 months the SAKC committees considered 30 candidates:
  - 17 were medically suitable
  - 13 were “unsuitable” and died
  - 10 of the 17 were selected for dialysis and the other 7 died
The silastic single break shunt developed by Quinton
The Sweden Freezer tank, 1962
Robin Eady, 1963

Medical student from London dying of renal failure from chronic glomerulonephritis.

Started dialysis in Seattle in early 1963
In 1963, Albert “Les” Babb, UW Professor of Chemical and Nuclear Engineering, began a cooperation with Scrib leading to new technology.
The “Monster” and the world’s first pediatric chronic dialysis patient, 1964
Home hemodialysis, Seattle 1964

- The 16-year old daughter of a friend of Professor Babb was turned down by the Seattle Artificial Kidney Center.
- He and his staff rushed to make a single-patient proportioning system with monitors and fail-safe devices for safe unattended home dialysis - the "Mini-I".
- This was the prototype for almost all single-patient dialysis machines.
Figure 6. The Mini-I at University Hospital shortly after its delivery in July 1964. The negative pressure monitor is on the second shelf next to the dialysate effluent pump. The conductivity and temperature monitors are in the upper left corner of the chassis drawer. The dialysate temperature was set by rotating the knob below the temperature monitor. An auxiliary test gauge is next to the console on the top shelf.
Caroline training with her mother:  
University Hospital, June 1964
Caroline doing homework on hemodialysis
Home hemodialysis, Boston 1964
The first nocturnal overnight unattended home hemodialysis, London, October 1964
Frequency of dialysis

- Dialysis every 5 to 7 days in 1960 was soon changed to 16 to 23 hours twice a week.
- In 1963 Babb’s group used mathematics to show 8 hours 3 time a week was better.
- With home dialysis in 1964 patients dialyzed 6 to 8 hours three times a week.
- After Shaldon visited Seattle in December 1964 overnight home hemodialysis three times a week became the norm.
Home hemodialysis in Khartoum, the Sudan, using water from the Nile river, 1967
Home hemodialysis at the SAKC

- Home hemodialysis was adopted as a treatment option in 1965
- Because of cost effectiveness and excellent results, the State Department of Vocational Rehabilitation agreed to pay for equipment, training and support
- In 1967, to provide dialysis for as many patients as possible, SAKC adopted the policy that all new and existing patients would go home
- In 1972, 90% of the 130 SAKC hemodialysis patients were on home hemodialysis
Cimino, Brescia and Appel, 1965
Fred Boen and Henry Tenckhoff
Boen’s closed system peritoneal dialysis equipment, 1962
UW’s first home peritoneal dialysis patient with Boen’s system and repeated puncture. 1964
The Tenckhoff catheter, 1968
The Cobe peritoneal dialysis machine, 1968
The Physiocontrol peritoneal dialysis machine, 1971
Jack Moncrieff and Bob Popovich, inventors of continuous ambulatory peritoneal dialysis (CAPD), 1976
The double-blind dialysis room and dialysis for schizophrenia
Daily dialysis started by John Depalma
Los Angeles, 1969
Clyde, Rolin and Harvey at the 10th Anniversary Party, March 1970
Bob Hickman and the Hickman Catheter
Bob Hickman today
Joe Eschbach

1980 – Brunhilda, a uremic sheep being hemodialyzed by Joe

The plasma being infused contains pooled EPO derived from very anemic sheep with normal renal function.
Don Sherrard. Chief of Nephrology at the Seattle VA Hospital

In 1974, he and Lindner first described the complication of cardiovascular disease in dialysis patients.

He became a world expert on renal bone disease, calcium and phosphorus metabolism, aluminum, and related topics.
According to the 2009 United States Renal Data System Report, 1,527,082 patients with end-stage renal disease were being treated in the world in 2007.