VOICE EXPEDITION INTERVIEW TRANSCRIPT
The Oral History of Nephrology
Robert Hegstrom, MD
Interviewed by Dugan W. Maddux, MD
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DWM: (0:01 - 0:23)
It's Tuesday, September the 15th, 2009, and I'm at the Scribner Kidney Center talking to Dr. Bob Hegstrom. Dr. Hegstrom began his nephrology career in Seattle at the University of Washington and continued to provide nephrology care throughout his career in Seattle. And thank you for letting me come to Seattle and for joining me today to talk about this history of dialysis.

RH: (0:23 - 0:24)
It's my pleasure.

DWM: (0:25 - 0:33)
I want to just start with where you were born and raised, which will take us to where you were educated and how you got interested in nephrology.

RH: (0:35 - 1:29)
Well, as I tell my friends, my obituary is going to be very simple and short. I was born, raised, educated, and at some time will die in Seattle. So I grew up in Seattle, central part of Seattle, Capitol Hill, and went to the University of Washington undergraduate school and medical school, from which I graduated in 1955.

I interned on the Cornell Medical Service at Bellevue Hospital in 1955 and 1956 and came back to Seattle where I had the rest of my training, including two years of fellowship, interrupted by two years in the Navy.

DWM: (1:31 - 1:34)
The years of your fellowship, what years would those have been?

RH: (1:36 - 1:45)
1960 to 62, and I stayed on the university as a faculty member for another two years until 1964.

DWM: (1:48 - 1:53)
Where along the way did you get interested in nephrology?

RH: (1:55 - 2:22)
I was interested in hypertension and fluid and electrolytes because Dr. Scribner had taught us very well, and it was for that reason I asked Dr. Scribner if he had any fellowships available, and that's when I joined nephrology.

DWM: (2:22 - 2:27)

So where did he teach you fluid and electrolytes? Was that during your internship and residency?

RH: (2:28 - 2:30)
It was when we were medical students.

DWM: (2:30 - 2:32)
He was teaching medical students.

RH: (2:32 - 2:33)
Yes.

DWM: (2:34 - 2:36)
And what about that was good for you?

RH: (2:37 - 3:29)
It certainly helped doctors managing difficult and very sick patients to understand what was happening with the handling of water, handling of sodium, handling of potassium, all of which could in one way or another account for morbidity or mortality, I mean, die of water intoxication. So it became an important part of medicine, I think, which is sort of taken for granted now in a way, I think, because we never see problems quite like that.

DWM: (3:30 - 3:35)
Did Scribner have an unusual approach to teaching fluid and electrolytes?

RH: (3:37 - 6:28)
His approach was basically a bedside approach in which he set up a cart outside the door of patients that were very sick and experiencing fluid and electrolyte problems, and in the cart were places to collect urine, collect stool samples if necessary, and with a little kit, which was a bedside electrolyte kit, in which we could measure total cation, which was indirectly a measurement of serum sodium, and bicarbonate and chloride, so that it was possible to measure electrolytes at the bedside with these little pipettes or syringes that we were using to determine the bicarbonate level, for example.

That caught our attention as medical students because we were all forced to take on a patient or two and go through the exercise of measuring these different things, and as a result we had a pretty good understanding of the basic principles. Some of the physiology was not entirely worked out, and in fact there was a period back in the early 60s or even the 50s when it was thought that a low serum sodium was the result of a transport system failure, and it was described by some as a sick sodium syndrome, and patients were actually given sodium even though they had peripheral edema and were clearly suffering the effects of an expanded extracellular error.

This is one of the fluid and electrolyte issues that I think Dr. Scribner helped work out and put to rest the idea that a low serum sodium was an indication of a need for more sodium. It was a need for less water and getting rid of the excess water that was contributing to the water intoxication.

DWM: (6:29 - 6:38)
So Scribner made a big impression as a medical student for you, seeing this kind of fluid and electrolyte management.

RH: (6:39 - 7:18)
He did indeed, and his early contributions in the field I think were well recognized. He wrote papers, I think, that were published in the Journal of Clinical Investigation. He got started on interpretation of potassium disorders, and that's when Dr. Burnell stepped in and really devoted much of his research career to potassium problems. Perhaps you've had a chance to talk to Dr. Burnell.

DWM: (7:18 - 7:27)
I have not. What's his first name? Jim.

Jim, that's what I thought, Jim Burnell. I have not. Is he still in the Seattle area?

RH: (7:27 - 7:28)
Yeah.

DWM: (7:28 - 7:28)
Okay.

RH: (7:31 - 7:35)
Still healthy from what I understand in his late 80s.

DWM: (7:35 - 7:50)
Yeah. So you asked Scribner if he had a fellowship for you, and had you had any experience in taking care of kidney patients during your residency and internship?

RH: (7:51 - 8:33)
It was fairly minimal. I'm trying to remember whether I had any patients who were uremic back in New York. I can't honestly answer that.

We certainly saw rare patients with end-stage kidney disease who were, frankly, uremic and suffering all the effects of the pruritus and the obtundation and slow death that resulted from end-stage renal disease. But I was far from an expert in the field.

DWM: (8:34 - 8:45)
So, when you came back to Seattle to do your fellowship with Scribner, were you thinking more about fluid and electrolyte management, renal physiology, or were you thinking about dialysis?

RH: (8:46 - 9:25)
I was not thinking about dialysis. I was thinking about the clinical management of patients with renal disease and maybe even with some attention to earlier diagnosis and perhaps earlier management with steroids or whatever, with patients with immunologic disease. So

it caught me by surprise that all of a sudden, instead of being an outpatient renal doctor, I was an inpatient dialysis doctor, starting in March of 1960.

DWM: (9:28 - 9:33)
So what was going on with dialysis in the hospital in March of 1960?

RH: (9:34 - 10:32)
The first dialysis in Seattle was actually done down at Harborview using a twin coil, a big operation. I mean, the cannulas that were placed, and you tried to keep them open in case the patient had to be dialyzed again. Of course, this was for renal failure.

Earlier in March, Dr. Scribner was inspired to consider Teflon because of its non-clotting aspects would make a suitable cannula, which when shunted would stay open for days on end. In the case of Jim Albers, the same cannula stayed open for 30 years, almost 30 years, maybe longer, I don't know. Isn't that amazing?

DWM: (10:32 - 10:34)
Amazing, it is.

RH: (10:34 - 12:00)
That was not the usual experience, of course. But anyway, this combined with the fact that Dr. Scribner had had a patient a few weeks earlier with end-stage kidney disease that they had dialyzed once but had to send back home, basically to live his last days or weeks at home without dialysis because at that time there was no useful way of extending dialysis. I think Dr. Scribner had kept patients alive for a month or so without dialysis, but that's about it. No one had ever lived more than three or four weeks on dialysis. And it was an access problem, of course. So as soon as the access became available, or so it was thought, and after the first placement, it tested out as workable.

That invited the introduction of Clyde Shields to long-term dialysis. The cannula was placed and he was on his way, starting in March of 1960. Two weeks later, Harvey Gentry was started.

DWM: (12:01 - 12:06)
When had you arrived in Seattle for your fellowship? How did that correlate with when you got here?

RH: (12:09 - 12:58)
Actually, after my internship, Dr. Williams, who was chairman of the Department of Medicine, invited me to come back for my medical residency. So I had another year of medical residency, two years in the service, and then came back for part of a medical residency. In fact, I was a medical resident in March of 1960 when this all started.

And Dr. Scribner came down and said, as of tomorrow you're going to be a fellow. He had worked it out with the chief of the medical departments for the rest of my rotation that I wouldn't have to complete my medical residency. I became a research fellow.

And Dr. Kainer took my place as a resident.

DWM: (12:59 - 13:01)
Why did he come ahead and bring you early?

RH: (13:01 - 13:09)
He realized he was on to something and he needed help. And that's all I can say.

DWM: (13:09 - 13:11)
What did he want you to do?

RH: (13:11 - 17:37)
Manage patients, be available to supervise dialysis and play a role in the clinical management of patients once they were started on dialysis. And of course it didn't take long before we realized that we had a tiger by the tail. Dialysis would seem to be possible on an intermittent basis, but the cannula is staying open.

And all of a sudden the reality shock hit us. Now what do we do? What are we going to do with these patients?

How are we going to manage the hypertension? In fact, Clyde Shields had malignant hypertension earlier on. It became obvious that from the weight gain between dialysis that they were consuming an enormous amount of sodium.

The weight gain would be 3 or 4 kilograms and their serum sodium would not change appreciably. So it meant that for every kilogram they were gaining 140 milliequivalents of sodium. And even though most of the time they didn't have peripheral edema, it was quite clear that volume was a big factor in the hypertension.

And that was part of the reason that we changed from a once a week dialysis schedule, if you can believe that we would ever consider keeping patients healthy, dialyzing once a week, to twice a week. Dr. Scripner mentions that it allowed us to better control weight and hypertension. You have to remember that the drugs available for treating hypertension were quite limited in 1960.

We had Reserpine, we had Hydralazine. The ganglionic blockers were too potent and I think difficult to use in patients who had a fluctuating blood volume from one period to another. I mean, if you gave them a ganglionic blocker when their blood volume was a little bit less, you could just do great harm to them.

So we didn't use those drugs. In fact, after our dieticians got to work on them and our formula for diet became fairly easy in principle, 40 milliequivalents of sodium a day, 40 grams of protein a day. And of course the patient couldn't really follow that diet very well.

But they tried harder and were able to bring Clyde's malignant hypertension under control. In fact, he eventually became normal-tensive. And Harvey Gentry didn't have a great problem with hypertension, so that made it easier to control him too.

But that led to the dry weight principle, which I think is still followed somewhat in dialysis centers. You had to get patients down to dry weight. But what was interesting, one of our fellows who came on later became interested in this problem and was able to do radioactive bromide studies measuring extracellular volume.

And what he found was that even after dialysis, their ECV was still expanded. So it really made the point. A paper was published in Lancet, I think, in the mid-1960s.

So that was one problem that we were able to take care of. Other problems that we didn't foresee were metastatic calcification, which showed up quickly. Metastatic calcifications in muscles around fingers.

DWM: (17:38 - 17:45)
That you had not been seeing with acute dialysis at all. It had just never been an issue until you start this chronic dialysis.

RH: (17:47 - 18:56)
So it was pretty easy to figure out why this was happening. We just measured the serum in phosphate levels, and the calcium phosphate product was twice normal. Like phosphate levels of 8 or 9, and the serum calcium level of 8 or 9.

It was just an invitation for the occurrence of metastatic calcification. So what to do? Well, it was actually Dr. Scribner's idea that we could use an aluminum gel to bind phosphate. He ran across that, I guess, somewhere in his medical residency. Of course, it helped. Along with trying to reduce phosphate intake.

Giving up milk and things like that. So that helped, but it didn't entirely prevent secondary hyperparathyroidism. Did you ever have patients with secondary hyperparathyroidism?

DWM: (18:56 - 18:59)
All the time, yes.

RH: (19:00 - 20:34)
So this led to some studies that were initiated by Dr. Curtis, one of our fellows, who worked with Clayton Rich, a calcium specialist at the VA hospital in Seattle. They had a bioassay of vitamin D, and it was soon evident that our patients were not absorbing calcium very well, and that their vitamin D levels were low. So, accounting for the fact that the serum calcium was usually a little bit low, I don't think we ever saw really, despite the secondary hyperparathyroidism, I don't think the serum calcium ever got much above normal.

So that's when we started adding calcium carbonate to the program to try to increase calcium absorption in vitamin D, just a plain old-fashioned vitamin D, not the 125-calciferol that came later, which made it so much easier. So that eventually did away with a lot of the calcium and parathyroid problems. I don't think we had to operate on patients for secondary hyperparathyroidism more than a few times.

I know this is a problem in most institutions, but...

DWM: (20:36 - 21:02)
Let's go back then to March of 1960, when Scribner realizes that he's got a shunt that will allow him to do chronic dialysis. I mean, Clyde Shields has this shunt put in. I gather, pretty quickly, Scribner realized that this was going to allow him to chronically dialyze people.

Just to understand that quickly, I mean, what a difference that was going to make is pretty remarkable.

RH: (21:03 - 21:20)
He set his mind to it. He actually decided in advance that all he needed was a cannula that would stay open and we could keep these people alive. After all, we kept people alive with acute renal failure.

Why couldn't we do it for chronics?

DWM: (21:21 - 21:22)
To adjust the access.

RH: (21:23 - 21:34)
It didn't take him long to realize that this was going to become a widespread treatment, although it took years for it.

DWM: (21:34 - 21:52)
How many patients, do you believe, when he came to you and said, I'm going to take you out early and bring you over to the renal fellowship early, do you think he thought, then I'm going to have three patients or five patients? How many patients do you think he thought he was going to have right away that would benefit from that?

RH: (21:52 - 23:27)
He started with the two, added two more, Jack Capilotto, who died after two or three months of transfusion-related hepatitis. He was one of the first dialysis-associated hepatitis cases. Jack Capilotto.

You'll see him mentioned in here as J.C. And Roland Hemming, you saw his picture. And about that time, the Department of Medicine got a NIH grant, which was an open, non-directed grant to be used by the Department of Medicine for clinical research. And the hospital set aside a whole ward, mostly single and double rooms, for clinical research.

And that's when we were able to get the financial incentive to add more patients, and it wasn't too long after that that Jim Albers was treated. This is in the clinical research center where he was being dialyzed. It's too bad they didn't get a picture of his wife-to-be, Joanne.

She was... His nurse. She was a key part of the success.

She really was an enormous contributor.

DWM: (23:28 - 23:33)
What did Joanne do? What role did she play that you think made...

RH: (23:33 - 24:11)
A little bit of everything. I mean monitoring dialysis, helping patients establish themselves in bed, and later on to actually become facile at declotting in patients who had clotted cannulas during the dialysis period. So they were an enormous part.

You have to remember that our dialysis went on for 14 hours. The patients would come in in the afternoon and dialyze all night, go home the next morning.

DWM: (24:13 - 24:17)
And you're in this picture. What are you doing here?

RH: (24:17 - 24:25)
I'm just there to be part of the picture. I guess I was supposed to be hooking up the lines or something.

DWM: (24:25 - 24:40)
Was that one of the jobs you had, actually hooking up the lines? What would be... When Clyde Shields came in, were you involved in his treatments to getting him on the machine and what all would be your responsibility?

RH: (24:43 - 26:16)
To go over him medically to make sure that his lungs were clear, there was no sign of infection, that the blood pressure was reasonably controlled, and then to attach the blood lines to the cannulas. But before very long, our nurses were able to do that so we didn't have to participate in that, but we still checked patients every time they came in for dialysis. The frequency of schedule was of course an important issue and one that we couldn't define in advance, but it was obvious that the patients weren't being adequately dialyzed after six or seven days.

And it became even more obvious when I had a chance to observe Clyde Shields walking down the hall to this room at the end of the hall with a flapping gait, obviously suffering a peripheral neuropathy, and that's when we got on to the study of the peripheral neuropathy. Is there something that we're not taking out? Is there something that we're taking out too much of, like vitamins, water-soluble vitamins, or just what is going on?

And that's when the neurologist tapped me on the shoulder and said, you better dialyze more. He was right.

DWM: (26:18 - 26:21)
So because you all were originally doing one day a week.

RH: (26:21 - 26:21)
Right.

DWM: (26:22 - 26:23)
How quickly did you decide?

RH: (26:23 - 26:26)
24 hours. Well, I think it was 16 to 24 hours.

DWM: (26:27 - 26:31)
How long did it take you to decide we've got to do more than one day a week?

RH: (26:32 - 26:37)
Oh, I think within three or four weeks we realized the patient was getting sick.

DWM: (26:39 - 26:41)
And then you went up to twice a week?

RH: (26:42 - 26:42)
Yes.

DWM: (26:43 - 26:47)
And how long did it last that you were able to get by with twice a week?

RH: (26:48 - 27:23)
We were still doing twice a week when I left in 1964, and I can't tell you whether that really changed before the proportion pump dialysis system came along, and new dialyzers made it quite possible to dialyze several times a week. In fact, in Seattle there are some patients now being dialyzed just about every day. Is that true in North Carolina?

DWM: (27:24 - 28:00)
Well, we've certainly seen a lot of interest in home hemodialysis and slow daily or slow nocturnal hemodialysis, which is five days a week, and seen very good success. I mean, the financial model for that is a little more difficult. I think that's been the struggle everybody's had is that looks like people are healthier, but how do you afford that?

How do you pay for that? And, of course, some people don't want to be dialyzing every day. That's a lot of commitment on their part, time commitment for the patients as well.

RH: (28:01 - 28:24)
Well, I haven't been involved in anything like that since I've been retired for so many years, but I do have contact with patients being on the foundation board, and they universally rave about the improved well-being of a regular dialysis.

DWM: (28:25 - 28:44)
Yeah, that's true. With Clyde Shields, then, in these early patients, you would come in and evaluate them medically and make sure they were stable and initiate the dialysis treatment, and then would the nurses stay with them throughout the treatment? Who would be involved?

RH: (28:44 - 29:34)

Nurses, or later on at times, nursing aides would be with the patient all night while they were being dialyzed. One of us, fellows, would have to stay in the hospital during that period of time because there's so many things that go wrong. Like what?

Well, like the bloodline being disconnected and the nurse having to act as an emergency to stop the bleeding or a cannula falling out, things like that. A lot of things like that could happen.

DWM: (29:35 - 29:37)
Did the cannulas fall out?

RH: (29:39 - 29:43)
Yeah, they were only in about so far. And Teflon's very slippery.

DWM: (29:44 - 29:48)
I guess that's one of its good properties is it's slippery.

RH: (29:49 - 31:08)
There were other problems that were unexpected, such as the fact that one time the dialysate bat became infected with bacteria, and it was an acid-forming bacteria that used up all the bicarbonate in the dialysate and created a severe metabolic acidosis and coma in one of the patients. But it used to be on the cardinal rules of being involved with dialysis, if something goes wrong, the first thing you do is stop dialysis. And doing that and then measuring electrolytes we realized the patient's bicarbonate was down to 5 or 6 or something.

So we became a little more antiseptic in our care of the dialysis tank, which is this thing. The dialysate came in 300-400 liter amounts in a freezer, wheeled up, and used for 14 hours. So lots of time for bacteria to grow.

DWM: (31:09 - 31:18)
Because it was a big open tank. Everyone knew there was bacteria in the dialysate. I guess the membrane...

RH: (31:18 - 31:18)
It had glucose.

DWM: (31:19 - 31:21)
It was a perfect environment.

RH: (31:21 - 31:22)
A culture medium.

DWM: (31:25 - 31:30)
How did you figure out it was the bacteria, an acid-forming bacteria?

RH: (31:31 - 32:00)

We measured the bicarbonate level in the bath and realized it was very low. And felt quite assured, since nothing happened right away with dialysis, that it must have been a consequence of an acid-forming bacteria. And Dr. Sherris, who was head of microbiology for the hospital lab, came up and took samples of fluid. In fact, it was E. coli, I think.

DWM: (32:01 - 32:26)
Figured it out. I was just talking to Jack Cole, and it sounds like the setup for the dialysis, from his standpoint, setting up the dialyzers and all that, was certainly a very arduous task, getting ready for a dialysis, particularly with the Skeggs-Leonard dialyzer, which I'm guessing you were still using in 1960 when Clyde Shields died.

RH: (32:26 - 32:39)
Yes. And for a few months after that, I can't remember when we started using the Kiehl, but later in 1960 or maybe 1970, I mean 1960 or 61.

DWM: (32:41 - 32:50)
Moved over to the Kiehl, which was still heavy and a big dialyzer, but was much easier to set up, I guess.

RH: (32:50 - 32:50)
Much easier.

DWM: (32:51 - 32:51)
Yeah.

RH: (32:52 - 32:57)
And with fewer flaws in the assembly.

DWM: (32:58 - 32:58)
Yeah.

RH: (32:58 - 33:18)
It was pretty hard to go wrong putting that together. Just two layers instead of the eight layers or whatever. We used two Skeggs-Leonard in parallel, and I think it was a total of at least eight or twelve layers that had to be assembled.

DWM: (33:19 - 33:38)
You were mentioning these early patients, Clyde Shields and Harvey Gentry. Were you aware that the selection committee was the selection committee already involved during that early time, or when did that come into play?

RH: (33:38 - 33:49)
The selection committee came to be when the kidney center opened in 1962.

DWM: (33:50 - 33:58)
How did you decide then in the early days when you were still in the hospital who would be able to start chronic dialysis?

RH: (33:58 - 36:26)
It was determined by medical criteria. Younger than age 35, no hypertensive cardiovascular disease, no diabetes, or no other chronic illness that would shorten longevity. Well, that wasn't followed strictly, but it was a guideline that was followed because we didn't have money to just take unlimited patients.

Now, there were some patients, like Rob and Edie, that their family were able to pay dialysis, and I think we had one or two other patients that paid for dialysis. But of course, that's not the system that we wanted to set up. We thought everyone should have access.

But in 1962, it became obvious that medical criteria wouldn't be enough, and that we had to have a selection committee. And one of the key people of the selection committee was a minister who was very doubtful that he wanted to get started selecting patients. He did not want to play God's helper.

But then he realized that he wasn't playing God because all these patients were going to die. It was just a matter of picking some patients that would have the best chance to be productive and contribute an income, being able to go back to work. So that's when the selection committee...

There were two selection committees. One medical selection, which was made up of nephrologists in the area. There weren't too many of us then.

And after we screened patients, and eventually we used diabetes as one of the eliminating diagnoses, and age, we set the standard 60 or 65, rather than 35.

DWM: (36:28 - 37:02)
Well, there were also issues. I know early on, we were just looking at Caroline Helm. She was too young.

In the early days of the selection committee, she ended up on home hemodialysis because part of it was were they supporting other people in the household? And she was actually a little on the young side. Nobody depended on her or anything like that.

So she fell out of the selection committee approval because she was actually too young.

RH: (37:05 - 37:38)
I do remember her. I don't remember all the details. But it was at about that time that Dr. Hickman, a pediatrician, became involved, and Children's Hospital, which was a pretty wealthy hospital, was able to start funding dialysis in children. So that solved the issue of whether children would ever be treated.

DWM: (37:40 - 38:02)
Funding. It's so funny how much of it is money-related and funding-related. You all had access issues and medical issues early on in dialysis, but funding was also a non-medical issue that really made a big impact on who could be dialyzed and who couldn't.

RH: (38:03 - 38:56)
It was an enormous impact. We were hoping in 1960 to get an NIH grant substantial enough that we could add several more patients. We reached the point of having a site visit, which I think was in January of 1961.

Dr. Lou Weld from North Carolina, Saul Sherritt from Washington University, and I think Dr. Harrington from University of Rochester. Most of the grant was turned down. They gave us some money for a few studies, but there was not enough money to support an expanded dialysis patient treatment program.

DWM: (38:56 - 38:57)
Why did they turn you down?

RH: (38:58 - 40:20)
One of the reasons given, and of course I'm not privy to what went through their minds, but they thought we were not doing a controlled experiment. They were being careful scientists, and they thought we were just doing clinical medicine, and that it didn't qualify as research. But Dr. Scribner was able to get a Hartford grant, which helped tide things over and made it possible to add a few patients. And then Dr. Haviland, which you'll read about, helped get the Northwest Kidney Center, at that time called the Seattle Artificial Kidney Center, set up down at Eklund Hall, associated with Swedish Hospital. That was had opened in January of 1962. And there was enough pressure on our state legislators that they came up with about a million dollars a year to help finance that.

And that continued for several years, I think until the end-stage renal disease financing program went through in 1972.

DWM: (40:21 - 40:26)
That must have made a big difference, that funding through Medicare.

RH: (40:28 - 41:52)
Huge difference. In fact, not all positive, but 95% positive. The negative aspects related to the fact that it was impossible for us to turn down patients for dialysis.

It was an open door, whether they had diabetes, just about anything other than a fatal cancer, they became patients. And of course, we ended up with patients up to 80 years old who were not very happy or not very suitable dialysis patients. And they were the ones who didn't stay around very long.

That was the negative. But everything else was just positive. It was such a delight to say, yes, we can do it, we'll get you set up.

And of course it didn't take very long before it was obvious that Eklund Hall would not be suitable or wouldn't have space enough for patients. And that's when the new kidney center opened across the street from Swedish Hospital, where it's located now.

DWM: (41:52 - 41:52)

Right.

RH: (41:53 - 41:58)
Except for the new one. Are you going to see the new one on Cherry Hill?

DWM: (41:58 - 42:07)
I haven't seen it. I don't know that I'll see that this trip. I have been to the one downtown when I met with Chris Blagg.

I was downtown, and now I've been here.

RH: (42:08 - 42:16)
It's a marvel. It's a nephrologist's delight and a patient's delight. It's just spectacular.

DWM: (42:17 - 42:34)
I'm not sure that anyone expected in 1972 how many people would end up being on dialysis. Do you think you imagined, can you remember back to 1972, did you imagine how many people would ultimately be dialyzed?

RH: (42:37 - 43:16)
I had no idea. And we were, I think, worried about the expense, because even then dialysis was quite expensive. I think the estimate, even back then, was $30,000 a year per patient or so.

Little did we realize. I'm not quite sure what is the number right now of patients being dialyzed. It's $40,000 or $50,000 or more?

DWM: (43:16 - 44:02)
More, yeah. I mean, hundreds of thousands. So, yeah, a lot of people being dialyzed today.

I want to go back to being denied for this NIH grant where they thought this was clinical medicine, this wasn't really research. And it seems like, as I talked to people, that there was a lot of feeling that this was not science, that what you all were working on in Seattle was not science. Did you feel like there was a lot of, like there was a nephrology community that was very research-oriented and very science-oriented, and they sort of looked down on the folks who were providing clinical care through dialysis.

Did you ever see that?

RH: (44:02 - 46:17)
Well, that's true, but we did quite a few studies that were published in other journals that I think were of some value. I mentioned the bromide study, studies with glucose metabolism and the influence of dialysis, whether or not we could improve insulin resistance, and, of course, Joe Eshbaugh and blood studies. But I think that's true, but that we were considered clinicians more than researchers, although most of the people in the dialysis field recognized the contribution and thought that it was very important.

In fact, there was concern even at the University of Washington Department of Medicine that we were using up all their money and not doing studies that showed up in the Journal of Clinical Investigation or the Journal of Medicine or other important journals. And they were complaining to Dr. Williams about that. Dr. Williams called me in one day and said, Bob, you know there's a lot of criticism from other faculty members about all the money, all the space being used for the dialysis program. Are you really doing something that's going to be important? I said, yes, Dr. Williams, it really is. We're keeping people alive.

And he said, well, you know, I just got through talking to Dr. Schreiner, and he said the same thing. So it was a wonderful confirmation, and everyone in the dialysis field was very supportive. But the physiologist, the renal physiologist, of course, didn't think.

DWM: (46:20 - 47:09)
This time of the late 1950s through the 1970s where dialysis changed so much, access, dialyzers, membranes, treatments for calcium, calcium phosphorus metabolism, understanding that, anemia, some of this was a lot of change very quickly, I mean innovation happening very quickly. And I was talking earlier with Jack Cole about the fact that there wasn't always a randomized controlled trial to see whether things worked. There was a lot of observational change and trial and error change.

Would you say that's true as well?

RH: (47:10 - 48:35)
That's very true. And an example of that are some studies that we did that never got published, although I may have mentioned it in one of the papers. We wondered whether urea was really contributing to uremia.

I hate to admit it, but we put urea in the dialysate to see what would happen, and it became obvious that urea was making our patients very sick. So we didn't do that more than a couple of times. That's the trial and error sort of thing.

There was also interest in some people in the hypertension field who wrote that thiazides may work directly on vascular resistance rather than just as a diuretic. And we were able to use parenteral thiazides in our basically anephric patients, and it had no effect whatsoever. And of course our patients didn't respond to Lasix either at that point, although later on we were accepting patients that were still a little responsive to large doses of Lasix.

DWM: (48:36 - 48:42)
Everybody you were accepting were essentially aneuric, anephric.

RH: (48:42 - 48:58)
Two or three hundred cc's a day. Harvey Gentry had a creatinine of thirty. And they had an aggregate of fifteen when he started on dialysis, and he lived more than thirty years.

DWM: (49:00 - 49:10)
Was that typical of the patients coming? What were the patients like by the time they got to the point where they were accepted for chronic dialysis? Would that have been typical?

RH: (49:12 - 49:34)
Well, they weren't in a uremic coma. They didn't have severe manifestations of pruritus with the scratch marks all over. But they had fatigue and lassitude and very abnormal chemistries.

DWM: (49:35 - 49:37)
Did you see uremic frost?

RH: (49:39 - 49:40)
I don't remember seeing uremic.

DWM: (49:43 - 49:48)
That's a good thing, I guess. Were you involved at all in peritoneal dialysis?

RH: (49:49 - 49:51)
Essentially not.

DWM: (49:51 - 49:58)
That was sort of happening also in the 1962-63, Fred Boone and Henry Tinkoff.

RH: (49:59 - 50:27)
Yes, you're going to be seeing Dr. Tinkoff. Maybe I have a chance to just look at this little section on peritoneal dialysis that Dr. Scribner described. It describes what Dr. Tinkoff's contributions were. The Tinkoff catheter, which he designed with a sleeve that reduced the risk of peritonitis.

DWM: (50:30 - 50:37)
Good. I'll take a good look at that for sure. Because it was sort of happening, I guess, but not overlapping then with the...

RH: (50:38 - 50:44)
It started in about 1962, I think, or 63.

DWM: (50:45 - 51:03)
Tell me which meetings you would have been attending in the 1960s, 62, 63. Were you going to ASIO? Did you go to the early days of the ASN?

Were there meetings where people were gathering to talk about dialysis?

RH: (51:04 - 51:51)
Most of the talk about dialysis occurred at the annual meeting of the ASCIO, which was in the early days held in Atlantic City in conjunction with the Federation meeting, so that the basic science papers were delivered, renal physiology and pathology and the whole field of basic science research and medicine. So we were able to spill over and take in some of the other papers that were being delivered at that time. There was overlap.

The ASN didn't come along, I think, until the late 60s, wasn't it?

DWM: (51:52 - 51:54)
Yeah, probably mid-60s.

RH: (51:54 - 52:07)
I would go to those meetings, and we had a Northwest Renal Society meeting every quarter, which kept us up to date.

DWM: (52:10 - 52:18)
Were people coming in to Seattle to learn about dialysis? How did you all share this information and experience you were having here?

RH: (52:19 - 53:05)
We had people coming from all over the world. South America, Dr. Molinari from Brazil, Dr. Charles Mion from Montpellier, France, doctors from Japan. We had two doctors from Switzerland, one of whom contributed that paper on the bromide in space, Dr. Bloomberg, and from Eastern Europe, it was Canada, Carl Sjostrand from Sweden spent time with us. So they were coming from all over.

DWM: (53:06 - 53:09)
And patients as well coming from all over?

RH: (53:10 - 53:42)
No, except for Robin Eady. So your patients were still... There may have been a few patients after the Medicare funding who moved to Seattle.

I think, in fact, a couple of those patients are still alive, having moved to Seattle from Texas because they wanted to be heard. The dialysis was available for them.

DWM: (53:43 - 54:16)
It does sound like I've talked to some other nephrologists who were involved in setting up demonstration projects in other parts of the country, John Bower in Mississippi, for example. And I do gather that they really looked to the Seattle experience to help them figure out how to start up an outpatient unit, equipment, access, and for progress. So it does sound like you all were the center of knowledge for early dialysis.

RH: (54:17 - 54:51)
We had visitors from dialysis centers around the country, Boston, both Tufts and MGH, and North Carolina, Bill Blythe spent some time with us. I think Dr. Mayer came from Georgetown. We had visitors from Cornell and California.

So they just became part of the team.

DWM: (54:53 - 55:08)
Tell me about Dr. Scribner. What kind of person was he, and do you think what made it possible for him to have started all of the dialysis and persevered through all the failures?

RH: (55:10 - 56:19)

Dr. Scribner was a dreamer. He would wake up at night with inspiration, and it often led to some very dramatic improvements. I think it was probably a time like that, when he couldn't sleep, that he started thinking about proportion pumps in order to avoid making dialysis in bulk amounts.

So you just pipe in some water and some concentrated electrolytes and make the thing work. But above all, he was truly dedicated to keeping patients alive. I think there were probably a few cynics that thought that maybe he was just trying to make a reputation for himself.

But he really was inspired by patients, and that's why you see patient pictures with him. He got to know the patients quite well.

DWM: (56:22 - 56:24)
When did you leave the program?

RH: (56:24 - 56:25)
1964.

DWM: (56:26 - 56:27)
What did you do?

RH: (56:28 - 57:37)
I moved in 1964 to join Dr. Richard Patton to start the nephrology section at Virginia Mason. At the time, there was no dialysis there, but the kidney center was established so that we could refer our kidney patients for dialysis. We soon developed an acute dialysis program so we could take care of our own patients if there was a medical problem that came up without referring them to the kidney center.

And this led, of course, eventually to the transplant program, which we started about 1970, I think. Probably just after 1972. And that became a successful program.

And then we did more transplants than any other hospital in the state.

DWM: (57:38 - 57:40)
And this is Virginia Mason?

RH: (57:41 - 57:41)
Yeah.

DWM: (57:42 - 57:48)
It's down by Swedish Hospital. Swedish Hospital, and it's a hospital system, a hospital itself. Yeah.

RH: (57:50 - 58:04)
There's an adjacent clinic. Eventually it was unified. The physician-owned clinic was made part of the hospital medical center.

DWM: (58:05 - 58:14)
So you were very involved in transplantation pretty early on in 1970. How successful was that, the early transplant?

RH: (58:16 - 58:35)
It was hit or miss, because tissue typing was not quite as good at that time, and anti-rejection treatment was not great. That's before cyclosporine.

DWM: (58:35 - 58:37)
Imuran, prednisone.

RH: (58:37 - 59:04)
That's what it was, Imuran and prednisone. I still run into patients today who were transplanted more than 30 years ago, treated that way. They were alive and healthy.

With kidney that they received from a sibling. So we stacked the deck a little bit. I don't think we did as many cadaver transplants.

DWM: (59:07 - 59:08)
And you're retired now?

RH: (59:08 - 59:12)
Yes, I've been retired for 17 years.

DWM: (59:13 - 59:14)
Still living in the Seattle area?

RH: (59:15 - 59:15)
Yes.

DWM: (59:16 - 59:19)
And you've been involved still with the Northwest Kidney Center?

RH: (59:20 - 59:28)
On the board of the foundation of Northwest Kidney Center.

DWM: (59:31 - 59:41)
I want to take a minute and go through a couple of these things that you have brought in, and just talk about maybe the people that I'm going to be able to read about here.

RH: (59:46 - 59:47)
Here's a special person.

DWM: (59:47 - 59:49)
Yeah, tell me about...

RH: (59:49 - 1:01:08)

Well, Ethel joins Scribner as a second wife in the late 60s, early 70s. And became as devoted as Dr. Scribner to the issue of taking care of patients with end-stage renal disease. And she was very supportive, traveled with them to meetings, and was with them more or less constantly.

And the two of them, for many years, lived in a houseboat down on Portage Bay. And Dr. Scribner would paddle off every morning across Portage Bay to University Hospital, right up until the time that he retired. And Ethel would take care of the houseboat.

A delightful lady. And I don't want to say too much more about her.

DWM: (1:01:09 - 1:01:12)
How about Dr. James Haviland?

RH: (1:01:13 - 1:03:00)
Dr. Haviland was an early supporter, and in fact an early part of administration of the University of Washington Medical School. He came from Johns Hopkins. He did his work in infectious disease before he arrived in the mid-40s.

Having, I think, been stationed in the military here, he stayed on and practiced internal medicine part-time and served as assistant dean of the medical school. And later, after Dr. Turner left, he was acting dean. So he was very much a part of the medical school.

But he was also very much a part of the medical community. He was president of the King County Medical Society at the time that it became obvious that an outpatient kidney center would have to be developed. And he was instrumental in getting the support of the doctors in Seattle and the support of the Swedish hospital by providing space and by campaigning in Olympia, the capital, for money to start the Northwest Kidney Center treatment program.

He deserves a lot of credit, and that's why the downtown dialysis unit is called the Havlon Center.

DWM: (1:03:02 - 1:03:09)
We were talking about Reverend John Dera, who was part of the selection committee.

RH: (1:03:09 - 1:03:09)
Yes.

DWM: (1:03:09 - 1:03:10)
Yeah.

RH: (1:03:12 - 1:03:42)
I remained friends with Dr. Dera. And when we were together alone, he'd almost say, I never regretted being on that team because I knew that those patients were going to die and we could save some of them. He felt honored.

But after 1972, it was unnecessary. So he had a short career, thankfully.

DWM: (1:03:43 - 1:03:44)
Thankfully, yes.

RH: (1:03:45 - 1:03:47)
Dr. Blagg, I'm sure you've met.

DWM: (1:03:48 - 1:03:59)
Yeah, Chris Blagg has certainly been a part of this program for many years and has wonderful history. He's recorded a lot of history, written it down, and then he...

RH: (1:03:59 - 1:04:00)
Yeah, he's still working on it.

DWM: (1:04:00 - 1:04:01)
Yeah.

RH: (1:04:03 - 1:04:05)
Dr. Ahmad is head of this unit.

DWM: (1:04:06 - 1:04:17)
Right. I have not met him, but I've heard about him. And then Jack Cole, I just talked with earlier, who certainly had an integral role in a lot of the development of the dialysis.

RH: (1:04:20 - 1:05:14)
This is a remarkable woman who still serves after umpteen years of end-stage renal disease. Presently, she's on the board of the Northwest Kidney Center Foundation and very much alive for her. But it's truly a remarkable story.

At 66, she, in her teens, she became kidney failure. She was accepted by the admission committee and obtained education and nursing degrees, raised two children, been regularly employed, and is a patient advocate for education and public policy. She has experienced all forms of dialysis and now lives with her fourth kidney transplant.

DWM: (1:05:14 - 1:05:16)
Amazing. Nancy...

RH: (1:05:16 - 1:05:16)
Space.

DWM: (1:05:16 - 1:05:17)
Space.

RH: (1:05:17 - 1:05:19)
She's around if you'd like to...

DWM: (1:05:19 - 1:05:21)
Yeah, I'll have to see if I can't talk with her.

RH: (1:05:21 - 1:05:26)
The kidney center would be able to set up an appointment with her, I think.

DWM: (1:05:27 - 1:05:42)
All right. Joe Eschbach died just about the time I started this project, so it sounded like he devoted his entire life to erythropoietin research and...

RH: (1:05:42 - 1:05:45)
Yes, he took care of patients. He had private practice.

DWM: (1:05:45 - 1:05:48)
In addition to doing that research, yeah.

RH: (1:05:49 - 1:06:11)
He respected the world, certainly very respected in Seattle. In fact, when I came back from military service to continue my medical residency, he was my intern. So we were lifelong friends.

DWM: (1:06:11 - 1:06:39)
Yeah, here in the same area. And I haven't, you've just brought this up, I haven't had time to look through this, but it looks like it has contributions from you and Jack Cole, Chris Black, talking about the early history of the program here. Is there anything in here in particular you want to make sure that we talk about that I'll come across in this article?

RH: (1:06:42 - 1:07:12)
No, we've talked about the funding program, and we've talked about the issue of is this medical research or just what, and Dr. Scribner comments on that when he was on. At a time when he was up for promotion and for eventually getting tenure, there were some critics wondering whether he was really doing research or not here.

DWM: (1:07:12 - 1:07:16)
So there was a question about his tenure at the Department of Medicine?

RH: (1:07:16 - 1:07:35)
Well, I never heard the story, so I don't know how much pressure there was on him. He made a reputation for the Department of Medicine, so I don't see how they could possibly have turned him down for tenure. As far as I know, he got tenure.

DWM: (1:07:37 - 1:08:33)
Well, part of working on this project is to look back at that time in the late 50s and through the 60s when there was just this tremendous innovation for dialysis. I mean, I trained, and I never have told a patient in the 20 years of my dialysis practice that their kidney disease was a fatal disease and that we had no treatment for it. I can't imagine having to say that.

And I think that looking back, you all lived through this time where there was just dramatic change and taking this fatal disease and providing treatment to large numbers of people chronically for it was such a dramatic change. I'm not sure we can all fully appreciate it

except standing where we are today, looking back at that and say, I can only imagine the courage that it took to get through those times.

RH: (1:08:33 - 1:08:55)
You might have seen it in reverse, though, since there are rare patients who decide they just can't stand dialysis and they want to stop. And then they show all the signs of end-stage renal disease and, of course, die of hyperkalemia or something.

DWM: (1:08:56 - 1:09:16)
Yeah. Well, it does, I think, looking at the history, reminds us that this is a dramatic treatment and it's a difficult treatment for patients and that there will be people who choose to, whether they're older or sicker, choose to just die with their kidney disease and that certainly is a choice they have.

RH: (1:09:19 - 1:10:04)
Patients should always have that right of refusal, I think. It's rare that they do, and if the patient does, the family intervenes to make sure that grandpa gets treated. One of my former colleagues as a nephrologist at Virginia Basin was called by a referring doctor who had a patient 98 years old whose family wanted to go on dialysis.

Dr. Chris, I think wisely, suggested that that not be done. That would be a miserable experience for the patient, not had more than a few months.

DWM: (1:10:07 - 1:10:21)
What do you think is the future for dialysis today? What do you think will make the next big sort of improvement for dialysis patients that we'll hopefully see in the near future?

RH: (1:10:22 - 1:11:29)
Well, I shouldn't be asking that question because I've sort of been away from it for so many years, but I think more frequent dialysis, made possible by something that can be done in the way of vascular access that is not unpleasant for patients. And I don't know what that would be, but I guess we'd all like a valve or something that you could just turn and start dialysis. But I think that it's also hoped that we can expand renal transplantation to prevent the ongoing increase in dialysis population and maybe even reduce it back to a fairly small number.

But I don't know how that's going to be. Certainly. We often transplant.

DWM: (1:11:30 - 1:11:42)
Pre- and post-transplant care, yes. So, in your experience, you would say that having a workable kidney transplant is better than being on dialysis.

RH: (1:11:42 - 1:12:34)
Yes. I had one patient with end-stage renal disease related to ulcerative colitis, who as a young woman developed renal failure to the point of needing dialysis and a possible transplant. But because of the ulcerative colitis, we had to do a colectomy first and interim dialysis and then a kidney transplant from her sister, which fortunately was not rejected.

And on her MRN and low-dose prednisone, eventually she had three pregnancies. Can you imagine? With an ileostomy on one side and a kidney transplant on the other.

DWM: (1:12:37 - 1:12:38)
Remarkable.

RH: (1:12:38 - 1:13:27)
I ran across her in Virginia Mason Hospital a few weeks ago. She now has gray hair. It's been more than 30 years since she had her transplant.

And I said, well, how are your children doing? She said, well, look around. There's one of my sons, and here's a big guy.

So that kind of successful transplant is truly the way to go. But whether the unrelated donors are working out that well, I don't know. What is your experience with the unrelated donors?

DWM: (1:13:28 - 1:14:22)
Fair match. With a fair match with the medicines we have today, some people do extremely well. I don't think there's any question that a well-matched, living-related donor kidney is ideal.

But there is a lot of work in transplant today, which I think has certainly made transplants possible that are poor matches or unrelated donors. We've even seen, had a couple of transplants that have been involved in sort of this donor swapping where they're blood type incompatible, and the center matches them with, we have donor pairs, and they're blood type incompatible. And the center matches them with another blood type incompatible pair, and they swap kidneys.

RH: (1:14:22 - 1:14:23)
Even though they don't even know each other.

DWM: (1:14:23 - 1:14:25)
Don't even know each other, yeah.

RH: (1:14:26 - 1:14:27)
And that works out all right?

DWM: (1:14:27 - 1:14:54)
Yeah, yeah. Surprisingly well. So the medications have certainly, the improvements in the immunosuppressive therapy have made a lot of difference for the availability of kidneys.

But there's still clearly not enough kidneys available for people who would benefit from kidney transplants. Thank you so much for letting me come talk to you today and for sharing with me your history.

RH: (1:14:55 - 1:15:30)

I brought one other thing, just for interest. You've seen the pictures. Dr. Scribner mentioned that the 1960 paper became a classic medical citation. But I show this because 1981, this was the paper in 1962, which is the two years' experience of our chronic dialysis program. Just in case you don't have that reference.

DWM: (1:15:30 - 1:15:31)
I do not.

RH: (1:15:32 - 1:16:01)
And I'm sure that North Carolina must have it. Because by 1962, things were coming together a little bit better. Two years' experience was...

Maybe you can just borrow this book. You can get it probably from the library.

DWM: (1:16:01 - 1:16:10)
I'm sure I can get it, yeah. So you were the lead author with Murray. What was his first name?

RH: (1:16:10 - 1:16:11)
John.

DWM: (1:16:11 - 1:16:12)
John Murray.

RH: (1:16:12 - 1:16:14)
Jerome Pendrous, Jerry Pendrous.

DWM: (1:16:15 - 1:16:18)
Jerry Pendrous, Jim Burnell, and Dr. Scribner.

RH: (1:16:19 - 1:16:25)
Yeah. That's why you didn't get the letter from whatever the organization is.

DWM: (1:16:25 - 1:16:38)
Because you were the lead author, yeah. So you all just combined your experience from 1960 to present. How many patients did you have then by that time?

RH: (1:16:40 - 1:16:46)
Well, here is a total of eight patients, I guess.

DWM: (1:16:48 - 1:16:49)
These are new patients.

RH: (1:16:51 - 1:16:52)
The original four.

DWM: (1:16:52 - 1:16:53)
Right.

RH: (1:16:56 - 1:17:08)
But it became obvious that we needed a retro poem. Right. We're getting pretty close to having problems with iron overload.

DWM: (1:17:10 - 1:17:28)
So your summary is eight patients with terminal uremia treated with periodic dialysis. It looks like seven of them were working. Five of the surviving seven.

One patient died.

RH: (1:17:28 - 1:17:31)
This patient had hepatitis and had no coronary.

DWM: (1:17:31 - 1:17:58)
Okay. And then five of the seven were able to go back to work or lead their usual lives. And they were doing biweekly hemodialysis twice per week, I guess, then at that point.

And peripheral neuropathy was an issue, gout, metastatic calcifications. So this would have been maybe the largest group of patients at the time.

RH: (1:17:58 - 1:17:59)
I think so.

DWM: (1:18:01 - 1:18:20)
Also, I was talking to someone, and they were saying that, yeah, we're sort of on this three times a week dialysis. That's sort of what every Medicare pays for and all that. And part of the reason was that that's what Seattle was doing at the time Medicare was looking to develop their regulations.

RH: (1:18:21 - 1:19:06)
Well, I can't answer that. In terms of the total hours of dialysis, I think we were doing a little bit more, but we were doing twice weekly until the proportion pump system and the more modern dialyzer became available. And then I think it's true that we switched to a three times a week schedule, four to six hours.

But the old system kept those patients alive, so I'm glad that someone kept the transactions. Yeah, so you go all the way back to 19- Because I left mine at Virginia Mesa, and no one knows where it is.

DWM: (1:19:06 - 1:19:13)
You all have this transactions collection that goes back all the way to 1955. It looks like a full set.

RH: (1:19:13 - 1:19:14)
Yeah, that's when it really started.

DWM: (1:19:15 - 1:19:18)

Well, I thank you for letting me come today to talk to you.

RH: (1:19:18 - 1:19:30)
Well, it's my pleasure, and thank you for all the work that you're doing, and I hope you have an easy drive going up to Bellingham, and believe me, you want to do it as early as you can.