VOICE EXPEDITION INTERVIEW TRANSCRIPT
The Oral History of Nephrology
Robert A. Gutman, MD
Interviewed by Dugan W. Maddux, MD
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DWM
So today is September 28, 2007 and I am here talking to Dr. Robert Allen Gutman. We are conducting this interview in Dr. Gutman's office in Durham Nephrology Associates office building in Durham, North Carolina.

Dr. Gutman was born in 1938 in New York City and grew up mostly in Jacksonville Florida which took him to undergraduate school at University of Florida and also medical school at University of Florida from 1958 to 1962. Dr. Gutman trained in nephrology in the early to mid 1960s at University of Washington in Seattle and we are going to talk today about the early days of dialysis therapy and some of the people and patients he remembers from that time as well as any other topics related to nephrology. So, let's start with how you got from the University of Florida finishing up medical school to the University of Washington.

RAG
The University of Florida was a brand new medical school. I was in the third class. Our faculty was much younger than faculties usually are so that even though I was one of the younger students most of the faculty was closer to my age; I mean you know within 15 to 20 years. They were mostly derivatives of the University of North Carolina and Duke. Most of the faculty was from just this area and so they wanted very much to have a research tone so they encouraged us to get involved in research and I actually made three attempts to do that. I worked with a hematologist. I worked with an endocrinologist who probably introduced me indirectly to my first sort of nephrologist, a guy named Charles Dent at University College Hospital in London. The endocrinologist, I remember him as Billy and I don't remember his last name, got me appointed as a temporary student at University of College Hospital with Charles Dent. If you back in literature you will see Charles Dent was a very famous calcium guy. So he was sort of a nephrologist. After I worked with Billy, I went to work with a neurologist named Richard Schmidt who was an extremely intelligent, attractive guy because he was such a pure thinker and such a good teacher and such a striking looking guy that I was absolutely sure that I was going to be a neurologist. I was absolutely sure of it. I worked with him on experiments in what was at that time called centrencephalic epilepsy and I learned

to read EEGs and I learned to put Penicillin lesions into cat brains with stereotactic instruments and I wrote a paper about centrencephalic epilepsy and Schmidt presented it to the American Society of Neurology and it won a prize. It was the first time they were offering this prize and I got to go with Schmidt to meet all the famous neurologists in the country which at that time included the man who later became the famous transplant surgeon in Pittsburgh, first in Colorado. Who am I thinking of? It will come to both of us in a second. This is the guy who was at Colorado and then went to Pittsburgh. He had been a neurologist first. He was doing experimental medicine in neurology. So anyway, Schmidt said to me you need to train with Fred Plum. That may be a name you remember because he wrote a book along with his colleague named Posner on coma and stupor. Fred Plum was a brilliant clinical neurologist. He was at the University of Washington at the time and I went there in order to do an internship and residency and then go into the neurology program.

DWM
So you were not even thinking about kidneys or nephrology.

RAG
No, no. Schmidt was a very attractive, warm human being. Fred Plum, in polite terms, was a horse's ass. In fact, the first week I was there he did nothing on rounds except brag about the deal he was making in Cornell and he left the next year for that job. He became the first chairman of Neurology in the country. He insisted they make a separate department for him. He bragged about this on rounds during the first part of my internship. At the same time we had The Berry Plan. The Berry Plan was a deal you made with the armed forces during universal draft. The deal was I will join your branch, and in my case I chose Navy, if you let me finish my training. Okay they said. What kind of training do you want to do? Well says I, I want to be a neurologist but I want to take a year of internal medicine training first. They said make up your mind. I said I have made up my mind; I want to do internal medicine and neurology. They said you cannot do that; you have to tell us one or the other. I said okay, internal medicine. They said okay you've got two years. Meanwhile I applied for a neurology training program in Cleveland and it took them a long time to make up their mind and I became uneasy that I was going to actually be allowed to do it because the navy had not promised me anything. Scribner stopped me in the hall one time and by this time I was already in my internal medicine training. I was a first year resident.

DWM
About what year would this have been?
RAG
I started internship in '62 so it was sometime in the fall of 63 and Scrib said how would you like to be my fellow. By this time I had become fascinated by his method of teaching

fluid and electrolytes. It just clicked with me. I just understood it. I could see why no one else understood it. I could see why he was right and everybody else was wrong and that was partly because of experiences I had in medical school where people were using the pediatric formula for sodium replacement which consists of measuring sodium, subtracting it from normal sodium, multiplying that difference by the estimated volume of a patient and giving the patient with hyponatremia that much salt. It worked great in volume depletion, but it is only a coincidence. It is not really an understanding but it worked and people did it all the time. So they saw sick people in congestive heart failure, I am not making this up, with edema and they would do the same thing. I am not kidding. When Scribner explained the difference between free water and saline as he called it by which he meant extracellular volume and he had this rigorous course of step by step cases he made up helping you understand the differences between free water excess, saline excess as he called it, saline depletion and free water depletion and it became crystal clear and I just thought it was fantastic. By the way he was doing dialysis. But this is what fascinated me. He also had a friend and the only other senior person in the nephrology division, a guy named Burnell who was a genius, just an incredible guy and a great athlete and a very, very rich guy and Scribner had allowed him to conduct private practice so he actually was a private practitioner with a laboratory. Later on, incidentally, his first partner was Joe Eschbach. Joe did the same thing. Joe went into private practice and continued to do research. So when he said I need somebody to be a fellow next year and then you can go back and finish your internal medicine training I said okay. Then I got accepted into the neurology program and the Navy wrote to me and said you can't actually do what you want to do but by then I had already accepted the deal with Scribner and truthfully the experience with Fred Plum was part of the reason but there was this problem with the draft and Berry Plan and so forth.

DWM
So once you go into Scribner's clutches you never got out again.

RAG
Well, no, no, I got out in a year. I had a one year fellowship and then I went back into internal medicine as a second year resident, which we would now call a third year resident because we were saying intern and two years of residency, and one of the people that I worked with during my time as a renal fellow was a second year resident who never the less was in my class because we graduated the same year named Bob Schrier. So there was that brief moment in time when I knew more nephrology than he did but he was already showing his consummate brilliance and ability. It was extraordinary to watch this young man my age develop so rapidly. As you may know he never took a nephrology training program himself.

DWM
I did not know that.

RAG
Yea, he took an endocrinology training program and then he got, it is not quite fair, but then he got to spend several months with Draudner in England but it was not what we would call a nephrology training program. So by the middle of the fourth year I was there, in '66, I knew I was going to have to go into the Navy and I had heard from Burnell about the advantages of the Naval Medical Research Unit. My wife, Lori, was a pediatrician already expert in infectious disease and epidemiology and that group of people had been working with the Naval Medical Research Unit in vaccine trials and other infectious disease things for years. So we wanted to go there because we had been told they might accept her as a visiting scientist. I went to Oakland Naval Hospital to talk to Naval Captain Raymond Watin who was in charge of the Oakland Naval Hospital at that time but had been working at one time as a junior officer at NAMRU-2 with a guy named Robert Phillips. He and Robert Phillips had worked together in the '50s at NAMRU-2 to develop IV solutions to replace cholera losses first in Bangladesh and then in Manila and had written papers in the JCI on what they were doing was measuring the composition of rice water stool and imitating it with IV fluids and they demonstrated almost perfect life saving with this system. He won later on the Lassiter award for this, Phillips did. Ray at that time did not know to my knowledge that he was going to be reassigned to NAMRU-2, this time as commanding officer. Phillips by this time had reassigned from the Navy and begun to develop alcoholic cirrhosis and was working in Bangladesh. So Ray, I guess when he interviewed me knew he was going to get that position but I have never been sure about that. I also went to visit the Naval Medical Research Institute in Washington with Lori to meet Paul Dooling. Paul was even then known as a nephrologist. He was in charge of a separate group of research programs called the Research Institute. I remember saying to him that I would really like to go to NAMRU-2. My wife is capable of doing vaccine studies in epidemiology that you have in mind or that they do and you would get two for the price of one because I am allowed to take my family anyway. Then I talked to Jim Burnell about it and he had some friends and even Scribner knew some people. Anyway, when I got my orders I had been assigned to NAMRU-2. I didn't know what I had done right. I had tried so many things. Years later I met Paul Dooling here at Duke. I don't remember how I ran into him but I somehow knew he was here and I asked him if he knew how I had gotten that assignment and he said, yea, you told me we would get two for the price of one. He remembered the story too. That was years later. Paul and Ray Watin in 1955 published an article in the Green Journal, the American Journal of Medicine, on peritoneal dialysis. They were doing it on naval personnel with acute renal failure and it was the first American Clinical paper on peritoneal dialysis that I know of, I'm pretty sure it was the first. Well Ray being a good Navy man loved to go to Manila. The women were beautiful

and available and the drinks were free and the spirit of the times was very ab libitum and so I spent the first summer in Manila living at the Army/Navy Club, a very famous place at that time. I think it is torn down now. It had big mahogany wall two stories high with a list of all the Presidents with oldest to most recent. Down near the bottom was Arthur McArthur and up near the top was Douglas McArthur and the famous military Philippine people were all there. We lived there and would travel by jeepney to the San Lazaro Hospital where we studied pediatric cholera. We were doing essentially what Watin and Phillips had been doing 10 years earlier but this time we were doing it in kids. Phillips came to visit us in Tipae after our first years experience and it was a fascinating experience. Captain Watin, Ray, was able to negotiate with the Air Force to fly a C46 to the air base in central Philippines filled with laboratory equipment that we needed. Absolutely filled with it. We had I forget the name but it was a device that we all learned to operate that measures total carbon dioxide and it is the most perfect way of measuring carbon dioxide. It involves a bulb filled with mercury that you would raise until it occluded a tube and then you would lower it and the gravity effect of lowering this mercury bulb, it was a great big bulb of mercury, extracted all the C02 after you added acid and then you could measure all of the C02 in that air. It was the most stoical metric measurement of carbon dioxide that has ever been developed. I forget the name of it but it may come to me later. We had that kind of equipment. We had copper sulfate, why copper sulfate. I tell students now apropos of what Scribner taught me that there is no laboratory test to measure volume of depletion. BUN to creatinine ratios don't work and obviously serum sodium doesn't work but that actually is a lie in acute cholera. You can precisely measure the specific gravity of plasma with this copper sulfate system and because it is so acute the specific gravity of plasma is a measure of volume depletion because it concentrates the protein so quickly that they don't reequilibrate. So we were doing that and we were measuring sodium and potassium and we were making sure all the patients actually had cholera so we had a microbiology laboratory. As a side we were checking everybody for tuberculosis because it was so common so we had an x-ray machine. All this was brought down on a C46 but mostly it was for fun and games and we did it the following summer. So I did it two summers in 66 and 67. In between Bob Phillips former commanding officer came back to visit his previous junior officer and now commanding officer to tell us a message, that we could help advance science it we would collect the cholera stool, package it properly and send it to this scientist in Tennessee because he had an idea, this scientist. Well at that time Phillips who always had a drink in his hand, was yellow, potbellied and obviously dying of cirrhosis. We thought he was out of his mind so we did not participate in this but he was sending cholera stools from Bangladesh. Now I am not going to remember the name of the scientist, and I should and I am embarrassed about that because it makes a better story if I could tell you the name but he was working at that time on something called cyclic-AMP. So the discovery of cyclic-AMP as a modulator of cellular function was the direct consequence of the stool that Phillips was collecting in Bangladesh because

that is the mechanism of cholera. It stimulates cyclic-AMP and at the time we thought it was a failure of resorption and normal secretory activity and didn't even think of the possibility of hypersecretion but he had thought of it and he had made contact with this guy. I want you to turn around and look at my sign up there. That plaque, there were many, many investigators at NAMRU-2 and that was our motto. Now what does it mean?

DWM
Well it is in Latin and since we are recording you will have to read the plaque and describe it and read the Latin.

RAG
It is mostly red and has a Chinese dragon because we lived in Taiwan and it says Veni Vidi Vici which means I came, I saw and I conquered. Vibrio of course refers to the name of the organism, Vibrio cholera, but we actually had a catholic priest come by one day and he said it doesn't mean that at all. It means I came, I saw, I conquered and I trembled.

DWM
Literally the vibrio. And what does the rest of the plaque say.

RAG
It says NAMRU-2, my name Lieutenant Commander Robert Gutman. We had a great time. While we were there we were allowed to do anything we wanted to do and I imagined myself to be a research nephrologist. I had spent a little bit of time in dialysis but it had not fascinated me. I had spent enough time with Burnell to get my hands wet doing research and what we chose to do was to demonstrate what the poisons were in paraldehyde poisoning because we had a couple of patients who had deliberately poisoned themselves with paraldehyde. So Jim scared up enough money for me to have dogs, so I poisoned dogs and collected their blood and God it was a horrible experience.

DWM
Where was this happening?

RAG
This had been during my one year fellowship.

DWM
Now you mention that you had considered yourself a research nephrologist. When you think people started calling themselves nephrologists?

RAG
Oh, people were already doing that.

DWM
Even as you went out in the early 1960s?

RAG
Yea, the guy I had in medical school called himself a hepatonephrologist. He was both liver and kidney expert but he used the term nephrologist. He was very interested to his great profit in fluid and electrolytes as well.

DWM
Yea, tell me what you remember about that.

RAG
That was Robert Cade. Bob Cade was an unreproducible creature. He was very smart and loved to lecture and he would hold ad libitum lectures in his laboratory every Friday afternoon in which he would hold forth on the functions of the kidney and liver and we loved his lectures and we just volunteered to come. Probably one of the reasons we volunteered to come is that he always served a punch and it was always very good. He was of course at that time playing around with salts and sugars in an attempt to develop Gatorade but unlike the final product on Friday afternoons it was laced with laboratory alcohol which made it very good no matter what else he put in it. (Laugh.) He was sort of using us as guinea pigs while he worked on his Gatorade and it was only shortly thereafter that it came out as a commercial product.

DWM
It worked out pretty well. I want to go back to Dr. Scribner and fluid and electrolytes which were your interest in nephrology. During the time you were in Seattle was it just that one year that you learned fluids and electrolytes from him? Did you have another time where you were back learning about fluids and electrolytes?

RAG
As I recall, and I may be making this up, but I think I was asked to be part of the teaching faculty which by that he would make sure that every student and every medical resident and intern understood fluids and electrolytes the way he understood it. He had a very rigorous course complimented by a kit that he had made commercially that was popularly known at the Scrib kit. It was about the size of a fishing tackle box and had little pipettes and syringes in it with various chemicals and resins that allowed us to measure chloride. You were precipitating chloride and redissolving it and then titrating it.

DWM
This is urine chloride?

RAG
Urine and serum chloride. The urine that was a measure of sodium excretion and by the way Volta Kempner used the same principle in his rice house. He would test his patients for their adherence to diet by measuring urine chloride. When I got to Duke I happened to be right across from his huge laboratory which was five times the size of this office and every morning they brought in cups of urine and that is all he was doing in the laboratory was measuring urine chloride. But Scribner's kit was designed to help us decide, and the focus of all this was to measure sodium balance. He was emphasizing that sodium balance was what counted.

DWM
Not water?

RAG
Not fluid balance. Of course he was absolutely right and to this day people still do not quite understand that. People tell me how much fluid should a dialysis patient drink and I always say as much as they are thirsty for and it drives people crazy, but it is the correct answer.

DWM
Right.

RAG
It was his method of emphasizing sodium balance as being key that taught me that.

DWM
So the kit, you would take it to the bedside and was it one use, you had a kit and used it?

RAG
No, no, you would wash all the stuff.

DWM
Wash all the stuff.

RAG

It was your kit. It had your name on it.

DWM
So you took your kit from patient to patient.

RAG
I would collect the urine.

DWM
At the bedside?

RAG
I would know from the orders how much sodium containing fluid was given. I would know from the measurement of the volume and concentration of chloride in urine how much sodium, because that was the surrogate, was excreted. Viola! I knew the extracellular volume balance for the day.

DWM
So how long would it take you to be in the room?

RAG
10 minutes.

DWM
So you would collect the urine.

RAG
Then we would write a little note. Serum sodium unchanged. Free water balance 0, 150 mEq of sodium out, 100 in. patient in negative sodium balance. It was a miracle of the time. What happened after I came to Duke in 1971 is I got telephone calls for several years, many years, from people who went into training in cardiology, endocrinology, neurology and had gone to other institutions, this again was the early 70s, and I had the same conversation many, many times and they said that I am in an argument with the nephrologist here and they don't seem to understand what I learned, where am I wrong? They would talk to me about the nephrologist insisting on water restriction, and the administration of isotonic fluid when the patient was already edematous and you know many obvious errors that today seem silly to talk about but it was going on. The people who had been trained as students and young house officers before going into specialty training were bewildered by the experience they were having where they understood it better than the experts in their institutions. I got calls from all sorts of

places. Have I got this right Bob? You told me such and such. Where am I wrong? It was an amazing experience and it is what fascinated me about Scribner.

DWM
You actually helped to teach the course?

RAG
Oh yea. Later on largely because of Burnell because we were trying to study intracellular acidosis and we had some mechanisms for that and all this in one year. This was incredible. If you ask me what I was doing most of the time, I was taking care of dialysis patients but I don't remember those things with the same charm. I remember them vividly but not with the same charm as the experiences in teaching and learning about acid base balance and fluid and electrolytes. I actually made a deal during my second year in residency to partner with an anesthesiologist, Barry Hornbine I think who was learning at that time in the mid 60s, there was a very exciting clinical research program throughout the world and bitter argument that was called by Relman and Schwartz the Great Atlantic Acid Base Debate. It was I guess started by a guy named Asmudson. I think he was Swedish or Norwegian and may have been Danish. I think he was Danish. The struggle was what is the right metric for measuring bicarbonate and what is the best way to express how much bicarbonate is missing from the body. This was complicated because obviously if the patient over breathed his carbon dioxide content would go down a little bit from that so as you may know Asmudson developed a concept of base excess which the anesthesiologist used a lot. There were graphic representations of this. It was an attempt to use bicarbonate isobars that crossed all the PC02 measures and measure the distance of that line from a normal line rather than a point to point. It was very interesting concept. Relman and Schwartz, famous nephrologists at the time, William Schwartz and Arnold Relman, who had studied a lot about acid base balance and lot about potassium balance and wrote some remarkable papers in JCI. Relman went on to become editor of JCI and later New England Journal. Schwartz was famous in his own way. They were extremely unhappy about this approach. They said listen you just need to measure bicarbonate and talk about it and for some reason everybody got very excited about this. This was just at the time that I was learning this other student. So Barry and I, I'm sorry it was Tom Hornbine, so Tom and I decided to pair up and just rationalize the hold controversy to the students at the University of Washington. It was a very exciting thing I thought at the time. Not the least of which because Tom was already a very famous guy. What was he famous for? He was part of the expedition of the first Americans that went to Mt. Everest. Tom and his friend were the first people ever to ascend Mt. Everest on the west ridge and it was at that time it was a historic event and he worked with one of those organizations that celebrate the beauty of nature, you know the

DWM
Sierra Club

RAG
Sierra Club or something like that and I still have his book of the pictures that he took with a 1960s style single lens reflex camera, gorgeous pictures, and he had just come back from his expedition.

DWM
So you all were teaching together during that year that you were the Scribner fellow?

RAG
Or the next year. I sort of continued to work with Scribner while I was in my second year.

DWM
Once you finished the true fellowship.

RAG
Yea, right, because all the guys were around there and interesting things were happening so I stayed in touch and I blurred entirely those two years and I will not be able to reconstruct whether I was doing it in ’64, ’65 or ’65, ’66.

DWM
You mentioned that although you were not focusing on it at the time that you were taking care of dialysis patients.

RAG
Oh yea.

DWM
So what was going on with dialysis at that time?

RAG
Scribner had published in 1961, already he had published so that was several years before I got there, his initial experiences with three people all of whom were still alive by the time I became a fellow. He was getting requests from Brazil, Poland, Malaysia, Taiwan, France, Italy, England, for fellows to come and they were being funded. So he had the United Nations of people. I trained with Santi Gill from Malaysia, and I cannot remember the name of the guy from Taiwan and I’m not going to remember the guy from Poland who became very famous or the guy from Brazil. I am sorry I am having so

much trouble with names. There was a guy, Charles something that begins with an M that became a very famous French nephrologist and the guy who wrote recently the article about long-term dialysis in a small city in France and I can't remember the name but he was there. So there were lots of people to do the work and lots of work to be done. We were getting patients from all over the west coast in endstage, endstage, endstage renal failure. These are people whose creatinines were 25 to 30, whose BUNs were 2 to 300, whose potassiums were 7 to 8, who were unconscious, who had uremic frost, who had pericarditis and who had profound neuropathies. These were uremic people like we don't see in the last 30 years but we saw them and they came in almost every week and sometimes 2 or 3 a week near dead, and our job was to get them on dialysis right away. The assumption was all of them had glomerulonephritis. We were not thinking about diabetes. We were not thinking about hypertension. We assumed they all had glomerulonephritis and I think by in large we were right. They were young people.

DWM
Do you think there was definitely, you were getting them very late obviously, so why were they coming late and do you believe they were already preselected by coming to you that people were not sending to you the otherwise sick, the otherwise elderly

RAG
No one thought the elderly or diabetic people should even be considered. It was not even on the plate.

DWM
So somebody else was even making that decision before they got to you.

RAG
I wouldn't even say they were consciously making a decision. I would say when they saw a 32 year old person with BUN of 300 a light went on and when they saw a 76 year old person with BUN 100 and creatinine of 7 they did not even think about it as we do now. It was a completely different mindset, completely different cadre of patients and I think there was a lot more glomerulonephritis. I think there really was a lot more glomerulonephritis in those days. I mean we were clearly seeing post streptococcal nephritis. We were seeing a lot more lupus nephritis in my judgment. In this office I don't think people are really running around us if they have lupus nephritis. I haven't seen a case of fresh lupus nephritis in three years and we were seeing it all the time. So I think things have changed and we certainly saw post streptococcal and there were many streptococcal epidemics in those days so anyway we were seeing much different patients. We were seeing young people and yes of course they were preselected. They were invariably people who had money. We weren't a charity hospital. This was a

university hospital so they had to pay. They were generally articulate, educated patients. I think they were highly selected but they came very late anyway. I mean people didn't know about it. When they would get there after a couple of weeks of instruction the technicians, George Shilipitar, I don't know why that name comes to mind so readily but George Shilipitar and there was another guy who was even better known but I have forgotten his name would come with a little tray that had silastic tubing on it that had been pre-bent, Teflon tubing that he would heat at the bedside in order to taper it, metal crimps and more Teflon for the other end of this thing, surgical instruments, local anesthetic and our job was to make a shunt. It was to put in a shunt at the bedside. And we got pretty darn good at it. We learned the technique. It had been developed in 1961 or 62 and the paper had been written by Scribner, Dillard, who was the surgeon, and an engineer whose name is Quinton.

DWM
So in your recollection this was a procedure that was several years old. These materials had been brought together by Scribner, Quinton and Dillard and the technique had been pretty much perfected by the three of them and was being very widely used. I mean patients were coming every day.

RAG
It was being used very widely at the University of Washington. It was not being used everywhere else.

DWM
But patients would be coming every day.

RAG
Well maybe two times a week, three times a week. But it was always the same floor and in those days we had big wards and this was a four patient ward.

DWM
So it was open.

RAG
Well the machine that we used was developed by the local ice cream manufacturer with Quinton's help and was a converted ice cream machine that held 360 liters of fluid and they put a water pump on it. Scribner had his technicians carefully weigh out the dry salts and put them in plastic bags and we would weigh out the salts, fill up the machine with a garden hose and all this was in the open. There was nothing vaguely resembling sterility because we had a semi-permeable membrane and we did not worry about bacteria crossing it. We did not think about endotoxins or _____ and all that stuff.

It was okay because we had a semi-permeable membrane. There was a heater in there. He had fitted some brackets on top of the machine that would hold the big Kiel boards. Have you seen pictures of Kiel boards?

DWM
Not in a long time. Can you describe it for me?

RAG
It is about 4 feet long and 2 feet wide and three layers of tough plastic. The bottom layer was plain on the bottom side and had grooves on the top side and you would put a membrane across that and then you would put another membrane across that and then you would put the middle layer on top of that and it had grooves on both sides and then you would put the top layer which had a groove on the under side and was plain on the top side and you put these connectors into the envelopes. So you have made two envelopes and then the Kiel boards themselves had outlets for the dialysate which would bubble up and around and flow in the opposite direction and we would put all that together and we would have to pressure test it to make sure we had not created a leak in the handling of the membranes and they were just sheets of cellophane. So we would assemble this Kiel board, make up the electrolytes, put in the Scribner shunt and hook the patient up and this was a circular system that is say because the volume was so large we did the calculations and it would take 8 to 12 hours for the BUN to equilibrate and after that of course it was not good anymore because it equilibrated but because the volume was so large it would take a long time. What most of us who were house officers at that time, whether we were house officers or fellows, remembers is how frequently we had severe, but we did not call it this at the time, but we had people having seizures and would go crazy so we had severe altered mental status so it was at that time that the term reverse urea effect came in.

DWM
It was called reverse urea effect.

RAG
That's right. The notion was that because we were removing urea so quickly from the blood it was not equilibrating quickly across the cerebral cellular system and the brain would swell and if we would just slow down the rate of removal it would not happen. I actually wrote a paper that sort of again reflects my original neurology bias, wrote a paper with an electroencephalic guy involving a child who kept having seizures no matter how slow we went and based on this theory Burnell and I , it was Burnell who helped me with this, and also Bob Hickman because he was the pediatric nephrologist, came to the conclusion that if we would give her sugar water directly into her venous line while we were removing urea we could offset the reverse urea effect.

DWM
A sugar like Mannitol?

RAG
No, no just plain glucose.

DWM
Just glucose?

RAG
Yes. So we did that and we demonstrated that the seizures stopped by virtue of the infusion of an osmotic agent for a while but then she started seizing again and our punitive explanation which was published in Lancet was that we had jacked up her insulin secretory mechanism and no matter how much glucose we gave her she was metabolizing it so the osmotic effect was ineffective.

DWM
Let's talk a minute again about the shunts. The tubing is arriving, the Teflon tubing, and you are creating a loop. So tell me what it took to actually put a shunt in.

RAG
You had to make an incision over the radial artery and carry it up to the origin of the forearm cephalic vein so we were operating in the same area where an AV fistula is made today. We would isolate the radial artery for a distance long enough that we could get arterial tapes underneath it. We would clip the tape and secure it to a towel so that it was pulling on the artery enough to occlude it. We would do it on both sides. We would make a small longitudinal incision in the artery and we would take the carefully shaped and selected Teflon tubing attached to silastic and insert it toward the heart and we had a little suture underneath all this in preparation that would slide in easily and beautifully. As soon as it was in we would secure the suture, release the tapes and you would begin to see saline solution pumping in it. We had a clamp on the silastic so it would hold. There was a little piece of Teflon tubing on the other side that was slightly bigger in diameter than the one that was going to be put on the venous side and we would do roughly the same thing to the forearm cephalic vein. They were shaped so it was a loop and we would put the pieces of Teflon together. We were carefully taught how to make a bridge tape. Scribner was extremely meticulous about this bridge tape. He would take a piece of tape and put it here and put another piece here and take a piece of tape and cross the two tapes because this was vital because if these things

came apart that was curtains. So that was a big deal and we all learned how to make a bridge tape.

DWM
So how long would it take you to put a shunt in?

RAG
If the patient had good arteries and veins it could be done in 20 minutes.

DWM
Right there at the bedside.

RAG
Right there at bedside. So while they were setting up the machine we were putting in the shunt.

DWM
How many people did it take to set up the machine?

RAG
Oh, I guess at least two but the fellows participated. As I said we put the membranes on there and weighed the chemicals and then out came the Scribner kit and we checked the chloride concentration. There is an interesting story about that. Very early on a Maharaja in India developed uremia and was about to die and his doctor in India had heard about Scribner. This guy was rich beyond belief so the solution that they worked out was that the Maharaja and his doctor and his family would buy a house in Seattle and come to the University of Washington and begin dialysis. Scribner's team would show this doctor how to put in shunts and how to declot them, we had another kit called the declotting kit, how to weight the chemicals, how to put the membranes on and they would spend two or three months in Seattle learning all this. This of course reflects Chris Blagg's present enthusiasm for home dialysis even then he was favoring home dialysis. Much of this was taking place in this guy's home.

DWM
So when you say home dialysis you are of course talking about home hemodialysis.

RAG
Yes. Well peritoneal dialysis that is another story and I will tell that in a second so I am talking about both.

DWM

So did the Maharaja come over?

RAG
Yes, absolutely, but the doctor like many Indian doctors at the time believed that getting his hands dirty was beneath him so Scribner was always very distressed. I went over to his house several times, the Maharaja's house with Scribner several times, and he was very distressed about this guy not really participating. He kept telling him this is important and you have got to learn to do this but the guy would not do it. Finally enough time had passed and the guy had faked his way through it and the Maharaja said I can do this in Bali or wherever they were from so they shipped everything back and this guy went back to India and he was back three days when Scribner gets a call from India that he is having seizures. Scribner packed his bag and took one other thing with him. What do you think it was?

DWM
His kit.

RAG
His kit. (Laugh) He arrived at the guy's home in India, measured the chloride in the dialysate and it was low and he said you are not checking and went home. (Laugh)

DWM
For most of the patient's who came in very uremic you put in the shunt and set up the dialyzer. How long were they dialyzing that first treatment and what was it like?

RAG
It was terrible. It was just terrible. We were out of our minds. We had no idea what we were doing. It was chaotic as hell. So we just went on and on and on until something clotted or the patient woke up or until we got tired.

DWM
So continuous dialysis.

RAG
Continuous dialysis. Now think about this. Remember how we made up this bath and the fact that urea is coming back into it so after a few hours you have 360 liters of a isotonic, salty, physiologic solution with sugar and protein in it. What do you think the bacterial count in that was after about 10 hours?

DWM
Not good.

RAG
Not good. (Laugh) I am not making this up. It was characteristically 10 to the 8 and sometimes 10 to the 9. It was soup. It was a biologic soup and we went on with this dialysis. We were completely unperturbed by this. Do the math. I mean how many organisms did we have in that room at 10 to the 9 per milliliter and 360,000 milliliters. (Laugh)

DWM
So in your general thought what were the outcomes? Were any of the outcomes good?

RAG
Well they all woke up. First they had seizures and screaming all night and we would have to give them sedatives and seizures we had to give them anticonvulsants but most woke up and started walking around and then the problem became what the hell do you do with them.

DWM
Right. What did you do?

RAG
I don't remember as well. Those people lived in Seattle. Scribner and a guy named Jerry Panderous who was already beginning to practice nephrology in the community. Scribner's great error which all his fellows and anyone who learned from him said this, that Scribner's great error was he was a great humanitarian, fantastic humanitarian, and from his point of view what he had successfully done at the University of Washington was immediately exploitable, people should be doing it at home, it did not need to be done at the University Hospital, that it could be done downtown at the Swedish Hospital and not only that but the city should be paying for it and he would help. So he did his level best to dispose of anything vaguely resembling maintenance dialysis unit from the University of Washington. So the University of Washington never had a maintenance dialysis unit which of course was a financial catastrophe for the division in later years because everybody else had one but he did not have one. Jerry Panderous and later Chris Blagg became the medical director the Northwest Kidney Dialysis Unit at the Swedish Hospital in downtown Seattle what we used to call kill hill. There were about four hospitals there. So he raised money. He thought it was necessary to have a decision making process so he created the famous committee that Shane Alexander talked about. He was motivated by the most generous and humane instincts that I have even known in a physician but he was not right, but his motivations were pure. It was very interesting and very sad for him. He became very depressed about it in later years. He became very depressed that the whole thing had become

commercialized, how there was no decision making process, how everyone was becoming eligible or had the right to dialysis and it was not his vision at all. His vision was that it should be for every man and woman who could contribute to society. That was his notion and he sold it that way to congress and sold it that way to the leaders of Seattle and they were funding it for years before the law came into existence.

DWM
So you think there was fairly good success in getting patients through that initial uremia

RAG
Oh yea, if you gave me a little time I could tell you the names of all three of the first patients because they were still alive and one was assigned to me.

DWM
Was one of them Clyde Shields?

RAG
Clyde Shields, Roland Hemming and strangely enough I cannot remember the name of the guy assigned to me. He was the youngest of the three. His name begins with an H. Harvey Gentry.

DWM
Harvey Gentry.

RAG
Yes, Harvey Gentry was my patient. Harvey was a trip. He was a very funny guy. He was very keen on living a long time. He was very keen on being self caring and understanding his own illness and I guess one of the most important lessons I remember from early training was Harvey calling me one night and saying Dr. Gutman my potassium is 6.9 and I need to come to the emergency room. It was late and I said Harvey, how do you know what your potassium is and he said I can tell. I said what do you mean? He said I just don't feel right. I said okay come to the emergency room. Of course it was 6.9 and later I got more detail. He developed muscle weakness. It was progressive but when it reached a certain stage he could recognize, I forget what it was he couldn't do like maybe walk up a stair or something, something specific that when it was 6.9 he could not do, and that was when he needed to come to the hospital and he knew what his potassium was. He was a good teacher. He was a lovely person. Roland is the one that taught up about uremic neuropathy. He had profound neuropathy. Clyde as you may know was the one who taught us about phosphate. He was a guy who said my shoulder hurts and look how big it is. X-ray was taken and Scribner took one look at it and said that is calcium

phosphate, give him binders. That is how binders got started. It was an instinct that Scribner immediately understood.

DWM
There is a lot of discussion in the literature about Scribner's approach which was very much clinical problem solving that his innovation and ideas came from taking care of patients.

RAG
He was not a scientist which is why most of the established nephrology community despised him. To say they did not like him or like what he was doing is only part of the story. They despised him for just that reason.

DWM
Were you aware of that at the time?

RAG
Not only was I aware of it but when I came to Duke and the connection between my being a Scribner fellow and coming back to Seattle after my navy career and getting a job with Ike Robinson is kind of an interesting story is because Ike was one of those people in the classic nephrology group who despised Scribner, but to give Ike complete and full credit he held himself at bay and he took a second look and he and Bob Schrier were I think, this is my memory and I think other people would tell a different story and would be interesting to ask Chris this story, I think Bob Schrier and Ike Robinson were the principle reasons that Scribner's reputation was resuscitated and he became part of the mainstream and as a result became President of the American Society of Nephrology which is something the Boston crowd was just really not happy about.

DWM
How did Bob Schrier and Ike Robinson, what did they do that made the difference?

RAG
They said Scribner has earned his place in the pantheon. He has done something that is vitally important to the development of nephrology and we need to respect him for it. Okay, maybe he didn't write JCI papers but he did something really important. Parenthetically, I believe, I am going to predict and I hope I live long enough to remember that I predicted this, that this worshipping of RCT's to the exclusion of all other ways of learning new information will be viewed in 20 years as a passing fancy. They have their place and will always be recognized as their place but I am beginning to see words in literature like narrative learning and that is what Scribner did. That is what earlier famous internists did. Osler did that. One of the books that I really love and I

have it in the library here and I became quite fond of it because of my time in Taiwan and my beginning to learn a little bit of Chinese and Chinese history. The Rockefeller Fund in the 20s gave money to the Peking Union Medical College and they had various people go over there to be acting chairman from American and one of them and again I cannot remember his name but I have it in the book, wrote a book called Western Lessons from Chinese Medicine and it has several chapters on what he learned about disease from seeing the Chinese diseases. He wrote the book in the 20s about the time that macroglobulinemia was being described by what's his name?

DWM
Waldenstrong?

RAG
Waldenstrong's macroalbuminemia and they were seeing in Chinese people a worm disease leishmaniasis, visceral leishmaniasis, which caused hyperglobulinemia and as I recall the narrative description and their interpretation of what they were seeing they conclude the reason this was causing the same symptoms as Waldenstrong's macroglobulinemia was because of the macroglobulins. Which you know is an interesting insight because you wouldn't know that just from seeing macroglobulinemia. So they are saying here is another disease that causes the same chemical phenomenon causing the same symptoms. That is not science as we presently understand it but it was terribly useful. I think there is going to be a renaissance of understanding of the value of that. That is probably a quaint idea but my primary doctor is a rigid evidence based medicine guy and every time I ask him a question he says there is no evidence for that. So the other day I said to him you know there was no study that proved that Jenner was right but we still use smallpox vaccine. (Laugh)

DWM
So tell me how you came, did they bring you to Duke because of your dialysis experience?

RAG
Yes.

DWM
So how did it happen that you ended up transitioning from Seattle to Durham?

RAG
One of the fellows that worked with me during that year was Craig Tisher, but Craig had a vision of his own career that was more mature, more finely tuned, more precise, more organized by far than anyone else. He said I am going to simultaneously because a

pathologist and he trained with oh God these names are terrible but he was a very famous renal pathologist at the time in Seattle and he became very, very good at it. Craig was a meticulous guy but his early concept of his own career was it was not enough to look at structure you had to study its function so he and a few other people at the time began to do structure function studies. He got well granted for this. So Ike in the late 60s was looking for some scientists in nephrology and he was just one of the naturals. He came here about 1968 or 69 I think and then Duke decided to invest in a leader in education but they were still very keen on having a scientist so they contacted another guy I knew in Seattle, Roger Bolger, who had actually trained in infectious disease but had actually spent a year with Arnold Relman so he had as much training in nephrology as I had but he identified himself as an ID guy and when he came down here a couple times he learned they were interested in having a fulltime nephrologist at the VA Hospital and at that time Chuck Hayes, Charlie Hayes, was the guy who had gone to Seattle while I was in Taiwan and learned dialysis from Scribner. Ike had sent him to Seattle to learn dialysis. There was no funding for Duke but there was funding for the VA so he came back and set up dialysis unit at the VA but he wanted to go into practice and interesting enough he wanted to go into practice in Jacksonville, Florida. So they were looking for someone willing to be a dialysis doctor and when Roger was here he told them about me. He talked to Craig about the idea too and during his going away party in Seattle at Robert Petersdorf's house he said to me would you like to come to Durham. At that time I was in the doldrums of may career and was not real happy with what I was doing and certainly not happy with what they were paying me, $17,000 seemed too small amount of money, $17,500 I think it was, so I talked to Bob Petersdorf and said I do not think I am being treated fairly. He said we are doing the best we can. I said all I am asking is $25,000.00 and he said it is too much and I said okay I am going to Duke. Lori had been having problems with her career partly because of pregnancies and partly because of illness so she had not finished her training yet even though she was highly experienced in infectious disease and epidemiology and I talked to her future boss here Sam Katz and he agreed he would make her both a faculty member and trainee so officially she could finish her training. So it got more and more attractive. At least our notion at that time was we would come here for a few years and then go back to Seattle because nobody in their right mind would leave Seattle. It was unbelievable that anybody would leave Seattle. Almost nobody did. It was the queen city, the most beautiful place to live, the most exciting place to live and had everything. It had mountains, sailing, skiing, hiking, islands, just everything but it was also the year that Boeing Company laid off 80,000 people so it was financial doldrums. In early June as we were getting ready to leave Petersdorf came to me and said okay $25,000 and I said it's too late.

DWM
When you came here what was the dialysis scene at the VA like?

RAG
It was pretty well developed. We had a unit, we had machines and we had a lot of money. The VA had created a home dialysis fund operated out of central office that seemed to be a bottomless pit and the structure, God only knows how they came to this idea, was that whatever funds were available for home dialysis would come straight to the nephrology program and was not part of the hospital budget so I never had to go to the Head of Medicine or the Medical Director or the CEO of the hospital, all I had to do was call the young guy in the central office and say Sam or Paul or whatever the hell his name was, I need more money. What do you need money for? Well if I am going to operate a home dialysis program then obviously I have to have a center dialysis program so I need some machines for the center. Well Bob that is not home dialysis. Well I can't have a home dialysis program if I don't have a center dialysis program that is obvious. Oh, then okay. I called him another time and said I need a word processor and at that time a word processor was a machine the size of these desks and was $3600.00 and did only one thing. It did word wrap, erase and reprint and was a very primitive computer. Why do you need that? I can't run a home dialysis program without a word processor. Oh, okay.

DWM
What machines were you using?

RAG
Originally we were using the Baxter machines and coils and God were they horrible. Somewhere along the line you might have learned when a patient is going into shock you turn down the blood flow pump. Have you heard technicians tell you that? That was true only of that device but the notion has gotten passed on even until this generation because it actually was an imitation of the original Kolff coil. It was a sausage wrapping around plastic framework and the faster you pumped blood the more blood filled this very loosely wrapped tubing and the higher the ultrafiltration pressure so the only way to stop the ultrafiltration was to turn down the blood flow because there was no balancing pumps. The only other thing you could do was release a little bit the C-clamp and it was literally a $1.00 C-clamp you could get from the hardware store on the outflow portion of the blood circuit to reduce the TMP which we were not really measuring but we talked about TMP and the damn thing had a 5% burst rate.

DWM
What did it look like when you had a burst?

RAG

This coil was sitting in a recirculating bath again an analogous to what were using in Seattle in the early 60s so the water would get bloody. The patient would go into shock and the water was bloody and we would take him off dialysis.

DWM
So how many patients did you have incenter in those early days?

RAG
I got here in 1971; by 1975 I had persuaded what's his name in central office to send me enough home dialysis machines for 70 patients. I had 70 home hemodialysis patients in 1975 out of the VA Hospital, 70. At that time we were using the machines that were made in Portland, Oregon a doctor and another guy.

DWM
Was that Drake Willock?

RAG
Drake Willock. I had met Willock in the Portland airport one time and I forget how we already new one another and he said Bob come here I want to show you something and he said I don't want you to tell anybody else about this and he sketched out for me literally on the back of an envelope balancing chambers. He said I think this will solve the problem of controlling ultrafiltration and he had these two pumps linked together mechanically and now we do it electronically to maintain the volume relationship in the pre and post dialyzer circuit of the dialysate in order to actually measure and modulate ultrafiltration rate. That was an original idea of Charlie Willock.

DWM
On the back of an envelope.

RAG
On the back of an envelope. I don't think he ever patented it but there it was. I said that is brilliant and it was obvious it would work. I wasn't the only one who told him it would work but it was a brilliant idea.

DWM
Could we go back to Seattle for just a minute? You all were a pretty close knit group it sounds like at times.

RAG
Oh yea.

DWM
You mentioned Gussie Lithwar. Would you tell me about that?

RAG
Gussie Lithwar, you know the Germans will make a V out of a W sound. I've got to tell you a joke. You know what the question is if the answer is 9 W?

DWM
No.

RAG
The question is do you spell you name with a V Herwaggner? (Laugh) Gussie was the most charming housemother and secretary that ever existed. The only person that I have ever known that came even close to her character is sometimes mighty damn close is my Janice, our Janice. By the way, one of the things they nailed me on this test I discussed yesterday is they said you are impulsive and a little scatterbrained as if you once had a secretary and you don't have one anymore. (Laugh.) Which is exactly right because when our practice expanded she could not be my secretary anymore, she became our office manager.

DWM
And that space has never been filled.

RAG
Never filled it. Tried unsuccessfully to get Lori to do it but it hasn't worked. Gussie was a holocaust survivor as was her father. She was from Holland. She was Jewish. She never spoke much about it. She was already Scrib's secretary when I came onboard and I honestly don't know when it started but she was always there. She was always there. She was always there for everybody. She made sure the fellows were happy. She made sure they knew what they were doing. She made sure the schedules were right. She made sure that Scribner was taking care of business. She was just a super woman. A lovely, charming, brilliant person. Chris Blagg and his wife always stayed in close contact with her throughout the years until her death not so long ago.

DWM
Sounds like Scribner was a pretty unusual fellow personally.

RAG
He was like many people at the University of Washington at that time. He had gone from Florida where the faculty was young to Seattle where the faculty was young. Scribner was I think 38 or 39 when he was made Head of the Division and Finch the

hematologist, the iron hematologist, and I emphasize that because as far as I know no hematologist now days even thinks about iron, but he was the iron hematologist and he was about the same age. Robert Bruce of the Bruce Test was there and 38 or 39 years old. Fred Plum same age. The Chairman of Medicine was Robert Williams and he might have been 48. There was a cardiologist at Harvard who is the guy who invented the idea of rapid response fire teams they call it The Seattle First for immediate resuscitation of heart victims. He wrote a lot of papers about that and I will think of his name in a second. Harold Dodge was a very young guy and he wrote the book, literally wrote the book, on the understanding of how to read an electrocardiogram. Everybody else was a pattern reader and he explained why those patterns develop. We were surrounded by young brilliant people and Scribner was certainly one of them. Also Williams was an eclectic guy. He was certainly willing to take chances. He was living in a city that still saw itself as the frontier and by God he was going to make the University of Washington the most famous place that ever lived but he was not going to imitate Boston. He was out there on the frontier and he was going to do it his way and he did.

DWM
Yes. I read somewhere that Scribner actually lived on a houseboat.

RAG
That was much later. That was after his divorce and remarriage. Originally he lived up the hill from there with his first wife in an ordinary two story house but after his second marriage they moved to a houseboat and it was right across from the his office. I think I told you this, Gussie and like many devoted trainees who come to another institution this is very common phenomenon the umbilical cord is terribly strong and I must have called Scribner or somebody in Seattle almost every day and I must have talked about Seattle all the time. I angered and became the laughing stock of people at Duke because I kept talking about Seattle. So it was not uncommon at all that I would call and say Gussie is Scrib there? No, but he is on the water, I can see him. He learned how to paddle, this is after I left, and he learned how to paddle a canoe on the high winds of Lake Union which sometimes got very brisk. How do you paddle a canoe in high wind, if you sit in the back end like you are supposed to the front end goes straight up in the air and becomes a sail and you can't navigate at all except in one direction, so he learned to sit in the middle of this canoe and avoid that effect and in very bad weather he would paddle across to work.

DWM
It does sound like there was good bit of consternation between the east coast and the west coast and there you were coming back to the east coast.

RAG

But to a receptive area. Ike for all his bluffing and huffing and making fun of people and he could sometimes be very cruel to his junior people but at heart he was really a nice guy and very warm man and as I say he became a champion for Scribner but he felt he had to do that and they couldn't be more different. Ike saw himself as elegant, sophisticated, wordsmith of the first order, a classicist and he would quote classics and dressed well and make sure his Crawford hair looked right and was nothing at all like Scrib; he was completely different.

DWM
Do you remember in the early days of dialysis much about the organizations? Do they play a role in your mind? Talking first about medical organizations like the American Society of Nephrology.

RAG
The ASN was the thing we all looked forward to. It was a wonderful meeting. It was small. We sort of knew everybody. I don't think more than a 1000 or 1500 people came to those meetings and probably less than that in the early days and there was always dialysis related talks. The ASN never completely excluded them. The meetings were very exciting and always in the same place. They were in Washington at the hotel right there by Rock Creek Park, it is not used anymore. It was a very cozy meeting. There was always a lot of drinking and eating and conversations.

DWM
So there was some dialysis and clinical talk and I am sure scientific and research talk.

RAG
Yea, on yea, and in those days of course the science was physiologic science. It was something I could get my hands on you know; how tubules worked. The great debate during those years as I said was the Great Acid Base Debate and third factor. Those were the third factor years. You know about third factor?

DWM
Very vaguely. I have heard the term.

RAG
Okay, here is third factor. In variable states of sodium balance how does the kidney react and what signals does it get to maintain sodium balance? This goes back to the Scribner business. What was the answer? What did we know? Well, we thought we knew that if glomerulofiltration fell there would be sodium retention because there would be less filtration and we thought that we knew if aldosterone went up that there would be sodium retention but somebody said I think there is more to it than that. So

there were many, many, many experiments that kept showing the same thing over and over again. If you fixed the glomerular filtration either in isolated kidney or in an animal and fixed the aldosterone secretion either by removing adrenal glands or giving chronocological amounts of aldosterone and then infused or restricted salt the kidney would still do the right thing so there was something else and experiments showed that tubular pressures changed, that intrarenal circulation changed, that glomerular capillary pressures changed so that the early decisions championed by Larry Early mostly was it was all physical factors. Those were the physical factors. Well a lot of people were not happy with that solution, it must be hormones. There must be another signal or something. Aldosterone was a hormone and it retained sodium so there must be a something that excretes sodium so there was ten years of looking for what we called then and still call the naturitic hormone. Where was it and how could you demonstrate it and what was it and so forth. It was the most elusive thing that could be imagined but as you know it was eventually elucidated. Two of them were elucidated, but in those years it was will of the wisp. It was yes it must be there, well maybe physical factors were doing it and we would discuss this at night. I did some research and it went on and on. We would go to a restaurant called El Bougaton with Spanish food, Spanish classic guitarist and gorgeous Spanish dancer and a guy with a gorgeous voice, a threesome, and we would sit in this restaurant and it seems like we did it year after year talking about everything including third factor. It was very exciting. (Laugh) In retrospect it all seems so silly but we were really excited by this. These were the things that were exciting to me because they were trying to elucidate how the body worked. Meanwhile Scribner was having conferences in Seattle all the time about how a dialyzer worked and how to make a dialyzer work and what were the mechanics of dialysis and how do you measure the adequacy of dialysis and these were all things I thought were really terribly boring at the time but Scribner was just very enthusiastic. Sometimes they were very interesting and they were always interesting when Stanley Shaldon came to town. Do you remember the name Stanley Shaldon?

DWM
No, tell me about Stanley.

RAG
Anybody who ever met Stanley Shaldon thought they were in the presence of Napoleon Bonaparte. He was short and had a funny accent. In actually had a heavy cockney accent but he spoke French and he was the most opinionated man who you ever met but he was not always wrong. He didn't mind expressing his opinion. He would come to these meetings and he would always shout the loudest and talk the longest and come up with crazy ideas. I don't remember what all he talked about but he always spiced things up. Years later he acquired infamy at a meeting I did not go to but heard a lot about. Eli Freeman and Carl Knauf decided to have a debate at probably a meeting of the

American Society of Artificial Organs was probably where it was and it was in Hawaii and the debate was Is Peritoneal Dialysis better than Hemodialysis and the plan was that Eli was going to be the emcee but also speak for hemodialysis and Carl was going to talk on peritoneal dialysis. Stanley came to that meeting according to the story I heard from several people and at the beginning of the meeting spoke up in his loud, cockney, raucous voice from the back of the auditorium and he certainly did not need a microphone I am sure and he said CAPD, that is second rate dialysis done by second rate doctors for second rate patients and sat down. (Laugh.) That was so terrible that Eli completely changed the format and began to defend peritoneal dialysis. That was Stanley Shaldon. He came to many of those Scribner meetings which I continued to attend during my fellowship and the course of the next year and when I came back from Taiwan I joined the nephrology division as a faculty member and was there three years so I used to continue to go to these things but again I was doing something quite different. I was working with Cutler at Harvard U, I was on the Harvard U staff and we were doing other things. I was doing xenon washout studies that I learned to do from Norman Hollinberg but I used to go to these meetings.

DWM
Were these people politically active, these people you were hanging out with at the ASN? Were they talking more about science and physiology or were they talking

RAG
I was aware there were people talking about politics all the time but I wasn't in that group. The closest I came to it was because I was Craig Tisher's friend and he became the President of the American Society of Nephrology probably in 1969 or 70 and he was very politically savvy and very politically active. He was the one who deliberately changed the self image of the ASN and he said we have to be politically active. He was not talking about reimbursement for dialysis, he was talking about funding for science. He got to know senators and congressman.

DWM
Do you remember the Gottschalk committee and law passing in 1972?

RAG
Of course I knew about it, but I didn't have anything directly to do with it. I didn't know Carl at the time. By the way, do you know Carl's second wife?

DWM
I do not know her but I have heard about her.

RAG

Her name was Susan Feldner.

DWM
Yes.

RAG
She was the wife of Don Feldner who was in the class ahead of me at the University of Florida. I took physiology with that class. Stan Martin made me and David Fear an experiment in medical education and allowed us to take medical school classes in our senior year of college. So we had already taken physiology when we entered medical school and Don Feldner was in that class and I took that class with him and his wife Susan was just a medical student wife. I ran into her at an ASN meeting in the late 60s and I said what are you doing here and she said I am a nephrologist. I didn't even know she had gone to medical school. She had already divorced Don and she had been always working with Tom who was one of those young faculty members, Tom Merrian, he was pharmacologist who made his fame on acetazolamide. Susan to this day is doing transport studies on epithelial tissue both at that famous lab in Maine, what do you call it, it will come to me in a moment, and is conducting research to this day at UNC, in Art Finn's old lab. She married Carl.

DWM
Yes and he then died pretty soon after. They were not married long.

RAG
About a year.

DWM
Yea.

RAG
Do you know what he was doing when he died?

DWM
No

RAG
He walked from home over to his annual treadmill test and did not survive it. How is that for irony? He was a healthy guy and he was taking a routine treadmill test.

DWM

Are there any other thoughts that you have about your time in Seattle or the early dialysis?

RAG
Well, I haven't told you anything about peritoneal dialysis.

DWM
Well tell me about peritoneal dialysis.

RAG
One of the people there was Fred Boone. If you go to the library and look for the book that Fred Boone wrote about peritoneal dialysis you will find virtually everything that anybody else has written about peritoneal dialysis since. He had done it all already. It may be in a different format, maybe the science is a little crude, but he had already figured it all out. Every bit of it. He wrote a very nice book that was published.

DWM
And he was at Seattle?

RAG
He was one of the faculty members at Seattle. He was an Indonesian guy but a Dutch citizen. Lori and I became very friendly with him and we used to have picnics with him and his family. He was a wonderful, lovely guy. He chose as his apprentice a guy named Henry Tenckhoff. It didn't start with Henry, it started with Fred but Tenckhoff at that time what Fred was doing to keep people alive was that he put a Teflon catheter, we go back to Teflon, a Teflon catheter in people's abdomens for 24 to 36 hours, rinsed their abdomen with physiologic solution and then take out the catheter. Henry influenced of course by the Scribner shunt said this is crazy, why don't we implant something. Well that is a great idea but how are you going to keep it in? He thought about it and said I think if you put a little Dacron cuff around it the tissue will grow in and it will hold in place and be a bacterial shield. So he tried it out in dogs, just that idea, just the Dacron cuff wrapped around the tube and it seemed to work. He started doing some peritoneal dialysis on dogs and he was able to keep them free of peritonitis for a while but he needed to try it in humans. There was no such thing of course as a

DWM
Review board

RAG
Review board and we didn't have an IRB but he understood he just couldn't ask people to do this unless he did something first and what was that? He implanted it in himself.

Literally himself. Henry Heinrich was his name, was a German trained surgeon and that was how he started life, he was not a nephrologist but was a surgeon. He glued Dacron onto a piece of silastic tubing and planted it in himself literally. He swore me to secrecy years later and I did not know this until many years later and he swore me to secrecy and said never to tell anybody but I think he would forgive me now because it was more than 25 years ago that he told me not to tell anybody and that is what he did. Then he and George Shilipatar developed this huge machine and you have probably seen pictures of it that consisted of 40 liter bottles that they would sterilize with heat and bring to the patient at home and they would hook them up. They had to go to the home until he developed the implantable catheter idea because he was himself putting these catheters in not only at the bedside but in the home.

DWM
In the home?

RAG
Yea. So he would go to Ms. So and So's home and take his trocar that he had invented

DWM
This is Henry Tenckhoff?

RAG
Yea , but Fred was doing it before Henry. Henry learned it from Fred. They had this bivalve thing that jammed into the abdomen and then you would put the tube down through it and then remove it piece by piece. We learned to do that too. As matter of fact when I first came to Durham I was putting in Tenckhoff catheters. No surgeon knew how to do it. I was the only one who knew how to do it. I got pretty good at it and eventually the surgeons, I have go to tell you this, there was a guy named Dell Stickle who was the transplant surgeon and the vascular access surgeon so he needed to become good at peritoneal dialysis placement but it took him two or three years to develop the courage to ask a mere nephrologist intern how to do it. So I said I will show you and he said you don't have to show me, just tell me. So I said okay I'll tell you. So the day came when he was going to put in a Tenckhoff catheter per my verbal instructions and we were doing everything right, we had a subcutaneous tunnel and had a cuff there and they worked. As a matter of fact I got an e-mail only about 3 or 5 months ago, I got a telephone call from a woman who said Thank you Dr. Gutman and I said for what and she says 14 years ago you put in a peritoneal dialysis catheter for me and it is still working.

DWM
That is amazing.

RAG
No it wasn't 14 years ago, it was 25 years ago. It was an incredible period of time and was still working. She had never had peritonitis until she douched herself. She had open fallopian tubes and that was her only episode of peritonitis was the backflow of fluid that way. So I was pretty good at it. I am down in the clinic and I make sure the technician who always helped me is up there with Dell helping him and he comes down to the clinic and I said how did it go? He said it went fine Dr. Gutman; in fact it was better than anything I ever saw before because as soon as he put it in she started making urine. (Laugh.) I went over there and I said Dell did you have her empty her bladder first? (Laugh) Oh well.

DWM
So Henry Tenckhoff was putting in these early PD catheters.

RAG
And developing the fluids and writing articles about it.

DWM
So was there any chronic PD?

RAG
Oh yea, one of the first papers I wrote when I came to Durham was just a narrative description of about 40 patients that I put on chronic PD. That was what we called it at the time. We called it Chronic Intermittent Peritoneal Dialysis. We evolved from the glass carboys that we boiled in the laboratory to a huge machine made by Cobe that was a 40 liter stainless steel tank with heaters in it and we had a concentrate in a 2 liter bottle made of sorbitol instead of glucose and it had a pair of pumps and after you boiled all this water and put in through a filter and boiled it and steam came out and peoples ceilings rotted and I have a picture somewhere of the last of the Cobe machines. I actually lined them all up. I had about 10 of them and actually lined them all up and took a picture in the hallway, the death of the Cobe machine, but I wrote a paper about that and then I became the principle author in a paper that is the most uncited paper ever written. This goes back to something I said earlier. It is actually an RCT. It is an RCT paper. It was a VA cooperative study organized by Colburn, what is his first name, the vitamin D guy, Jack Colburn, Jack Colburn and his sidekick Mike Bloomingcranz and we developed a video explaining peritoneal dialysis to patients and hemodialysis to patients and we balanced it so that we thought it was at least a balanced representation and we randomized them to either chronic peritoneal dialysis or hemodialysis. We got amongst all of us, we had about eight centers, and we got about 70 people to agree to participate in this study. It took a long time. It was very,

very lengthy and in the middle of the study Carl comes around and says you really don't want to do 3 times a week 40 liter exchanges you should do it 4 times a day and we will call it continuous ambulatory peritoneal dialysis. So he is developing CAPD and we are studying something else and we were collecting all kinds of data and we finally squeaked by, got all the parameters and had this incredible compilation of data that is all being handled at the study center, the statistic center in New Haven at the VA Hospital and the Chinese guy who was the statistician produced reams, and reams and reams of data and sent it to Jack and said okay you write it up. Jack says I am not going to write up this shit and gave it to Mike Bloomingcranz and Mike said I am not going to write this stuff, we are doing CAPD now. The other people said we have all this data so we ought to publish it. So I was about 5th in line so I said okay I will do it. I really worked hard. I sweated bullets writing that thing up and Ike was very generous, he published it in the Kidney International and we actually studied mortality and morbidity and of course we have a lot of dropouts in peritoneal dialysis so the paper was virtually meaningless but it was RCT. (Laugh) It was rendered even more meaningless since we weren't studying anything anybody was doing anyway.

DWM
How was the outcome for the patients?

RAG
Equal, but that is to be expected when you consider the design of the study and that is sort of my point about RCTs, that they are so highly focused

DWM
That you get what you ask for?

RAG
You sort of get what you ask for. There are certainly many exceptions to that but randomized control studies for therapeutics are going to always be tough. Fast forward to 2006, I am on the board of RPA and Al Klieger who is certainly interesting enough a Yale doctor, remember the study was centered in the New Haven VA, but in a generation younger than I and is now President of RPA and is very active in many fields and is a quality guy in many ways. He has been placed by the NIH and CDC and CMS in charge of a study, randomized control study, for nightly dialysis versus regular dialysis, randomized. I said Al; you are going to be sorry. This is not going to work out the way you want it. I said you know you are not the first person doing an RCT study on dialysis therapy. He says yes I am. I sent him my paper and he said I never saw this before. Which is true, no one has ever seen it before. Last week he wrote an editorial about a small RCT study that has just been published in JAMA, he wrote an accompanying editorial, and makes the point that a) they chose only surrogate outcomes because they

couldn't possibly with such a small group actually get the mortality and morbidity and makes the same point I had made to him, I said the very nature of a fast moving system of care prohibits a meaningful RCT, just can't do it. You are going to have to rely on observational studies to really get information. So he quoted my paper and said that. I wrote him back and said you are the first person to quote my paper in 25 years, thank you.

DWM
You had waited a long time for that.

RAG
I actually said, I knew what was happening, as the last paragraph of that paper said in effect don't anyone ever try this again, I mean I made all the same points in the discussion. I sort of said this was a lot of fun but anybody in their right mind shouldn't try it. (Laugh.)

DWM
What do you think that we, well you know we hear a lot because of Scribner about hemodialysis in the 1960s. What do you think in looking back about peritoneal dialysis? Was it just happening but more quietly? How were patient's looking at peritoneal dialysis versus hemodialysis?

RAG
In Seattle? I think this again goes to a discussion about the character of Scrib. He had no desire to be famous. He had no desire to have his name on things. He really only cared about making progress and helping people. He early on decided if he didn't have a matching peritoneal dialysis program then he was not working properly. So he was very keen in getting Fred Plum there and encouraging Henry Tenckhoff to do it. In Seattle at that time there were plenty of people who were put on peritoneal dialysis. It was regarded again Scribner and then later Blagg's notion that home dialysis was the right thing to do. My fourth patient, in fact I was sort of the junior fellow and the senior fellow was Joe Eschbach, was a 16 year old lupus patient who couldn't do dialysis in Seattle because she lived across Elliott Bay, she lived on that island, I forget the name of it but it is a Navy place, so we trained her and I was heavily involved in this and Barbara what's her name was the nurse, and we trained her and her family to do home dialysis but he saw it as an opportunity to demonstrate that people could and should do this at home and peritoneal dialysis was simply another idea. He also had a strong sense that he was going to learn something by comparing the outcome of peritoneal dialysis and hemodialysis and one of the papers he wrote was about that. He was making the point and invented the term that the clearance of urea through peritoneal dialysis the way we

were doing it at that time was no way near what it was in hemodialysis yet he claimed the outcomes were the same so what could possibly be the explanation for that.

DWM
Was that middle molecule idea?

RAG
That was middle molecules.

DWM
Do you think that when the government really looked at funding in 1972 and began the Medicare funding of the ESRD program the fact that the patient who went there was a hemodialysis patient and in everyone's mind the issues were hemodialysis. There was the big Life magazine article in 1962 about hemodialysis patients, and the legislation that was passed in Congress that the big demonstration was hemodialysis patient, do you think that was why people

RAG
No, no I don't. It has always been the same issue. When you do hemodialysis for the most part someone else is doing it and when you are doing peritoneal dialysis you are doing it yourself and remember the original legislation, what did it say about peritoneal dialysis; do you know?

DWM
I don't know.

RAG
It said that if you were under 65 you did not become Medicare eligible for the first 90 days unless you were on home dialysis.

DWM
Even then. I didn't remember that.

RAG
That was the original legislation and when they said home dialysis they were talking about peritoneal dialysis. So even then there was an effort and Scribner was the one who pushed this to get people to take care of themselves at home.

DWM
With PD being given equal

RAG
It was more than equal. It was for all practical purposes the only really way to do it. Yes we had isolated examples of people doing home hemodialysis and they were generally Seattle. Remote areas like Durham, NC and we were a remote area at the time because how many dialysis facilities existed in NC in 1971? UNC had one, Duke had one, VA had one and Al Ferguson in Greenville, private practitioner who had just moved there, had one, and that was it. So if you were a veteran and you wanted to do dialysis you couldn't do it unless you learned to do it at home.

DWM
The private practice hemodialysis unit, how was that? Did he open it just by himself or was it a corporate dialysis unit?

RAG
He opened it by himself.

DWM
It was just a private unit.

RAG
There is a funny story there and as a UNC graduate you will get a big kick out of this. You know the term PDC.

DWM
No

RAG
It is the clinic at Duke operated in those days and still in these days for and by the senior faculty and it was called the Private Diagnostic Clinic. It was in the spirit of the Pavilion in Columbia and I forget the name of it or the Johns Hopkins Clinic. There was another clinic called the Outpatient Medical Clinic. It was where the residents learned and the people who went to the resident's clinic were different than the people who went to the PDC by virtue of what? Money. Everybody understood this. It was not kept secret. So if somebody wanted to see Collie Gunnels who at that time was the most favored and famous practicing nephrologist in North Carolina and really wanted to have a patient referred to him they would call Gunnels' office and he would say I would be happy to see him please call the PDC. They would call the PDC and they would say Dr. Gunnels has agreed to see Ms. Smith. That is fine, what is Ms. Smith's insurance. She does not have any. Well Dr. Gunnels will see her at the Medical PDC in conjunction with the residents. Okay. Gunnels was pretty good about that but they weren't his patients. The two clinics were physically in the old Duke South building close to one another so

that Gunnels could see his patients and spend some time with them and run over and talk with the residents and say hello and run back. The waiting room for the Medical Outpatient Clinic was styled circa 1930 and the PDC waiting room was overstuffed furniture, leather furniture, flowers, lamps, wallpaper. When Al Ferguson went in to practice in Greenville he set up an office with two waiting rooms. I am not kidding. He had learned that at Duke. That was the way you operate. It is really funny.

DWM
And his clinic was hemodialysis. Would he have been offering peritoneal dialysis?

RAG
No

DWM
No. So incenter hemodialysis.

RAG
There were only two places in North Carolina at that time that was offering peritoneal dialysis and that was me at the VA and a little bit at Duke later, they finally sort of let me try a little bit at Duke, and Hosea _____ and Charlie.

DWM
Yes that is right, early on. It does sound like the VA system was a very early doctor dialysis

RAG
Yes. We didn't need congressional action and there were leaders at central office who wanted the VA, I guess it is sort of the way later on leaders in central office wanted the VA to become the recognized experts in electronic medical record.

DWM
Just be out in front.

RAG
Yea. So they put a lot of money into it and before the '72 law we were the leading practitioners of dialysis.

DWM
I am sure that is true. What about kidney transplantation.

RAG

Well of course that started about the same time or arguably the twin transplants had already occurred in Boston in the 50s but most of the programs early on that were doing dialysis were also doing transplantation. I can think of few exceptions.

DWM
It does seem like there was a little bit of difference in thought in for example Boston where transplant had been done early and everyone was very much transplant focused that dialysis was really a means to maintain, to keep people alive while they were waiting for a transplant and that ultimately the best outcome for treating endstage renal disease was renal transplantation.

RAG
Which is still true.

DWM
Yes, but it certainly sounds like Scribner in Seattle really considered that there were people who would not be transplanted or ever be transplanted and that dialysis the role for them was to keep them alive as long as possible.

RAG
You know I don't know what he thought about that. We had a transplant program. We had a guy from the program that was initiated in Colorado by the guy who had once been a neurobiologist who went to Pittsburgh, what the hell was his name? It will come to me after you leave. This guy was a fruitcake. He was a paranoid schizophrenic but he was a very good surgeon and I honestly don't know whether Scribner understood from the beginning that transplantation was the better alternative. I will tell you that when I came to Duke and Dell Stickle and Siegler were running transplantation it wasn't better. They were terrible. Siggy could not bear a patient losing a kidney and we did not have Cyclosporin or any of those drugs and what we had was steroids and Azathioprine and he poisoned patients with steroids left and right and Bill Statin and I just got furious about it. We saw the sickest people. So it wasn't better at that time. There were big debates about which is better. That was another thing that occupied a lot of thought and time at ASN meetings. Big debates, dialysis or transplantation. Again when you look back on the fads of the time you realize how likely it is that you are living in another fad right now that somebody else is going to be laughing at in 20 years. There is a wonderful book from the 19th century called something, something, something and the madness of crowds and it is a description of fads, mostly financial fads, of the 19th century and how excited people got about something and how quickly it faded and became an object of scorn and humor, the most famous of which is the tulip mania. Do you know the term tulip mania? Many of these things remind me of tulip mania. Tulip mania was a true phenomenon occasioned by the transplantation of tulips from Turkey to Holland early

on before Holland became the famous place where tulips came from, they came from Turkey. When these gorgeous flowers bloomed in the spring everybody wanted one. Now that was interesting because every summer where you had one tulip you now had two. So if you had a tulip bulb you had a potential source of income, you just needed one bulb. People started bidding up the price of bulbs. They became equal to the value of a house during the peak of the tulip mania. There were stories about how the gardener accidentally ate a tulip thinking it was an onion and things were crazy. It lasted about eight years with the price of bulbs going literally through the roof and then everybody realized if they keep dividing we are going to have lots of tulips and this isn't necessary. There were many stories like that. Well many of these fads. So we were arguing about transplantation versus dialysis and there were many, many seminars about it. Can you imagine having such a seminar now? I mean it is absurd. Yes that discussion was going on but exactly what Scribner thought I don't know. You know the long-term care plan of the dialysis unit?

DWM
Yes

RAG
Do you know why it exists?

DWM
No

RAG
What is the most important question on long-term care plan?

DWM
Well, it has to do with rehabilitation and transplantation.

RAG
The question is a patient a candidate for home dialysis or transplantation.

DWM
Right

RAG
That was written into law by Congress, that long-term care plan regulation, was written into law because they were hearing from people that scum like you and me were holding on to patients in hemodialysis units and we had to certify every year that we had thought about the better therapies.

DWM
It is interesting that you say that scum like you and me because there certainly is that undertone always for those of us who cared for dialysis patients that the government or somebody thinks that we are trying to keep people on hemodialysis. What do you think is going on with that?

RAG
Well first of all it was happening. There is no question it was happening. It was not always motivated by money, it was often motivated by the real thought that my dialysis is better than your transplantation which sometimes was true but there were pecuniary motivations as well, no question about it and certainly the transplanters of the time thought they were not getting enough people referred to them. Now they cannot possibly handle all the referrals that we want to give and are mandated to give. I have not said anything about my most famous paper. The most famous paper I ever wrote was published in New England Journal of Medicine circa 1981 and was on the rehabilitation of dialysis patients. I have the actual article somewhere but this is the book that came out of it that I put together using the computer that Bill Sted helped me develop and that Ike Robinson helped me get published.

DWM
This book says Duke University Survey of Physical Activity and Employment Status of Patient's on Maintenance Dialysis, 1981.

RAG
Yes, published in New England Journal of Medicine. This is the information it is filled with. All we did was develop a survey instrument that a social worker could answer in a few minutes and we used something called the Karnofsky scale which had never been used before, we were the first ones to use it. We published this. This is sort of the central thing. On the Karnofsky scale numbers 1 to 39 are morbid, 40 to 69 are debilitated. Look at that. This is in 1981. Why did I do this? Because I saw how bad dialysis was actually rehabilitating people and I was very distressed by it and it distressed me that nobody was talking about this. This is obviously particularly true of diabetics but there were plenty

DWM
You had already divided out the diabetics versus the non-diabetics and it is clear that it is worse for diabetics.

RAG

Yea, we already understood that. Anyway, this is the central theme. This is what people remember about this paper. I was practically taken out behind the woodshed by most nephrologists. Why did you publish that? Everybody knows that. Why did you publish it and I said you and I know it because we practice nephrology but it is not known. It was my 15 minutes of fame. There are articles written about this paper and about me that were published in the Wallstreet Journal and New York Times and Boston Globe and Washington Post. Big articles.

DWM
What were they saying?

RAG
They were saying this is not good. What are we spending all this money for? We have got an ethical problem and that was my point. It was still a hangover from the old days when I thought dialysis was half-baked and frankly I still do. I mean I see a lot of misery. You see a lot of misery. I see a lot of people clinging to a meaningless life and I find it very distressing. I see ethicists saying I can't make a decision to let people go without their permission and I understand that, I understand the slippery slope argument. I understand the humanitarian. I understand the argument that my version of quality of life is different than the patient's version. In fact, I am a published author on a paper that proves that because the next paper that I have my name on about quality of life also in the New England Journal of Medicine was lead by Roger Evans and the paper shows exactly that. The instruments that measure quality of life where you are asking the patient give entirely different answers than the ones where you are asking doctors and social workers. They are not only not correlated they are not even close to the same, so I know that. But to my dying day I am going to be very distressed about this halfway therapy. I have had a good life because of it, I have made money because of it and I have become well known from time to time because of it, but it is halfway therapy. I don't think wearable artificial kidneys or better membranes or any of that stuff is going to make a big difference. I also don't think we are going to solve the vascular access problem in any measurable big way.

DWM
What do you think the answer is?

RAG
The first right thing to do is completely adequate information for everybody about what they are getting in to. I have patients tell me that I am unnecessarily frank. I said to a woman the other day, we can do dialysis and you will live a few extra years but they will be the worst years of your life. Do you really want to do it? This is a good time to ask because you don't need it right now but you will need it soon. She is furious at me and

so is her primary doctor but I think it is the right thing to do. Candor is important and clear information, clarification about the goals, and discussion about under what circumstances will you want to stop, what is it that would make you want to stop and have you discussed this with your family. I think that transplantation is the answer. I think far too few people are willing to give kidneys after death and probably during life. I think transplant programs are enjoying an ivory tower existence. We will only take perfectly healthy donors. I have asked people as long ago as when I took care of the man whose wife gave me this thing, he was a practicing psychiatrist with severe diabetes, and he wanted his mother to give him a kidney. Duke said no, her blood pressure is high and she might die. I said to them, she is 72 years old. If she has 10 times the risk of a 32 year old of dying what the hell difference does that make. You are talking about 1 in 100 versus 1 in 1000, what is the problem if she is willing to do it. I talked them into it and he lived an extra five years. I think the transplant programs continue to be excessively restrictive about taking living donors. I think the population is way too unwilling to sign that little donor card or put that little heart on the driver's license or however you do it in Virginia. I think planning for dialysis is inadequate. I think dialysis would be a lot better if we were able to plan far enough ahead. I think expectations are way too high and unrealistic. I don't think home dialysis is the answer. I honestly don't think except for about 20% of the population that more times per week is the answer because most people are not going to be willing to do it. I think there will be more people to do it and I think the ones that do it will be happier and healthier but they will also be bored to tears and feel trapped. I think it is a pretty tough existence but that is what I said in 1981 more than a quarter of a century ago.

DWM
I think it is interesting that here we are in 2007 talking about these issues
and certainly as I read the Shane Alexander article in Life magazine where the big issue was the committee, the anonymous committee in Seattle, choosing who would live and who would die but the point that some of the committee members made and some of the medical community made at the time was this treatment is not easy. It is not good. The quality of life for people on this treatment is not good and that there are only probably particular people who could even deal with this lifestyle or begin to benefit from it and that it is a hard treatment and still is a hard treatment today. It is an interesting issue that we still have those same dilemmas today to deal with.

RAG
Scribner was an extraordinary person, extraordinary person. He saw the whole thing. I read a description once of the life of Mozart and he was asked how were you able to write music so fast. He said I am not writing it. I am writing and recording it. I have already heard it. It is in my head already. Scribner had the same experience. In that

sense he was like Mozart, a genius. He could see the whole pattern from the beginning and it depressed him.

DWM
If that is true, I can certainly see his issue in that if he was seeing in Seattle this small number of people who were beginning to dialyze and have these same issues and here we are today in 2007 and the big difference is the numbers are just greater. The numbers of people who have to make the decision about starting dialysis or not starting dialysis and have to deal with the dilemmas of access.

RAG
It is not only the numbers are greater but the nature of the population is dramatically different. Another patient that was my patient was an engineer, hardworking guy named Erman Morelli. There are papers written on this. This guy Paul Kimball in Washington writes on this all the time. One of the strongest indicators of a good outcome in dialysis is what, besides not having diabetes or obvious things like that. The answer is strong family or strong family support group or strong environment. Erman Morelli was a young Italian American who did not have any money for dialysis and every six months the Italian community put on a banquet for him. Hundreds of people came. I came to two of them. They had up at the front table a 20 ft sub sandwich, Italian sub sandwich 20 feet long. People bid for it. He was the star of the show. He was delightful, optimistic guy with a scar here, scar here, scar here, and here and here and here, up his legs all Scribner shunts. This was very early. Each one lasted about three months. Things seemed to be great. He was working for a while. He was doing pretty well dialyzing but he had vascular access problems and he died. But he did very well for a long time because I am convinced because of his personality, his youth, and his family support. Here in the last years of my career the thing I enjoy the most is my outreach clinic in Granville County. I see patients out there and also see patients here. The difference in seeing patients in Granville County and seeing patients in Durham County is night and day. It is extraordinary. The patients I see here come to the clinic by themselves, they are depressed, their family is not interested and I am exaggerating of course to make a point but go to Granville County and sons and daughters come with them and they show interest and they call me later. They provide all sorts of support; I'll build a ramp, I'll do this, I'll do that and you don't see any of that here. Our Fresenius database outcomes in Granville County are far better in the dialysis unit. Our phosphorous is lower, our intradialytic weight gains are better, our coming to dialysis is better, PTHs, everything is better and they say oh what a wonderful group of nurses they are. I say yea they are great nurses but let me tell you it is just a different population. Paul Kimball has written a lot of science on this and he is right. So it is a very strange mix and the more we try to take hopeless people and put them on dialysis the higher our nursing turnover is going to be, the higher our expenses are going to be, the greater the level of dissatisfaction

among the patients, the more angry patients, the more shootings we are going to have and nobody knows how to deal with this. Nobody knows how to say, even knows how to say maybe let alone say no.

DWM
This is true.

RAG
Well, I hope you solve the problem. (Laugh)

DWM
Well, are there any other big issues you can think of that we have not covered?

RAG
No, I think we covered them.

DWM
I really appreciate your time and your words and wisdom.

RAG
My pleasure.