SA: Hi, my name is Stephen Ash. I'm a practicing nephrologist with Indiana University Health Arnett, Lafayette, Indiana and we are interviewing today Dr. Eli Friedman, a pioneer in the field of artificial organs. His interview as a pioneer is sponsored by the Project Bionics of ASAIO. Dr. Friedman has certainly been central in the development of the dialysis and also transplantation in his career, and he had his education beginning with a Bachelor's of Science at Brooklyn College, had his MD degree from State University of New York Downstate Medical Center. He then transferred to Peter Bent Brigham Hospital in Boston for an internship in medicine fellow and renal medicine and senior resident in medicine, but after a short stay with the Communicable Disease Center a couple of years as an Epidemic Intelligence [Service Officer]. He returned to Downstate where he was promoted to [Distinguished Teaching] Professor and still remains active there. Dr. Friedman has been instrumental in ASAIO’s history by being president and also for many years the very successful editor of the ASAIO journal. We really appreciate the opportunity, you allowing us to speak with you, and I have considered Eli a friend and myself very fortunate to have that for some time. So welcome here, Eli.

EF: Thank you for you kind words, it's a pleasure to see how ASAIO's “vital viscera” work and to become a part of it again.

SA: We certainly appreciate it as well. In terms of just looking at career choices early in life what led you to decide to be a physician?

EF: The best answer is that I had a couple of accidents in my development that shifted my training. I think the first and most important was in comparative anatomy at Brooklyn College where the professor Benjamin Coonfield came over repeatedly while I was working on the lamprey to try and understand its muscles and vascular distribution and said what am I going to do after Brooklyn College, and I said, “Well, I’m going into organic chemistry because I think it really appeals to me.” “Well, have you considered medicine?” And I said, “But I’m going to go into organic chemistry.” “I’d like you to go for an interview in medicine at Downstate there nearby.” And I said, “Dr. Coonfield, please, I have a brother who’s a chemist, I’m very happy with chemistry.” “We’d like to have you in the medical school,” and I said, “I didn’t really consider being a doctor, but tell me more about it.” And I won’t go into the details but that’s how it happened; and I just recently was looking up this point stimulated by your list of questions prior to the interview and I went to see Benjamin Coonfield’s contributions at Brooklyn College, very substantial, the anatomist and biologist and ultimately organizer and he changed my life.

SA: Wow, impressive story. And what sparked your interest in nephrology?
EF: Well, here again it goes along with an article that I wrote, “An Accidental Nephrologist,” some time not too long ago, but when I was going to finish the years at Downstate Medical Center and medical school, at the third year I was called by the chairman then, Dr. Perrin Long who is the man who introduced sulfanilamide into the United States, and he had been a general in the army, and he said, “Where are you thinking of going for your house staff training?” And I said, “Brooklyn Jewish Hospital. I’m going to try and get an internship in internal medicine. I know they only have two, but it’s what I want to do.” “Have you thought of looking elsewhere?” “No sir.” “Because I’d like you to go to an interview at John Hopkins and at Harvard and elsewhere if you wish.” And I said, “No I’ve made my own opinion.” He said, “Would you like to have help with the money to get there?” And I said, “No, that’s not it.” “Okay, please apply.” So I applied to the Massachusetts General, the Peter Bent Brigham Hospital it was then called Peter Bent Brigham, but when it absorbed the Robert Bent Brigham who was the brother of Peter Bent and Women’s Hospital, it’s now Brigham and Women’s Hospital.

[EF:] And I went there for an interview, went to John Hopkins, and had a very good experience, and on the day when I opened the envelopes as to where we were going to go, I found that I was the first person from Downstate to go to Harvard, and the first person to go to the Peter Bent Brigham Hospital, and when I went there my first rotation was the renal rotation; I didn’t know anything much about kidneys and the renal rotation was under the tutelage of John Putnam Merrill. Merrill was an unquestioned hero of World War II; few people know that he was in addition to other things the flight surgeon for the Enola Gay. The Enola Gay was the Flying Fortress¹ that dropped the atomic bomb on Hiroshima, changing the world—and then Merrill came back to the Peter Bent Brigham Hospital and got interested in the artificial kidney and met Kolff in 1948; and the two of them decided to improve on his original kidney that he built in Holland during World War II under the Nazi occupation from 1942 to 1944; and that was when the Kolff-Brigham kidney was introduced and forty of them were sold and dialysis moved around the world and that was my introduction to dialysis.

SA: And you learned to do hemodialysis directly from Dr. Merrill.

EF: Yeah. I mean it was very different than anything we do with fellows today because the fellow had to measure out the solutes that were put in the water, the 100 liter tank and for example sodium bicarbonate, sodium chloride, glucose, others and you were taught how to taste the difference to make sure that you didn’t screw up while you manufactured the dialysate. It was very cumbersome; one dialysis could take eight hours of preparation, we actually wound the membrane on the rotating drum and tested it for leaks, all steps that we did prior to each dialysis. Now a number of people don’t realize how marvelous Kolff was in what he built, because he, do you know, for example what the membrane was the he used?

SA: A sausage casing.

EF: Yeah, but what kind?

¹ On reviewing this transcript, Dr. Friedman noted that the Enola Gay was a Boeing B-29 Superfortress bomber (Silverplate series), rather than the smaller Boeing B-17 Flying Fortress.
SA: Cooper [inaudible], cellulose.

EF: No, no it came from the American Viscose Company, it was Nathan's hotdog casing and almost nobody knows this, and the pump that he used to rotate the drum came from a Model T Ford and the other part, he had no money for a budget to build his artificial kidney and he was lying to other people because he was working allegedly at the Kampen Porcelain Works; and because he wanted to build an artificial kidney, he worked surreptitiously and built it. He also made the first blood bank in Europe. Kolff was absolutely incredible. I met him and I'll tell you in a minute how, or maybe later how I met him, but we invited him to Downstate where he talked and I was absolutely infected with his enthusiasm and his vision of the future.

SA: So you met, you met Kolff at Downstate after you returned there?

EF: Yes.

SA: But you hadn't met him before?

EF: No.

SA: Really. He was a remarkable person.

EF: He was on our faculty as a visiting professor and I think we must have had him twelve or fifteen times and also he stayed in my home with his wife for some time.

SA: Wonderful. And of course the Kolff-Merrill kidney, it didn't have blood pump right? It used to have arterial access?

EF: That's correct.

SA: You had to be really careful to get as much blood out of the end of the line as you were putting in.

EF: Well another component of what you needed was a vascular surgeon to connect the artery and the vein. Each dialysis was a big deal.

SA: It sure was. Your goal, I suppose, in returning to Downstate was to establish an in-center renal program?

EF: No, not at all. My goal in returning to Downstate was that I liked Brooklyn and I wanted to be in internal medicine, and there was this static and stimulus coming out of Seattle that was having other people to try and make artificial kidneys, and I was directed by the dean to look into this because I had had some training with Merrill. And so I agreed because I didn't want to lose the job, but I cannot take any credit for having the vision to come back and build a dialysis unit. It turned out that the work of Dr. Blagg, which you've looked into, and Scribner in starting dialysis and showing its feasibility as a chronic therapy changed the world in ways that even they didn't know because everybody wanted to do it and they couldn't. They didn't have enough artificial kidneys; they didn't have a budget to do it and when we started, for example, using the Scribner shunt very happily, the plastic supplies
for the patient who had to change and attend to that shunt periodically were not available; I had to go to a drug manufacturing store to get them to make packets so that a patient for five dollars a week could get enough of the supplies so that they could take care of their shunt; there were no fistulas yet.

SA: And how many patients did you treat in the earlier years at Downstate?

EF: I think we got up a maximum in the unit. We had a twelve-bed unit and I think we got up to about twenty-five as a stable number until the major change that happened in, I think it was 1972, when Medicare decided that they would pay for the funding of patients and that opened all the doors.

SA: And did you have home patients as well?

EF: Yes, thanks to one of our women fellows, Dr. Barbara Gustin Delano, we had her interested in home dialysis and she began a home dialysis program that worked very well and we got up to as many as about forty patients at home.

SA: And that was before 72 or 73?

EF: No, that was after.

SA: After, yes. Did you--you also worked very closely with transplantation.

EF: Yes.

SA: With Dr. Merrill. In fact, one of your earliest publications was on the first transplant between non-identical twins.

EF: Right and do you know why that was possible? Because John Merrill, in his training to drop the atomic bomb, learned about radiation and its toxicity, and realized that if it was true that other than identical twins--and the Brigham had started kidney transplant by doing successful transplants between identical twins--but if you wanted to go beyond that, something happened to the kidney that nobody understood, in a period of days to weeks and that was rejection, and it was Merrill who looked into it and said there were--along with Peter Brian Medawar in England--but said that the rejection is a consequence of the kidney transplant being attacked by white blood cells, lymphocytes, thymocytes, and that if we can turn off the lymphocytes and thymocytes maybe the kidney would last longer, so Merrill said why not use total body radiation? Wow. And we stated giving 250 rads of total body radiation to, it was one of the Herricks were the first twins, but one of the patients got total body radiation, survived terrible infection and lived for twenty-six years with his transplant from his fraternal twin brother.

SA: And he was taking medications later or--

EF: Yes, but even the medications, we didn’t know which [medications], there weren’t any medications to give. When 6-mercaptopurine first came in this was a major revolution. Now the drugs we take today as routine, all came much later.
SA: Between the two, which really fascinated you more? The fact that dialysis could work and remove all of thousands of uremic toxins or the fact that transplantation could work?

EF: The fact transplantation could work, because the issue of finding a good kidney to put in a sick patient and sewing that in and then leaving the patient relatively free of any need for further care; and that’s what I learned in the identical twin service where I was taking care of the patients and there was no rejection question, but that wonderful thing made me wonder how we could get transplants to work without immune rejection and later of course it grew into thinking about xenografts and the work that’s going on with the Starzl Institute at the University of Rochester now where they’re regularly putting pig kidneys into rhesus monkeys and they’ve got them living now for as long a year. So, I think when we get to dialysis I take a peek at one, a distorted peek of how we can think of the future, but I think that it won’t be too long before dialysis is just a memory because there are other things that have, are going to replace it much better.

SA: Things like transplantation and--

EF: Well, xenografts.

SA: Xenograft.

EF: Yes, because there aren’t, though the number of patients who want kidneys has progressively increased over the past twenty years, the number of transplants performed has remained about the same at least for the last decade, last eight years or so and so we’re not treating the patients who need to be treated with transplants. But if you could go as going to the butcher shop and just call up and say, “Send me two of these and one of those, we’re operating tomorrow,” and the xenograft worked and was not rejected, then you have a therapy that’s applicable around the world. But even there is a major problem, in that it can’t be afforded by most countries. If you take the two countries with over a billion population, India and China, both have a lot of good things if you’re rich and you’re well-connected, but if you have kidney failure, you don’t get treated. Less than five percent, probably less than two percent of patients with kidney failure are actually treated properly in China or India, that’s the tragedy of life today.

SA: You have obviously felt that dialysis technology could be simplified, because one of the great things that you created was your “suitcase kidney.”

EF: Yes.

SA: Could you describe the reason that you saw to do that and--

EF: A number of patients, we were taking patients who were employed, as Seattle had suggested and we were taking patients who were innovative and we even had a series of doctors early in the course--I think we had four doctors--and they wanted to know why they couldn’t travel and take a kidney with them, so I got Halliburton cases and had some advice from various engineering associates at Downstate and we took all the parts, put them together, put them in a portable attaché case and it worked; and I was surprised that it worked, but the preparing of the materials for the dialysis was never picked up
commercially and the patients eventually found it too much trouble to devote four to six hours before they could do their dialysis.

[EF:] Now there's an interesting story about George Schreiner and my Suitcase Kidney. One day, the late George Schreiner, who I very much admired, called me and said that, could I meet him at Kennedy Airport, he was at Georgetown and meet him within two hours and give him one of my Suitcase Kidneys to use and take with him with enough supplies to be able to use for a month. And I said, "What is this for?" And he said, "Eli, don't ask questions, just go." "What, George, I don't understand what you're asking me." "Eli, will you do it or not do it? I've been your friend a long [time]." “Alright, alright, two hours, no more.” So I ran in, got everything ready, went to the airport in a cab, had the cab wait, and only later, and it was about eight years ago now, that George Schreiner spoke for the last time at Downstate, maybe a little longer; when did he die, do you [recall]?

SA: I'm trying to remember.

EF: Okay.

SA: Five or six--

EF: Oh, well it was about eight years ago that he, we were honoring the giants of nephrology and he was of course one of them and I asked him a question, I said, "Will you finally tell us who the Suitcase Kidney was for?" And he said, "Alright, Eli you're a pain-- Fernando Marcos," so it was [for] the head of the Philippines.

SA: Yeah of course. The device obviously worked. It had--

EF: Yes, I still have several of them.

SA: You had to mix, manual mixture of dialysate?

EF: Yes, yes.

SA: But you--

EF: But it was too cumbersome. And it required the person to be too much a technician, and the whole point of the people who were doing the best things in dialysis was to simplify it, so you didn't have to be a scholar to do one dialysis. Weighing out the chemicals, tasting them; you don't have to do that anymore.

SA: Right. If there was an innovation to make dialysis more practical in the home, some kind of greatly simpler artificial kidney what percent of people could do home dialysis?

EF: Excellent question, because of the data that's coming in, especially from some Canadian studies, that show the small percentage of patients in dialysis units who can say to anyone of their names who understand what's going on or can recite the medications they're taking, so we've done a few superficial studies so far at Downstate and I would guess that maybe 20 to 25%. But, the question once behind or ahead of yours is supposing you could
do away with dialysis, is that really possible? And I think it is. And you're going to ask me why and how and I'll come to that.

SA: Why and how?
EF: Oh, alright.
SA: Just kidding.

EF: Well, the most promising doing away with dialysis is the xenograft path and that is a drumbeat that's going on, as I said in Rochester at the Starzl Institute very well; there are the preparation of new kidneys using stem cells and that's really possible, though it hasn't gotten to any clinical test yet, but there is one other stark approach and that is using the bowel as kidney and the bowel as a kidney has been an idea for a long period of time since the observation that patients who had cholera and advanced diarrhea all of the time had very low blood urea nitrogen and other chemicals containing nitrogen in their blood. So there was then a trial in China and then Taiwan of what was called, and is still called diarrhea therapy and it was found that you can; just before that there was a trial of a patient who had an ileal loop, a young man who was dying because there was no dialysis, he had an ileal loop, two catheters and he lived for two years just having washing of his bowel as a substitute for his own kidney. Now I think if you're asking me why the bowel as a kidney, because it makes sense, one observation that really attracted me is that if you have a calf, a cow's calf and you remove the kidneys the calf doesn't die. The bacteria in the rumen are capable of metabolizing nitrogenous waste for up to several months. And so there were a couple of workers, Thomas Chang in Montreal, Canada was one of them who thought maybe he could make a bacterial mix that would keep rats alive when he took the kidneys out of rats and he made a 5/6 nephrectomy in some rats and fed some of them placebo and some of them his specially prepared Escherichia coli and the rat lived--for 150 days, and other rats lived and the mixture of bacteria that has been used is now in a commercial preparation by the Kibow Company. I have no commercial interest in it. Kidney for bowel, that is the name Kibow, and they have already shown in cats and dogs and pigs that the feeding of the proper bacteria will substitute for kidney function and we have started a trial we've finished the phase of patients with chronic kidney disease where they've been given placebo versus the active bacteria made by the Kibow company orally and found that when they get the bacterial combination--it's called Renadyl--when they get this their urea falls, the creatinine falls, they have fewer complaints, few side effects, and no infections and we're in the process now, the Mayo Clinic, is one of the other facilities participating of having a twelve-center trial of bacteria to see how much they will do in substituting for failed kidneys.

SA: In patients with ESRD [end stage renal disease]?

EF: Patients on dialysis.

SA: On dialysis.

EF: And the plan is, thank you for that point, the plan is to see first how they tolerate it with no change in dialysis frequency--we've done that and they feel better and they have a
reduction in a number of intermediary nitrogenous waste in their blood and they tolerate it well, then we have to go down to two treatments a week instead of three and one treatment a week instead of three and then zero treatments instead of three; that's wishful thinking and dreaming and hoping.

SA: Well, the ballot certainly chemically a two-way street, so.

EF: Yes.

SA: I think that there is promise for that. In terms of dialysis what do you think are the biggest innovations you've seen since you first used the Kolff-Merrill kidney until now?

EF: Well, I would think that the first major innovation was the Scribner shunt. And it was incredible, almost unbelievable, because it freed us of the need to have a strong linkage with an always-on-call vascular surgeon. Then New York finally entered the scene with the arteriovenous fistula which was made at the Manhattan Veteran's Administration Hospital, and that replaced everything with a little connection between the artery and vein, if you had an artery and vein easily to get and then the vessels of the arm get very big and you could do vein-to-vein dialysis. That revolutionized dialysis because you didn’t have to have plastic, you didn't have to know, worry about it, the bridge slipping off and the patient bleeding to death. The next major advance was the hollow fiber dialyzer because we started with Kiil dialyzers--that's what Scribner was using and we learned from him how to do it and it was pretty cumbersome to build it and we had technicians trained with the slabs and put the cellophane on, but the hollow fiber and disposable cartridge dialyzers were really wonderful.

SA: Yes.

EF: And then the other big advance in our thinking and in how we behave was Paul Teschan in the Korean War because he took, before we had the entirely new kidneys, he took the Kolff-Brigham kidney out to the Korean bases and did battlefield dialysis for hyperkalemia and showed that dialysis did not have to be linked absolutely to a hospital.

SA: And other machine adaptations--bicarb dialysis and controlled filtration?

EF: The problem with all of that is that the trials have not been side-by-side respective so you can’t say which is the one that I want to do, which is the one that’s been proven. In the same way that trials, for example, the most difficult one to deal with now is the mortality in peritoneal dialysis versus hemodialysis; is it really lower in peritoneal dialysis? Or the other way where the sickest patients [were] not allowed to go to peritoneal dialysis so they went to hemodialysis and those are the ones that died, and I don’t know the answer to that, but it’s an important question.

SA: What do you think of the possibilities for peritoneal dialysis?

EF: I think that, as I see it now, there's no future for peritoneal dialysis because it's too much of an imposition on the patient. It may be a future if there’s not vascular access.
source, if the patient has a particular feeling that they can do it well and they've seen it and they want to do it, but as a problem solving tool, I don't know. There are countries that have a good percentage of patients who were treated for kidney failure on peritoneal rather than hemodialysis; Mexico is one, Taiwan is another, so I'm, my opinion is under informed and not data based.

SA: Okay. Do you think innovation in dialysis has been as expected, or slower than you would expect?

EF: Slower than I expected, but then I think of Yogi Berra who said the thing, predictions are very difficult sometimes, especially about the future.

SA: Great.

EF: I have been wrong in so many predictions. For example, I know that Dr. Blagg in his interview was talking about his estimates of what was going to happen at the first conference that Dr. Blagg and Scribner held in Seattle of the, just shortly after the NIH was beginning funding, and there was a chronic kidney branch and we had the first federally funded dialysis unit. The conference was held and I think it was 1964, and I chaired a session and I was asked how many patients do I think there will be in the United States in the near future if dialysis really goes as I say it should, and I said that I would not be surprised if we had as many as 3,000 patients a year who were suitable for dialysis, that's how wrong I could be.

SA: Well, that's always a guess; might be closer to per week, actually.

EF: Yes.

SA: So. Great. And you've been a stalwart member of ASAIO for many years and contributed a great amount to the society, and plus you were editor of the journal for what, fifteen years or about?

EF: A good number of years.

SA: Yes. What, how do you see ASAIO's role in terms of innovation and in promoting new designs of devices and therapies?

EF: That's the most uncomfortable question that you are going to give me in a sequence because, I don't know how it happened, but it looked to me, it looks to me as if ASAIO walked away from the kidney and left it as if it didn't belong with the thoracic surgeons, the pulmonary surgeons, the other spare-part people; I can't imagine how the society that was founded by Willem Johann Kolff and had all of the major advantages, including Scribner's great first paper, how it could just leave dialysis.

SA: Uh huh.

EF: And it isn't that the dialyzers left ASAIO, it was that the leadership of ASAIO, as I understood it, walked away from dialysis.
SA: It’s certainly been a more minority part of the program for some years, although this year’s renal--

EF: I saw that.

SA: Has gone up and the program is larger.

EF: I believe that there is some self-inspection in realizing that the ASAIO’s vitality came from in large part the kidney doctors. And that we’re moving towards bionic devices that will probably serve as the inheritors of the dialysis tradition and that the bionic devices are very appropriate for ASAIO, David Humes, for example, president of ASAIO, is a leading synthesizer of the new kidney.

SA: Yes. So there’s excitement and there’s more excitement when the approaches are radical and making progress as well. And you’ve also been a professor at the Downstate for many years. Was Downstate supportive of your role in particular in improving kidney technology, particularly the Suitcase Kidney or sorbent work?

EF: It would be hard for me to imagine an institution being more supportive. Almost nobody knew what the “expletive deleted” I was doing. I had no space to speak of, I had a small lab, but the chair of urology at the time, Reginald Keith Waterhouse, gave me Ward A-22 of Kings County Hospital--we ran Kings County Hospital, as well as the University Hospital that was to come as a state hospital--and I was fortunate the New York Kidney Foundation gave me enough money to rebuild the unit, the specific A-22 ward, and make it a fourteen-bed unit. The university came by and tolerated it, but nobody really knew what I was doing or why, and as grant after grant came in, and we had conferences, the president and others became interested, and from toleration they moved to joining in and trying to build Downstate's participation as a renal center. And we have: we had the, at Downstate the first woman fellow, the first black fellow, the first Hispanic fellow, the first Hasidic Jew as a fellow, so all this that went along brought nephrology out of the “where is Seattle anyway, and who cares about Brooklyn?”, it brought it into the general arena where it was part of contemporary medicine. And we had visiting professors and I went to be visiting professor, so that whether it was Germany or France or elsewhere, dialysis very rapidly grew as part of world medicine.

SA: And Downstate’s reputation certainly grew to be recognized around the world.

EF: Thank you.

SA: Very impressive. You also have over 500 peer-reviewed articles and, that every one looks, utterly impressive but different from the others; what role does the publication have in the world of research clinical medicine and devices?

EF: I don’t think it could be more vital--when something is going on that you want to communicate, you have to be able to have a legitimate basis for summarizing what you’ve done and conveying it to others, and that’s where the journals come along and they’ve served a marvelous function; the problem today that’s happening and I don’t know how to deal with it is that there is so many new online journals and journals that almost harass
investigators saying, “Give us this, give us that, come to a program in Beijing next month,”
that we may be losing the ability to communicate new advances effectively.

SA: And do you see any way to prioritize the journals in the reader’s minds or do you have
any response to that?

EF: There are still journals that if you get into them it’s pretty wonderful; The Journal of
Clinical Investigation; The Journal of Experimental Medicine; The Lancet; and making the
legitimate journals a home and continuing to have creative investigators published in them
is one way to respect and honor their heritage, but I don’t know, things change and the one
thing that happens when you get is old is you fail to see the marvelous innovation that
could be possible when you see things as you live them as they way they’re going to be and
they’re not.

SA: What do you see as the biggest challenges for ESRD therapy? What will it be in twenty
years?

EF: Without a question, it’s cost. And if you look at, for example, the price of a kidney
transplant which I’m advocating in the United States, $150,000 with minimal donor fees;
dialysis $85,000 a year; now that’s why Ghana, Sierra Leone, South American countries,
they can’t touch dialysis. Even though it’s there today, everybody dies. And as I mentioned,
in the two countries with over a billion population, China and India, 95 plus percent people
with kidney failure die, even though there’s a way of keeping them alive for months to
tears.

SA: It’s crude economic reality; and the solution--are there approaches you mentioned
before? Xenotransplant and--

EF: Xenotransplant has the advantage if you can get it to work without a secondary
immune response and I think that may be possible of a single operation and the patient
now goes to live thirty years. And the bacteria makes sense because they could be in little
capsules and given around the world. But will the bacteria work, or am I just an overly
hopeful optimist?

SA: Alright. I don’t think that would surprise anyone that you’re an optimist.

EF: Okay.

SA: Anyway. What recommendation would, do you give, say, a resident who says, you
know, “I think nephrology is neat. I’d like to go into that field.”

EF: I would say that please take an elective and if you can’t find one we’ll help you find it
with somebody who is doing what most attracts to you about nephrology and then see if
you can make a single creative observation that you can publish, and publish means that
people will criticize you and just have someone know is interested in bionics. It was
interesting in the Six Million Dollar Man-- who was played by Lee Majors—[portraying]
Steve Austin the astronaut who was injured who was rebuilt [with his vital organs
replaced] by bionic parts [that] worked beautifully and then there was [a derivative series]
the Bionic Woman who followed the Bionic Man, so I believe that people, and we get a large number of requests to go into nephrology, but they’re not sure of what nephrology is or why it’s so attractive. The one thing that is less than attractive is to go into commercial dialysis units and just see the technicians or nurses spending too little time with the patient and worrying about getting the drums of this and the drums of that moved around and forgetting that you have patients to care for. One statistic that is really disquieting is—again from a Canadian study—a little over seventy-five percent of dialysis patients says that no doctor discussed the alternative therapies with them before they were started on dialysis and no one told them what to be, what they should expect during dialysis or what the prognosis was, and it appears then that we are not doing our job as we learned the physician’s duty to bond with the patient and to guide the patient. How we’re going to do that with commercial dialysis units, and just recently under Obama Care we have a new form of electronic records that to do them properly, which we have to do to get paid, requires much more than the fifteen minutes per patient that we have arbitrarily allotted, and so we spend more time looking at the computer screen and making x’s than caring for the patient and I think back to the old statement, “the secret in caring for the patient is caring for the patient,” and we ain’t doing it now.

SA: Wow. And if you had a do-over, if you had a choice to differently, take a different course in your career would you have one?

EF: I think I’ve been very lucky because people have paternalistically guided me and they’ve given me good suggestions, and I’ll just tell you one other bit of; may I one other bit of luck?

SA: Sure.

EF: Okay. I was with Merrill as fellow and doing the dialyses and the man Ben Stein who invented the electric hockey game in Canada in Montreal had in his sons the terrible presentation of Alport syndrome which is a hereditary nephritis associated with deafness and vision changes and dying. Of his three sons two had died, and the third came to us and when Mr. Stein came down from Montreal to see his son, I had done the dialysis on him the day before as Merrill directed that I do and Mr. Stein said, “Do you know there’s a two-headed dog that’s working in Russia?” This man Demikhov at the Sklifosovsky Institute had solved the problem of rejection of grafts, but we didn’t know how to do unrelated [donors] at that point and we were just getting interested and he said, yes I’ve heard about that; he said, well I would like you to go over immediately to the Sklifosovsky Institute and see if there’s something they could benefit Lionel so he doesn’t die. I said, I don’t make that decision it’s up to Merrill and Merrill spoke with Ben Stein, Ben Stein determined that I must go and I have to leave that night, he handed me a fistful of $100 bills, one of his agents would meet me at the airport and everything would be handled and they planned the trip for me and the trip started at the Sklifosovsky Institute, I saw two other centers in Russia, I went to Paris and I saw at Hôpital Necker the magnificent work they were doing there. The whole thing was planned for me, oh and in England as I finished at United Kingdom, I met Peter Brian Medawar—he was the Noble Laureate for discovering how rejection is handled and how it reflects itself—and we invited him and he became a visitor at Downstate, so all this happened by chance because one man’s son was dying and he wanted someone to go
and I was the person that someone picked. So at least on three occasions I was fortunate in that the pressure externally had me do something that changed my life; can you sit down and plan how your life is going to be, not with, if you’re open to opportunities like that.

SA: Now you took advantage of them as well, as you should have.

EF: I tried to.

SA: That’s wonderful. And you have a, in your career you’ve also been able to maintain a strong family, dedicated family; so sorry to hear of the passing of your wife.

EF: That was another, thank you, a major influence: my wife developed type-I diabetes after we were married for some time shortly after I was coming back from the Epidemic Intelligence Service which I, two years in the Public Health Service to Downstate and we went, took her to see the head of endocrinology at the time, Ann Carter, who said, “How are you handling your blood sugar?” And she said, “Well, I use a urine stick.” “Urine stick! Ugh! Please!” This was out of Harvard they were way behind and they taught her how to get her blood tested and to base her care on blood testing and I was amazed at how far they had come in diabetes care. And meanwhile despite everything we did, one stop along the way was that my wife started losing vision from proliferative retinitis and we met, and he became a personal friend, Francis L’Esperance at Columbia he was the man who introduced the laser to get the retinopathy to regress and he treated her and restored her vision, so I was in the midst of seeing diabetes change and to show you how much it’s changed, when Dr. Blagg was in training, diabetic patients were excluded from dialysis at Seattle, they were excluded from much of the United States and we began accepting them as we did older patients because we couldn’t say no and today, approximately 45% of all new dialysis patients have diabetes. So living with my wife, watching how she handled things and then watching how despite everything we knew, the disease carried her off was a guide to me to learn more about diabetes and it’s the management of diabetic kidney failure that’s my primary clinical concern today.

SA: And you certainly educated a lot of people about that through articles, care and talks.

EF: Thank you, a lot of people have done that and what’s really fascinating and I think this is true and its commented upon in this issue of the Lancet and this issue of the Journal of the American Medical Association, this being the third week of June 2014, but in this issue the comment is made that though the amount of diabetes is going up in a sharp pandemic rise so that it is predicted by the CDC, Center for Disease Control that one in three Americans will have diabetes by 2050; incredible. While that’s happening, the death rate from diabetes, the number per 100,000 who are dying is going down, the blindness in diabetes is going down, heart disease and diabetes is going down so we’re doing better. Which makes me wonder, for example, could diabetes be good for us? What?! What kind of crazy thinking is that? Well, look at our life expectancy; when I was born the life expectancy of a Caucasian male was approximately 65 years, and today it’s 78 years and continuing to rise, so we’re doing something right in living.

SA: With proper care, I agree, I think the outcome of diabetes has improved and the kidney disease appears to be at least leveling in frequency or--
EF: It’s actually going down.

SA: Or going down. Yes, wonderful. Any suggestions for people who might be watching the interview about how to shape a career, besides take those opportunities that come by chance?

EF: Well I think that taking the opportunities that come by chance after you have proper counseling not just going off to Nevada or Sierra Leone just to have the opportunity, but to have an open mind and to ask yourself when nobody's around you, what do you really want to do with your life? It’s hard to get that answer; it’s even hard as you have a life and it's even harder at the end of life to figure out what you want to do, but it's worth asking and trying to have the best open mind you can.

SA: Wonderful. Well thank you so much for giving us the time.

EF: Thank you for the honor of participating in this group. I think that without ASAIO I would not have gone where I've gone and it was privilege to edit the journal, the transactions, because having to read all of the papers forced me to be educated in areas that I would not have read otherwise. It’s a marvelous journal and an outstanding society.

SA: Oh, thank you.

EF: Thank you.

SA: Partly due to you.

EF: Thank you.

[ Music ]