

Transcript for Focus Forward 38 – Kidney Disease

John D. McConnell, MD, CEO, Wake Forest Baptist Medical Center: One of the unique qualities of Wake Forest Baptist is the way in which we fully integrate research and educational programs into our daily patient care activities. Ultimately, this is actually to the benefit of our patients because we can quickly bring discoveries from the laboratory through clinical trials and to improve patient care literally on a daily basis. During this segment you'll learn a lot about how research is integrated into patient care. For example, the discovery of how a gene confers a higher risk of kidney failure in African-Americans. And how our researchers are hoping to leverage that discovery to actually lower the rate of renal failure in a very vulnerable population. In addition, we have a very large academic-based dialysis program; in fact it's the largest such program in America. We provide kidney dialysis services over 16 locations. That's a very important program, bringing patients into our medical center, then for transplantation, but also for many clinical research studies as well. I think you'll be truly amazed by the accomplishments of this great team of faculty, staff and others who contribute daily to the health of patients with kidney disease.

Without question, one of our most preeminent academic clinical programs is Nephrology. It's the combined excellence of research, education and patient care that typify this division and make it a model division within the medical center. With me today is the division chair, Dr. Barry Freedman, who leads one of the country's leading research programs in kidney disease.

Barry, how did Wake Forest get so preeminent in kidney disease?

Barry Freedman, MD, Section Chief of Nephrology: A couple of things should be stated at the outset. We maintain the largest academically owned and operated dialysis program in the United States. There are more than 1,550 patients receiving end-stage renal disease therapy in 16 dialysis programs in the region. We were one of the first sections to outreach into the community and we have nephrologists driving an hour in every direction to see patients in their hometowns.

McConnell: Right.

Freedman: I have to tell you the things that we develop in the lab—the clinical research that we do—has been brought to the fore to try and help all the patients that we're able to treat and interact with. I don't view a mission as purely clinical or purely research or purely educational. As you said, it's that unique blend. And I think that blend is what has brought us national attention.

We have absolutely superb clinical nephrologists giving us such a high ranking. But every one of them has a research program and clinical interests. And we're able to

bring that right to the dialysis units. Our section maintains the largest DNA sample collection for African-Americans with end-stage renal disease, African-Americans with Type 2 diabetes, as well as European Americans. We now have 17,000 DNA samples that have been recruited through the section on Nephrology for widespread studies on kidney disease risk, heart disease risk, brain disease, from high blood pressure in diabetes, and bone disease.

McConnell: So what does the future hold? What's the next major research advance and how do you visualize the care of kidney disease patients 20 years from now?

Freedman: Well, I have to say one of the most exciting parts of our research program and highlights of my career has been working with a couple of other teams in Harvard and at the NIH to identify the APOL1 kidney failure gene. While identifying the gene was a major breakthrough—it taught us what was really causing kidney disease, not necessarily just high blood pressure—but the goal now is to find a cure, to be able to prevent kidney disease. We know this gene doesn't act alone. There are environmental triggers. Viral infections certainly interact with this gene. But we've just had a major breakthrough. And I'm very optimistic that soon we'll be able to vaccinate people to prevent viral infections or prevent other environmental exposures that can impact how these genes work. I would like in the next 20 years for us to put a stop to non-diabetic kidney failure in the African-American population as well as other forms of kidney disease in all people.

McConnell: That's a great vision. I bet you have a reasonable chance of hitting that.

Freedman: Thanks, Dr. McConnell.

McConnell: Congratulations to you and all of your colleagues. And I know it takes a team, but it's also very clear to me who the orchestra director is. Thanks for everything you do.

Freedman: Thanks, Dr. McConnell.

McConnell: Today I have Dr. Don Bowden, who's the director of our Diabetes Research Center. Don and his colleagues have provided amazing insight into the relationship between diabetes and kidney disease. But Don, not everyone with diabetes develops kidney disease. Could you give us some insight into that?

Donald Bowden, PhD, Director of the Center for Diabetes Research: That's correct. In fact, Barry Freedman and I have been working together for over 20 years trying to understand the relationship of diabetes and kidney disease. We really don't know at the most fundamental level what the difference is. It appears that long-term exposure to high levels of glucose in your blood, which is really the definition of diabetes, ultimately leads to problems in the organs and the vascular system, especially small-vessel disease, which is where it ends up with kidneys and damaging the kidneys. Everyone who has diabetes will not develop kidney disease,

and the goal of our research has been to try to understand the genetics of what the differences between people are. So it's been a very powerful, interdisciplinary team with people with multiple expertise working together to solve very complex problems. That's one thing I'd like to emphasize, is having genes for these clinical diagnoses such as diabetic nephropathy, doesn't mean there's a single gene that's likely going to be the change whether you're going to be diabetic or non-diabetic. We presume there's a combination of genes that are contributing, and they're interacting with your lifestyle and your environment, ultimately creating risks. So it's a complicated problem but attacking it from multiple levels gives us the best opportunity to solve the problem.

McConnell: You're very appreciated for your leadership, and thanks to both you and your team for everything you do.

Bowden: Thank you.

McConnell: As we all know, education and research is firmly embedded in our single mission to improve health. Our overall kidney disease program here is a great example of how research is embedded in daily patient care to improve outcomes and to prevent disease. I have with me today Dr. Amret Hawfield, who's one of our leading young investigators. Could you tell us a little bit about your research programs?

Amret Hawfield, MD, Assistant Professor, Internal Medicine (Nephrology): My main research activity is being involved in the SPRINT study, which as you probably know, it's an NIH-funded, multicenter randomized, controlled trial. About 10,000 people are expected to be enrolled nationwide. To date at Wake Forest, we have 290 participants enrolled. We have three clinical sites. Together with Michael Rocco (MD and professor of Internal Medicine), I run the Nephrology clinical site, where we have 87 patients. And what we do is we randomize patients to two different blood pressure targets. The patients all have hypertension and they are either treated through a treatment target of a systolic blood pressure of less than 120 or less than 140, which is standard care. And we're trying to reduce cardiovascular events by using more intensive blood pressure control. So it's a great benefit to the patients. They're enrolled for four to six years. They receive free medications for the study, which is wonderful for our community here. And what we learn from the study will be helpful for future generations of doctors in writing blood pressure guidelines and how to manage these patients.

McConnell: Although I know as a young assistant professor in Nephrology it's very exciting to participate in research, but you also have patient care obligations. How do you balance that?

Hawfield: Right. We have a very good system here at Wake Forest, which allows me to participate in inpatient care about half of the year. And the other half of the year that I'm not participating in inpatient care I have days assigned where I work in the

SPRINT clinic and I meet with the study coordinators once a week. And other days where I have my own outpatient continuity clinic.

McConnell: Well I wish you a really amazing career here at Wake Forest. I know you're destined to do great things. Thank you.

Hawfield: Thank you.

McConnell: Wake Forest is very fortunate to have one of the country's leading kidney transplant programs, not just in terms of tremendous volumes of patients they transplant but also in terms of the quality of their outcomes. With me is Dr. Robert Stratta, professor of surgery who's the director of the transplant program. Tell us a little about the nature of the program, the number of patients that are transplanted on a yearly basis, etc.

Robert J. Stratta, MD, Director of Transplantation: Currently, there's about 500,000 people on dialysis in the United States. And of those 500,000, about 100,000 are on waiting lists for kidney transplantation. In any given year in the United States, we perform about 17,000 kidney transplants. So only about 1 in 5 or 1 in 6 of the waiting list actually gets transplanted in a given year. So clearly it's a numbers game and one of our biggest challenges is improving access to the waiting list for all of those dialysis patients. And then trying to get them transplanted in a timely fashion once they are on the waiting list. And we currently are performing about 180 to 200 transplants per year, which makes us the largest program in the state of North Carolina and, arguably, the largest program in the southeastern United States.

McConnell: Like many of our marquee programs, I know your transplant center is heavily involved in research. Can you tell us a little bit more about that aspect of your program?

Stratta: We do a lot of clinical research on not only transplanting higher risk patients, for instance the elderly patients—we've transplanted more than 100 patients over age 70 with excellent outcomes—but also with expanding our limits for acceptable donors. What we've been able to show with our research is that we have excellent outcomes.

McConnell: Dr. Stratta, you and your team make amazing contributions here at the medical center and we're very grateful for the great accomplishments of your team and for the great care you provide our patients. Thank you very much.

It should be obvious to you what a great team of individuals we have working in our Wake Forest Baptist kidney disease program—all the way from very basic research, clinical trials, education, the integration of those functions into an enhanced patient care. Our physicians and staff on a daily basis are working on ways to improve the outcomes of dialysis, developing new ways to actually treat and prevent kidney

disease and to optimize the outcomes of kidney transplantation. But I would say one of the most interesting things that you heard in the last few minutes is the repeated use of the word 'team.' Probably no finer example of how a team of individuals united around a single goal—in this case to improve the outcome of patients with kidney disease—allows us to accelerate change and to be one of the leading institutions in America in this important area. Thank you.