‘DON’T DEFINE ME BY KIDNEY DISEASE.’
THIS IS RIDICULOUS. WE NEED TO FIND A BETTER WAY.

Kidney disease is the ninth leading cause of death in the United States. While rates of death from heart disease, diabetes and cancer have all decreased significantly in recent years, mortality rates from kidney disease have stayed the same. Advanced kidney disease is immediately fatal without the support of either dialysis therapy or a kidney transplant. However, access to kidney transplantation is severely rationed due to organ availability and regenerative medicine approaches to treating kidney failure remain a distant possibility. Thus, dialysis is the mainstay of treatment and will likely remain so for the foreseeable future.

Unfortunately, dialysis as we know it is not a complete or lasting solution; patients receiving the treatment suffer numerous complications and, on average, survive only three to five years in the United States; in the developing world, survival is much worse and in many cases, dialysis is not even available. Even with poor outcomes, the cost to the U.S. healthcare system for dialysis care exceeds $35 billion annually, and the total cost to society is even greater due to other financial losses associated with undergoing dialysis treatment. And as the global epidemic of advanced kidney disease continues to grow, millions more die each year from lack of access to this lifesaving treatment.

460,000 people are on dialysis in the U.S. — a $35 billion industry. 24% of the U.S. Medicare budget is spent on treating kidney disease.
MAT Diagnosed with lupus at age 16, and kidney failure a decade later, he’s been on dialysis for two years. He wishes there was a treatment option that “allowed me to do what I really want to do — travel and see the world.”

Keep up for change. #TransformDialysis

DON’T DEFINE ME BY KIDNEY DISEASE.

HISTORY OF INNOVATION
UW Medicine scientists and physicians invented the Quinton-Scribner shunt for hemodialysis and the Tenckhoff catheter for peritoneal dialysis, making long-term kidney dialysis possible and extending millions of lives.

RESEARCH PRIORITY
A mobile dialysis device
With the rapid increase of obesity, diabetes and hypertension (major causes of end-stage renal disease), the need for safe, effective and affordable dialysis globally will increase for decades to come. Within 10 years, the Center for Dialysis Innovation (CDI) aims to complete a series of multi-site and multi-national clinical trials and have approval from worldwide regulatory agencies for a mobile artificial kidney that requires little power and water, making it universally adoptable even in resource-constrained systems. At the CDI, teams of bioengineers, collaborating with physicians and patients, will systematically redesign each component of the dialysis circuit around these criteria to be seamlessly incorporated into the device. We are committed to making a mobile artificial kidney that will dramatically impact and prolong the lives of hundreds of thousands of people in the U.S. and millions worldwide, where kidney failure often remains an immediate death sentence.

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LIVE ON YOUR TERMS.

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JAMIE Born with a very rare condition that caused her organs to form outside her body, Jamie has undergone more than 50 surgeries in her 33 years. She ran a preschool for years but quit to keep up with dialysis treatments. She says, “I would love to work more and hope to someday foster children.”

Speak up for change. #TransformDialysis

LIVE LIFE.

A BETTER FUTURE

The Center for Dialysis Innovation is like no other effort in the world. By taking the global lead in revolutionizing dialysis technology, we envision a better future for many millions of people now living with kidney disease and for those in the future.

RESEARCH PRIORITY

Eliminating biofilms through self-vaccinating biomaterials

Implanted medical devices are prone to biofilm (bacteria) formation, which increases the risk of cardiovascular problems — the most common cause of mortality in dialysis patients. We have researchers developing biomaterials that modulate the immune system. Our recent results have demonstrated design of biomaterials that heal, biomaterials that engineer infection immunity, and enhanced vaccine delivery via implanted delivery systems. Kidney disease is linked to premature cardiovascular disease, fractures, infections and diminished physical and mental functioning.

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‘DON’T DEFINE ME BY MY DISABILITY.’
EMMETT “dreaded dialysis” when he first started; his fistula was too narrow, causing him pain every time the needles went in. After three years, he received a transplant and has since designed a new intravenous catheter for people on dialysis. “I don’t work in the medical field but going through dialysis, I understand how it feels. More options for patients would make a huge difference.”

Speak up for change. #TransformDialysis

RESEARCH PRIORITY
Full rehabilitation for patients with advanced kidney disease
The only treatments available for patients who progress to end-stage renal disease (ESRD) are dialysis or kidney transplant. Dialysis is an expensive and resource-intensive therapy, and is extremely challenging or even impossible to implement in developing countries in its current form. Millions who need treatment therefore do not receive it. Only 2 million patients are on dialysis worldwide, leaving up to 7 million people to die every year from lack of access to this lifesaving therapy. For those fortunate enough to receive dialysis, the risks of complications from infections, blood clots and vascular access failure remain exceedingly high. Patient mortality rates remain extraordinarily high, while quality of life and rehabilitation potential remain poor. We’re here to change this.

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LIVE BETTER.

‘DON’T CUT MY LIFE SHORT.’

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WORK UNDERWAY
A recent clinical trial conducted at the University of Washington serves as proof of concept that development of more miniaturized dialysis devices is feasible with use of improved bioengineering, biomaterials and design technology throughout every aspect of the dialysis circuit. With continued work, the CDI will be poised to launch a low cost, energy efficient miniaturized form of dialysis to market for patients worldwide.
DAVID Diagnosed with polycystic kidney disease at age 49, 
David changed his lifestyle to stave off dialysis for 16 years. 
Today, he does dialysis at home five days a week and stays 
positive, saying, “It can affect your state of mind if you let it. 
You just deal with it and go forward.” 

Speak up for change. #TransformDialysis
Dialysis hasn’t changed much in 50 years. We can’t wait another 50. We want a different outcome to the story: treatment options that keep people with kidney failure alive for a long time — living healthy lives where they are able to work, enjoy their families and contribute to their communities. Kidney dialysis is a complex interplay of many technologies, and no one has ever addressed it as a whole. Until now.

REIMAGINING AND RE-ENGINEERING DIALYSIS

From UW Medicine and Northwest Kidney Centers — pioneers in the kidney dialysis field — comes the Center for Dialysis Innovation. At the CDI, we have a bold vision to upgrade and substantially improve the entire kidney dialysis system, leading to safer, faster, more cost-effective dialysis. We are bringing physicians, engineers, scientists and kidney patients together to address each of the major kidney dialysis complications. Our teams, one focused on bioengineering, the other on kidney research, will collaborate on six priority research projects. As a result of this work, in the next decade, you will see dramatic improvements and elevated performance in dialysis benefiting kidney patients all over the world.

IN THE NEXT DECADE YOU WILL SEE CHANGE.

BE PART OF THE CHANGE

We are seeking an investment of $25 million to build the Center for Dialysis Innovation over the next 5 years. Gifts of any size — and to any project — would serve as valuable contributions.

With your investment in the Center for Dialysis Innovation, researchers at the CDI will make dialysis safer and more effective, helping people to live longer, healthier lives. Our researchers will focus on research and clinical projects for patients with irreversible kidney failure, developing novel treatment strategies that improve their quality of life and reduce complications. For more information about the CDI, please visit cdiresearch.org, and to learn more about the Center for Dialysis Innovation, visit uwmedicine.org/cdi.

BECAUSE LIFE SHOULDN’T HAVE BOUNDARIES.

Bill Peckham, home dialysis patient and significant contributor to our local and national kidney research and dialysis communities, CDI Patient Advisory Board member, Northwest Kidney Centers Emeritus Trustee, and author of the blog “Dialysis from the Sharp End of the Needle,” undergoing hemodialysis while on an 8-day, 225 mile rafting trip through the Grand Canyon. The CDI is dedicated to developing a mobile dialysis device that will provide freedom for people like Bill to live full, active lives.

IN THE NEXT DECADE YOU WILL SEE CHANGE.
WILLIAM, 65, started dialysis in 2015 at Northwest Kidney Centers in Seattle. He’s on the transplant list and although he is hopeful for a kidney, he’d also, “be very interested in seeing other options for dialysis.” He tries to stay positive and wants other patients to know, “Hope is out there—just have trust.”

Speak up for change. #TransformDialysis

‘DON’T GIVE UP ON LIFE.’

LIVE HEALTHIER ON DIALYSIS.

RESEARCH PRIORITY
Remove toxins
Conventional dialysis is inefficient at removing many uremic solutes that accumulate in the blood during kidney failure. We will test novel strategies to remove uremic toxins from the body, including using molecularly engineered membranes and modifying the gut microbiome to reduce uremic toxin generation.

TREATING UREMIA
In kidney failure, waste products build up throughout the body leading to a syndrome known as uremia (urea in the blood). Unfortunately, we still don’t fully understand uremic complications that greatly impact people on dialysis and how to best treat them.

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XAVIER, 27, began dialysis when he was 13 years old. “When I first started, I felt like my life was over.” A transplant when he was 15 lasted just a couple of years and he’s been back on dialysis ever since.

Speak up for change.
#TransformDialysis

LIVE LONGER ON DIALYSIS.

NEED FOR COMPREHENSIVE TREATMENTS
Dialysis is lifesaving for millions of people worldwide. Unfortunately, it’s not a complete or lasting solution; kidney patients on dialysis suffer numerous complications and, on average, survive just three to five years.

RESEARCH PRIORITY
Needle-less vascular access with integrated healing
Vascular access is the biggest unsolved problem in dialysis. We are developing blood access technology that will remain open to blood flow with a low risk of infection due to excellent biointegration.

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LIVE STRONGER ON DIALYSIS.

Bub, 82, had blood tests before back surgery several years ago and was shocked when they showed kidney problems. Soon after, he started dialysis. Although he feels lucky to be doing peritoneal dialysis at home, he says, “Dialysis still restricts me. I can’t go out in the evenings because I have to start dialysis at 7 p.m. every night.”

Speak up for change. #TransformDialysis

‘DON’T TELL ME I HAVE TO SPEND SO MUCH TIME DOING THIS.’

RESEARCH PRIORITY
Blood compatibility
In hemodialysis, blood is circulated outside the body through tubing, membranes, and pumps, increasing the risks for bleeding, clotting, inflammation and infection. We will develop novel biomaterials that prevent blood platelets, white cells and coagulation proteins from being activated, thereby reducing thrombotic and inflammatory complications.

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WORK UNDERWAY
We are committed to developing dialysis devices that patients need and want. Patients with kidney disease will be integrated into our process to ensure their needs are met by our novel technologies.
The Center for Dialysis Innovation will lead to a revolutionary transformation in the treatment of kidney failure. Dialysis therapy should be accessible, complication-free and fully emulate a healthy kidney. We will develop a device that will be lightweight, wearable, low-cost and require little power and water, making it universally adoptable even in resource-constrained systems. Teams of bioengineers, collaborating with physicians and patients, will systematically redesign each component of the dialysis circuit around these criteria. The battery-powered device will require minimal water volume, minimal (or no) anticoagulation, offer complication-free blood access, and be robustly and compactly designed, dramatically improving outcomes and quality of life for patients around the world.

JOIN US
If you would like to learn more about investing in this lifesaving, life-changing work, contact our UW Medicine advancement team at writemed@uw.edu, 206-543-5686 (local), or 866-633-2586. Thank you very much for your interest in our work.
Transforming kidney dialysis
YOUR GIFT HOLDS GREAT POWER.

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