Northwestern Medicine

Northwestern International Health

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Someone You Should Know

Northwestern Medicine Nurse and Kidney Transplant Recipient Shares Her Story of Hope

The Kovler Organ Transplantation Center at Northwestern Medicine is the longest continual provider of organ transplantation in Chicago. Northwestern Medicine has the largest living donor kidney transplant program in Illinois, and one of the largest programs in the country, performing 98 living donor kidney transplants in 2017 and more than 500 over the last five years. Northwestern Medicine nurse Karin Rule experienced this firsthand. Read the experience below as told by Karin herself, her sister Lisl, and Dr. Joseph Leventhal, kidney transplant surgeon at Northwestern Medicine.

Karin: My kidney disease was found accidentally, completely out of the blue. I was very sick and I needed to get help immediately or else I would be dead.

Well, I was a very, very healthy teenager, didn't have any symptoms. I enrolled in nursing school and because of that, they took full blood work and the results absolutely shocked me. They told me my kidneys were dying and I needed to get help immediately. So with no history of any kidney disease in the family, I did not even know what to do so fear led me to research, and research led me to Northwestern Medicine.

I picked up the phone and called Northwestern. I was very scared and the person who answered asked simple questions that a seventeen year old could easily answer. The phone call that I made to Northwestern Medicine made this death sentence go away.

Dr. Leventhal: When we met with Karin, we talked about three basic options. There's dialysis, there's a deceased donor kidney transplant, and then the best long-term outcomes we can offer somebody is a living donor kidney transplant.

Lisl: For me it was an easy decision. She's family, she's my only sister, so giving up a kidney was pretty easy.

Living donor kidney transplant patient, Karin Rule, became the first patient in the world to conceive off of immunosuppression and receiving a combined kidney and stem cell transplant.

Dr. Leventhal: So because of Karin having a sister who was such a good match, we had another option, a very innovative clinical trial where we can use stem cells and a kidney from a living donor to try and achieve something called tolerance, where we essentially trick the immune system of the recipient into seeing the organ from the donor as part of the transplant recipient. This therapy eliminates the need for lifelong immunosuppression, which allows people to live a much more normal life than individuals who are chained to these anti-rejection medicines, which have all sorts of potential side effects.

Karin: Dr. Leventhal had a lot of energy and enthusiasm and great passion for the research that I believed in him. I believed that he was my way out of the hole I was in.

Waking up from my surgery, I felt the pain, but I loved it because I knew I was alive. I knew that everything was going to be fine.

Dr. Leventhal: We knew within a month of the transplant that we were on our way to getting her off immunosuppression over the next year.

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Joseph Leventhal, MD, PhD, Surgical Director of the Kidney Transplant Program, successfully performed Karin's transplant with her sister's kidney and stem cells.

Karin and her husband's daughter Zyla meeting Dr. Leventhal for the first time.

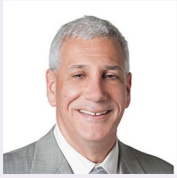
Karin: Eventually after this ordeal, I met my now husband. We knew the potential side effects of the clinical trial, knowing that I might not have a baby or even get pregnant. But we took a risk and found out we were pregnant and Dr. Leventhal was the very first phone call that we made to break the news.

Dr. Leventhal: So after Karin shared her big news with us, I shared some big news with her. We told her that this was a first, anywhere in the world, of a patient becoming pregnant who was a combined kidney and stem cell transplant recipient off of immunosuppression. Fertility and the ability to conceive after having with some of the treatments that we used to achieve tolerance was an unanswered question. And Karin was helping us answer that question!

Karin: Nine months later we welcomed to the world Zyla, our baby girl!

Dr. Leventhal: It really was a fulfillment of what we want for our patients. And we are very excited about the future potential for this approach that we've pioneered here at Northwestern.

Karin: Who would've ever thought that my life turned out like this? I am married, I have a perfectly healthy baby girl. And I am now a nurse at Northwestern Medicine, and I am excited and happy to be part of the team. I beat the odds, I'm very blessed!



Message from Dr. Daniel Derman
President, Northwestern International Patient Services
Chief Innovation Officer and Sr. Vice President, Northwestern Memorial Healthcare

As we officially welcome in the summer in Chicago, we know it is a time of leisure and relaxation. At Northwestern Medicine however, we never stop working to find ways to improve our care and treatment options for our patients.

You can see this on page 4 of the newsletter discussing significant advances in the study of Glioblastoma being generated from the physician/scientists at Northwestern Medicine. Because of this kind of innovative research from our doctors, Northwestern is one of the world's leaders in Glioblastoma.

You can also see our commitment to breakthrough discoveries and cutting edge treatments with the grand opening of the largest biomedical academic research building in the U.S. affirming Northwestern as a research innovation leader among major academic medical centers.

In the someone you should know section, you have read about an extraordinary account of the first know patient anywhere in the world who was a combined kidney and stem cell transplant recipient off of immunosuppression and who became pregnant and delivered a healthy baby! This patient then went on to become a nurse at Northwestern Medicine. Our whole organization is celebrating this extraordinary news!

Thank you for taking the time to read our newsletter, as always please feel free to contact me or Laura Jaros our Senior Manager if you have any questions – laura.jaros@nm.org

Northwestern Opens Largest Biomedical Academic Research Building in U.S. Affirming Northwestern as a Research Innovation Leader Among Major Academic Medical Centers

The Louis A. Simpson and Kimberly K. Querrey Biomedical Research Center -- the largest new building solely dedicated to biomedical research at an American medical school -- officially opened June 17 at Northwestern University Feinberg School of Medicine in Chicago.

Northwestern is the fastest-growing research enterprise among all U.S. medical schools -- climbing from 39th to 15th in National Institutes of Health funding since 2002. The new center provides much-needed biomedical research space to continue Northwestern's projected growth.

The 12-story building adds more than 625,000 square feet of research space to Northwestern's Feinberg School of Medicine and is designed for a future expansion that would allow it to more than double its size with up to 16 additional floors.

The University already brings in $700 million in total sponsored research funding annually. The new facility will enable Northwestern to increase that by $150 million annually or $1.5 billion in the next 10 years with the additional space and investigators.

"Inside this modern new building, scientists will pioneer discoveries that will impact the practice of medicine and transform human health," Dr. Eric G. Neilson, Vice President for Medical Affairs and Feinberg's Dean, said in a statement. "Here, we will accelerate the pace of lifesaving medical science!"

Research Briefs: Advances in the Study of Glioblastoma at Northwestern Medicine

Investigators across Northwestern's labs are determined to put an end to glioblastoma, the most common and aggressive type of brain tumor.

The investigators are members of the Robert H. Lurie Comprehensive Cancer Center at Northwestern Medicine.

Atique Ahmed, PhD, Assistant Professor of Neurological Surgery

A NEW ROLE FOR DOPAMINE

Scientists in the laboratory of Atique Ahmed, PhD, Assistant Professor of Neurological Surgery, investigated how activation of dopamine receptors plays a role in glioblastoma growth. The team demonstrated that dopamine signaling drives specific changes in glioblastoma cells, shifting them to become both more aggressive and resistant to therapy – even acquiring the ability to produce their own dopamine. The findings were published in *The Journal of Neuroscience*.

"This represents cancer cells hijacking a normal brain function in order to help themselves," said research associate and co-first author Jack Shireman. The findings could inform future treatment approaches. For example, existing FDA-approved drugs designed to reduce dopamine signaling could be repurposed for use in glioblastoma. The authors caution, however, that more research is needed before such an approach is ready for patients.

"These cells have a remarkable ability to detect changes in their environment and adapt to them. Our lab strives to better understand this, so we can develop more effective therapies," said Ahmed.

TUMOR MUTATIONS PREDICT RESPONSE TO IMMUNOTHERAPY

Adam Sonabed Worthalter, MD, Assistant Professor of Neurological Surgery

According to a study published by Northwestern investigators in *Nature Medicine*, the presence of certain mutations in tumors can influence how patients respond to immunotherapy.

Scientists profiled 66 patients with glioblastoma, tracking their response to PD-1 immune checkpoint inhibitor therapy over time. Genomic analysis revealed that many of the patients who did not respond to therapy had tumors with mutations in a gene called PTEN. These PTEN-rich tumors had gene expression that suggested a high number of regulatory T-cells. However, when the investigators examined the tumors, they didn't find a high concentration of immunosuppressive T-cells in non-responder patients.

"We were scratching our heads," said Adam Sonabend Worthalter, MD, Assistant Professor of Neurological Surgery and co-senior author of the study. "How could someone have higher levels of activation for the genes for the T-cells, but not have more of these cells?" They used RNA sequencing to look at the gene expression of individual tumor cells, finding that the tumor cells themselves were expressing the regulatory T-cell genes, potentially mimicking their function – a possible reason why immunotherapy would be less effective. Patient tumors with mutations in the MAP kinase (MAPK) pathway responded better to immunotherapy.

"Whereas careful validation of these findings is necessary, we have little to offer glioblastoma patients. So for the time being, if a patient of mine had these mutations, I would offer immunotherapy," said Sonabend.