Leading the Fight

UVA at the Cutting-Edge of Type 1 Diabetes

Type 1 diabetes afflicts an estimated two million people in the United States and millions more worldwide. Untreated or mismanaged, this disease can lead to serious health problems throughout the body, including kidney failure, heart disease, and stroke.

UVA is an established leader in the fight against type 1 diabetes. Our nationally recognized physicians and researchers approach the disease from multiple angles, some of which are highlighted below. Collaboration across departments and a team-based approach to care help our patients achieve better outcomes.

Islet Cell Transplantation

Islet cells in the pancreas make the insulin that is vital to regulating the body's blood sugar levels. With type 1 diabetes, islet cells are completely destroyed by the immune system, necessitating daily injections of insulin for survival. Islet cell transplantation offers the potential to completely reverse the disease and allow patients to have normal blood sugar without insulin injections.

Kenneth Brayman, M.D., heads the Center for Cellular Transplantation and Therapeutics at UVA. Since its inception in 2004, ten successful islet cell transplants have been performed at UVA, allowing patients to dramatically reduce their dependence on insulin treatments.

The Artificial Pancreas

Researchers at UVA and sites across the globe have begun testing the artificial pancreas, a system that could one day transform the way diabetics manage their disease. UVA is the only institution in the world that has simultaneously developed both islet transplant and artificial pancreas research programs. Working in conjunction, the two approaches should allow for improved metabolic control at times of glucose stress.

Boris Kovatchev, Ph.D., has developed the algorithm that lies at the heart of the artificial pancreas. This complex mathematical formula seamlessly coordinates a patient's glucose monitor and his or her insulin pump. The correct dose of insulin is calculated and administered without the patient's intervention. Kovatchev is the lead investigator in the international clinical trials currently underway.

The Genetics of Diabetes

Investigators at UVA's Center for Public Health Genomics, led by Steve Rich, Ph.D., are working to translate findings from the Human Genome Project into usable science and treatments to benefit type 1 diabetics. His team is identifying potential genetic biomarkers that can be useful in assessing risk for developing the disease and its complications. A world leader in the fields of molecular epidemiology and genetics, Rich also heads the NIH Type I Diabetes Genetics Consortium, an international effort to understand the genes that underlie diabetes and its complications.

Building on Our Momentum

The advances in diagnosis, prevention, and treatment pioneered here at UVA will impact type 1 diabetics worldwide. While our physicians and researchers have achieved tremendous success, philanthropic support is required to ensure we remain a leading institution in the fight against type 1 diabetes.

For more information, contact Cindy Reynolds at the UVA Health Foundation, (434) 243-8432 or (800) 297-0102, or through e-mail at creynolds@virginia.edu.