Type 1 diabetes is a disease in which the body does not produce any insulin; it is usually diagnosed in children and young adults. People with type 1 diabetes must take insulin injections to stay alive. In the United States, 5-10% of people with diabetes have type 1. Type 2 diabetes is a metabolic disorder resulting from the body’s inability to make enough – or properly use – insulin. It is the most common form of the disease and has reached epidemic proportions in this country due to an increased number of older Americans, and a greater prevalence of obesity and sedentary lifestyles. Complications from both forms of the disease include heart disease, amputation, blindness, loss of kidney function and premature death.

While whole pancreas transplantation can effectively control blood glucose and eliminate the need for insulin treatments in people with type 1 diabetes, it requires a major operation. For this reason, islet transplantation is an emerging alternative treatment to transplanting the whole pancreas. In islet transplantation, the pancreas from an organ donor is processed in the laboratory to obtain islet cells, which produce a variety of hormones, including insulin. The cells within the islets that produce insulin are called beta cells. The pancreas also contains exocrine cells which produce enzymes that aid in digestion of food. The islets are required for the treatment of diabetes, but the exocrine cells are not needed. The goals of the islet isolation process in the laboratory is to separate the islets from the exocrine cells. This is done through a highly specialized process by which the pancreas is exposed to an enzyme which breaks apart the pancreas into islets and exocrine cells. The islets are then purified by being physically separated from the exocrine cells using...
Islet Cell continued from page 1

Type 1 diabetes (also known as juvenile-onset diabetes) is an autoimmune disease that usually affects children although adults can develop the disease. Patients with type 1 diabetes are insulin-dependent since the insulin-secreting cells in the pancreas are destroyed by the immune system. Several factors are required to develop type 1 diabetes. First, genetic susceptibility to the disease must be present. Second, an environmental insult, such as a viral infection, initiates the process in genetically susceptible individuals. The best evidence for this scenario is seen in identical twins in which one twin develops type 1 diabetes and the other twin does not. Third, infection causes inflammation in the pancreas which results in activation of the immune system and alteration of the insulin-secreting cells of the pancreas. This alteration of the insulin-secreting cells leads the immune system to attack these cells as foreign ultimately leading to destruction of the insulin-secreting cells of the pancreas and no insulin production.

In islet transplantation, no operation is required, so the procedure is safer than if the whole pancreas were to be transplanted. The islet cells are infused into the recipient’s liver via a minimally invasive procedure in the radiology department. The procedure lasts only about an hour. Recipients are walking and eating the same day after the procedure, and only remain in the hospital for a few days for monitoring the function of the islets. Recipients of successful islet transplants will not need to take insulin, and will have normal blood sugar levels. Recipients of transplanted islets still require medications to prevent rejection of the islets. Islet transplantation is also believed to be able to help slow or prevent the development of many complications of diabetes over time.

At the present time, islet transplantation is still classified as experimental in nature by the United States Food and Drug Administration and other regulatory agencies. As a result, islet transplantation is currently only available to those willing to take part in a research study. The selection criteria for these experimental studies are quite stringent, more so than for whole pancreas transplantation. Participants are required to agree to extensive testing and monitoring before, during, and after the islet transplant.

The recent survival rates for islet transplantation in the United States, although promising, still lag behind that of whole pancreas transplantation. For most recipients more than one islet infusion is required. Only two of every three recipients are able to completely discontinue insulin, and those able to do so are only off insulin for an average of two years. Nevertheless, for nearly all recipients, glucose control is improved and episodes of hypoglycemia, a serious problem for type 1 diabetics, are nearly eliminated.

– Randall S. Sung, M.D.

Pancreas Transplantation

Type 1 diabetes (also known as juvenile-onset diabetes) is an autoimmune disease that usually affects children although adults can develop the disease. Patients with type 1 diabetes are insulin-dependent since the insulin-secreting cells in the pancreas are destroyed by the immune system. Several factors are required to develop type 1 diabetes. First, genetic susceptibility to the disease must be present. Second, an environmental insult, such as a viral infection, initiates the process in genetically susceptible individuals. The best evidence for this scenario is seen in identical twins in which one twin develops type 1 diabetes and the other twin does not. Third, infection causes inflammation in the pancreas which results in activation of the immune system and alteration of the insulin-secreting cells of the pancreas. This alteration of the insulin-secreting cells leads the immune system to attack these cells as foreign ultimately leading to destruction of the insulin-secreting cells of the pancreas and no insulin production.

Left untreated, type 1 diabetes can lead to heart disease, vascular disease, neuropathy, bowel problems, blindness, and kidney failure. Tight blood sugar control is key to preventing these complications. Treatments for type 1 diabetes include insulin such as provided by an insulin pump and pancreas transplantation. Pancreas transplantation is reserved for patients with type 1 diabetes. In contrast, patients with type 2 diabetes (also known as adult-onset diabetes) do not qualify for pancreas transplantation since in these patients, their pancreas produces insulin but their body is resistant to it. An absolute indication for pancreas transplantation is hypoglycemic unawareness or the inability of a diabetic patient to recognize low blood sugars which can be life-threatening. Potential benefits of pancreas transplantation are improved quality of life, freedom from insulin injections, and stabilization or reversal of retinopathy or kidney disease, respectively.

Pancreas continued on page 3
Patients with type 1 diabetes can get a pancreas transplant in one of 4 ways: (1) a pancreas transplant alone; (2) a combined kidney-pancreas transplant; (3) a pancreas transplant after kidney transplant; and (4) a living donor kidney transplant along with a deceased donor pancreas transplant. For each of these scenarios, the pancreas transplant is placed usually in the right lower quadrant of the abdomen and connected either to the bowel or to the urinary bladder by a piece of intestine that accompanies the pancreas transplant.

Compared to kidney transplantation, pancreas transplant survival is shorter with the best outcomes seen in those patients receiving a combined kidney-pancreas transplant. In those patients receiving a combined kidney-pancreas transplant, pancreas transplant survival is about 85% at one year and 55% at ten years. Nonetheless, combined kidney-pancreas transplantation before the age of 50 may result in improved patient survival as compared to kidney transplant alone. This finding may be explained partly by better blood sugar control and better lipid profiles in type 1 diabetes patients that receive pancreas transplants.

– Diane M. Cibrik, M.D.
The International Transplant Nurses Society (ITNS) was founded in 1992 by Nancy Stitt and Kandy Newell as the first professional nursing organization to focus on the professional growth and development of the transplant nurse. ITNS offers nurses a forum for learning about the latest advances in transplantation and transplant patient care. Over the years, ITNS has continued to provide nurses skilled in transplantation with numerous opportunities to share their expertise with national and international peers, and receive recognition for their knowledge and scholarly pursuits.

ITNS membership is around 1500 members. Our membership comes from the US, Canada, Europe, Australia, China, and Japan to name a few. Many of these members attend and present at our annual symposium, local chapter meetings and core review meetings. The member’s area of interest can vary from kidney, pancreas, liver, intestine and cardiothoracic – pre / post transplant, organ procurement, staff nurse to the research nurse.

**Mission**
The ITNS is committed to the promotion of excellence in transplant clinical nursing through the provision of educational and professional growth opportunities, interdisciplinary networking and collaborative activities, and transplant nursing research. As we have grown, we have chartered over 26 local chapters, which help and promote the field of transplant nursing through their geographical region and transplant center. For a complete list of chapters near you, or information on how to charter and start a chapter please browse our chapter’s site within this Website.

**Certification**
It has been now three years since the first CCTN (Certified Clinical Transplant Nurse) examination was performed. ITNS has been working on a certification examination and core curriculum for the last 10+ years. With the assistance of ABTC (American Board of Transplant Coordinators), they were finally able to provide a certification for the staff nurse caring for the transplant recipient. Two times per year, they now provide a core class that assists the staff nurse in preparing for this examination. I encourage nurses in transplant centers to pursue taking this examination as part of their professional development in transplantation.

**Patient Education**
One of ITNS goals is to provide the most current patient / family education to our transplant recipients. Some of the educational modules that were developed by the membership are available to us for use. The education modules include: diabetes, dental care, skin cancer risk, diet / exercise to name a few. These modules are available by either download or contacting the ITNS home office for copies at no charge. Many of the modules are available in Spanish.

To learn more about ITNS visit their website at [www.itns.org](http://www.itns.org). To get involved either on a local or international level, please contact Vicki Shieck, RN, BSN, CCTN via email at vickys@umich.edu.

– Vicki Shieck, RN, BSN, CCTN
Bring Your Child to Work Day - 2007

April 26, 2007 was an extraordinary day for 37 children at the University of Michigan Transplant Center. The highly anticipated “Bring Your Child to Work Day” had arrived.

The day began in the spacious Towsley dining room with check in, goodie bags and picture taking. A mouth-watering continental breakfast was served.

Survival Flight staff presented countless facts about Survival Flight and took the children on a tour of the helipad and the Bell 430 Helicopter.

Following the tour, the group arrived at the Simulation Center for a mock operating room presentation, which was incredibly realistic.

Parents joined the children back in the dining room, where the children’s bellies were filled, this time with pizza, breadsticks, cookies and juice.

The next presentation was done by the Perfusion staff, who accompany surgeons in operating room during the recovery of organs. They encouraged the group to pass around plasticized organs and ask questions.

We had six incredibly special guests among the group – children who are organ transplant recipients. They enjoyed themselves with the others and found it awesome to be “just one of the kids.” Many starred in the Camp Michitanki video presentation which was the final event of a fantastically full day.

Thank you to the many volunteers who made this day exceptionally meaningful to all.

– Crystal Sprang, MBA
New Faculty

Theodore H. Welling III, M.D.
Assistant Professor of Surgery

On July 1, 2007 the faculty of the Transplant Surgery service welcomed Dr. Ted Welling to a faculty position as an Assistant Professor of Surgery. Dr. Welling is well known to the Transplant Center as he has been the Transplant fellow for the past two years. Dr. Welling previously received both his undergraduate degree and medical degree at the University of Michigan, and completed training in General Surgery here. During his training he also completed a research fellowship in Transplant Immunology with Dr. Keith Bishop. Dr. Welling will be focusing his energy on clinical organ transplantation as well as on treatment of patients with hepatic cancer and research into both of these areas.

Dr. Welling is married and has two young children.

Hellan Kang, M.D.
Lecturer Gastroenterology

Dr. Hellan Kang received her medical degree in 1998 from the Kyungpook National University School of Medicine. She completed her residency at the University of Illinois at Chicago (UIC) in 2003. She completed a Gastroenterology fellowship at the University of Michigan and joined the faculty in July 2007.

Dr. Kang’s clinical interests are non-alcoholic fatty liver disease (NAFLD), elevated liver enzymes, chronic liver disease and liver transplantation. Her research interests include non-alcoholic fatty liver disease (NAFLD), metabolic syndrome and insulin resistance in post-liver transplant patients.
Kenneth J. Woodside, M.D.
Clinical Lecturer of Surgery, Transplant Fellow

Kenneth J. Woodside, M.D., is a Clinical Lecturer/Fellow in Division of Transplant Surgery, Section of General Surgery. Dr. Woodside received his undergraduate degree in cellular and molecular biology from the University of Michigan in 1993 and went on to receive his medical degree from the University of Michigan Medical School in 1999. Dr. Woodside earned a master’s degree in transplantation immunology from the University of Texas Medical Branch, where he also completed his residency in general surgery in 2006. Dr. Woodside joined the University of Michigan as a Transplant Fellow in 2007.

Dr. Woodside’s clinical interests include abdominal transplant surgery. His research focuses on transplant immunology.

Calling All Golfers!

Come see us at the Michigan Golf Show on March 7, 8, and 9th at the Rock Financial Showplace in Novi, Michigan. Visit the Transplant Center exhibit for information on the 2008 Transplant Center golf tournaments! Transplant Center merchandise will be available for sale. Hope to see you there!
Transplant Center’s Mission
The Transplant Center’s clinical mission is to provide our patients with the best possible medical care in a setting that emphasizes excellence, compassion, accessibility, responsiveness and prompt delivery of care.

University of Michigan Transplant Center Contact Information

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Fax: 734-936-2464

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Fax: 734-936-6671

United Network for Organ Sharing (UNOS)
The United Network for Organ Sharing provides a toll-free patient services line to help transplant candidates, recipients, and family members understand organ allocation practices and transplantation data. You may also call this number to discuss a problem you may be experiencing with your transplant center or the transplantation system in general. The toll-free patient services line number is 1-888-894-6361.

Executive Officers of the University of Michigan Health System: Robert P. Kelch, Executive Vice President for Medical Affairs; James O. Woolliscroft, Dean, U-M Medical School; Douglas Strong, Chief Executive Officer, U-M Hospitals and Health Centers.
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