Transplantation in 2012:
Optimizing Outcomes through Seamless Communication
Kidney, Pancreas and Islet Breakout Session

Improving People's Lives
through innovations in personalized health care

Wexner Medical Center
Kidney Transplantation as a Treatment of Choice for ESRD

Uday S. Nori, MD
Assistant Professor of Medicine
Division of Nephrology
Comprehensive Transplant Center
The Ohio State University Medical Center
Learning Objectives

- Indications for kidney transplantation
- Understand why kidney transplant is the treatment of choice for patients with advanced Chronic Kidney Disease
- Briefly discuss the main barriers for transplantation
- Discuss the novel strategies for “unsuitable” patients to have access to successful transplantation
Adjusted all-cause mortality in the ESRD & general populations, by age, 2007

Kidney Transplantation offers Improved Patient Survival

Figure 2. Adjusted Relative Risk of Death among 23,275 Recipients of a First Cadaveric Transplant.

Wolfe RA et al. Al NEJM 1999
Indications for Kidney Transplantation

- Anyone with advanced chronic kidney disease
  - GFR of <15 ml/min
  - If acute kidney injury – wait for renal recovery
- If living donor and not yet on dialysis:
  - Okay to wait till symptomatic
- If no living donor – refer when GFR is <25 ml/min
  - Wait-list when GFR is <20 ml/min
Barriers to Transplantation That Are Amenable for Intervention

- Older age
- ABO incompatibility
- Highly sensitized – pre-existing anti-HLA antibodies

- Cardiovascular and other medical diseases
- Psychosocial
Older Patients with ESRD……

Half of Kidney Transplant Candidates Who Are Older than 60 Years Now Placed on the Waiting List Will Die before Receiving a Deceased-Donor Transplant

Jesse Schold,*†‡ Titte R. Srinivas,§ Ashwini R. Sehgal,‖‖ and Herwig-Ulf Meier-Kriesche*

Departments of *Medicine, †Health Services Research, Management and Policy, and ‡Epidemiology and Health Policy Research, University of Florida, Gainesville, Florida; §Department of Nephrology and Hypertension, Glickman Kidney and Urological Institute, Cleveland Clinic, ‖Division of Nephrology, MetroHealth Medical Center, and ‖‖Center for Reducing Health Disparities, Case Western Reserve University, Cleveland, Ohio

…..Have Improving Transplantation Rates….

Access to Kidney Transplantation among the Elderly in the United States: A Glass Half Full, not Half Empty

Elke S. Schaeffner,* Caren Rose,* and John S. Gill†

*Division of Nephrology, Charité University Medicine, Campus Virchow Klinikum, Berlin, Germany; and †Division of Nephrology, St. Paul’s Hospital, University of British Columbia, Vancouver, British Columbia, Canada


- Data from USRDS database
- Patients age at 1st ESRD treatment
- Most
...And Better Clinical Outcomes

Outcomes of Kidney Transplantation From Older Living Donors to Older Recipients

Jagbir Gill, MD,¹,² Suphama Bunpradist, MD, MS,¹ Gabriel M. Danovitch, MD,¹
David Gjertson, PhD,³ John S. Gill, MD, MS,² and Michael Cecka, PhD³


<table>
<thead>
<tr>
<th>Table 3. Transplant Outcomes by Donor Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>No.</td>
</tr>
<tr>
<td>OLD</td>
</tr>
<tr>
<td>DGF (%)</td>
</tr>
<tr>
<td>OLD</td>
</tr>
<tr>
<td>Primary nonfunction (%)</td>
</tr>
<tr>
<td>OLD</td>
</tr>
<tr>
<td>Acute rejection (%)</td>
</tr>
<tr>
<td>At discharge</td>
</tr>
<tr>
<td>OLD</td>
</tr>
<tr>
<td>At 1 y</td>
</tr>
<tr>
<td>OLD</td>
</tr>
<tr>
<td>Mean SCr 1 y posttransplantation (mg/dL)</td>
</tr>
<tr>
<td>OLD</td>
</tr>
<tr>
<td>SCr &gt; 1.5 mg/dL at 1 y posttransplantation (%)</td>
</tr>
<tr>
<td>OLD</td>
</tr>
<tr>
<td>Mean eGFR at 1 y posttransplantation (mL/min/1.73 m²)</td>
</tr>
<tr>
<td>OLD</td>
</tr>
</tbody>
</table>
PRE-EMPTIVE TRANSPLANT

- Definition and outcomes
- Barriers
  - Lack of timely referral
  - Lack of education
  - Financial issues
    - Insurance
    - Living donor expenses
  - Psychosocial issues
Pre-emptive Transplant

![Graph showing CV survival over time for different ESRD time groups.]

<table>
<thead>
<tr>
<th>Group</th>
<th>ESRD Time</th>
<th>10-year CV Survival (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Preemptive</td>
<td>94.8</td>
</tr>
<tr>
<td>(2)</td>
<td>0–6 months</td>
<td>92.8</td>
</tr>
<tr>
<td>(3)</td>
<td>6–12 months</td>
<td>92.3</td>
</tr>
<tr>
<td>(4)</td>
<td>12–24 months</td>
<td>89.2</td>
</tr>
<tr>
<td>(5)</td>
<td>24+ months</td>
<td>88.4</td>
</tr>
</tbody>
</table>
OSUWMC Transplant Statistics

**Kidney**
- Waiting times (median time to transplant)
  25 months (national average > 72 months)
- Waitlist mortality:
  8% (national average = 6%)
- Survival rates: July 2012 Scientific Registry of Transplant Recipients (SRTR)
  - One year = 96% (national average = 97%)
  - Three year = 92% (national average = 92%)
Take Home Points

- Kidney transplant is the preferred choice of renal replacement therapy
- Majority of the patients approaching dialysis probably suitable for transplant evaluation
- Problems previously perceived to be barriers are being surmounted with novel approaches
- Pre-emptive transplant and living donor transplants strongly encouraged
Transplantation and Living Kidney Donation at
The OSUWMC Comprehensive Transplant Center

Robin Petersen-Webster, LPN, CCTC
Living Kidney Donation Coordinator
Donor Exchange Program Coordinator
The OSUWMC Comprehensive Transplant Center
Transplant Signature Program

Teamwork committed to Quality and Quantity of Life – OSUWMC
The Transplant Team

The Ohio State University Wexner Medical Center

Transplant Team Includes

- Transplant Surgeons (7)
- Transplant Nephrologists (4)
- Transplant Nurse Coordinators (19)
- Clinical Transplant Psychologist
- Nurse Practitioners and Physician Assistants
- Transplant Pharmacy Team
- Infectious Disease Team
- Social Workers
- Financial Coordinator
- Patient Rx Assistance Coordinator
Referral Process

- Individuals seeking kidney transplantation should be referred when GFR is approximately 20 ml/min.

- Referrals can be made by mail or fax. Patients may self-refer.

- Referral information should include:
  - Demographics
  - Current lab reports, including ABO
  - Cardiac Stress Test / Echo (if available)
  - H&P outlining pertinent medical history
  - Psycho-social concerns
  - Current dialysis information

- Contact Numbers: Pre-Transplant Office (614)293-6724
  Pre-Transplant Fax       (614)293-6710
Referral Process

- The OSUWMC PreTransplant Office will send a welcome package to potential candidates once a referral is received. A letter confirming receipt of referral is sent to the referring physician.

- Potential Recipients are scheduled for a mandatory education session, and will be given an appointment for their formal pretransplant evaluation at conclusion of the education session.

- A living kidney donor team member contacts each referral to discuss the possibility of living kidney donation.

- The PreTransplant Office verifies benefits for transplantation at OSUWMC prior to full evaluation.
Psycho-Social Considerations

- Noncompliance with medical treatment
- Active Substance Abuse / Dependence
- Untreated Severe Mental Health Disorder
- Cognitive Limitations with Inadequate Social Support
- Inability to Afford Post Transplant Treatment
Living Kidney Donation

- The best option for a patient waiting for a kidney is to receive a kidney from a living donor.

- Living donor transplants can be arranged in as short as six weeks, versus years of waiting on the deceased donor list.

- Approximately half of all kidney transplants performed at the OSUWMC Transplant Center are from living donors.

- Our center welcomes non-directed / altruistic donors

- Incompatible kidney donors and recipients benefit from our donor exchange program.

- Our living kidney donation volumes are among the top 5% in the U.S.

- The CTC operates a specialized donor clinic to follow donors for two years after their donation.

- The OSUWMC Transplant Center has been recognized as a Best Practice Center by CMS for excellence in living kidney donor follow up care.
Donor Exchange

Paired Donation

Donor Exchange Chain
Donor Exchange Programs

- The OSUWMC Comprehensive Transplant Centers offers patients the option of donor exchange when a compatible donor is not available.
- We have a very active internal donor exchange program.
- We partner with The National Kidney Registry, Alliance for Paired Donation and The UNOS KPD Program to find matches for those we are unable to match internally.
- All surgeries are performed at The OSUWMC regardless of location of matched donor or recipient.
- Donor Exchange transplants accounted for 19.5% of the total kidney transplants completed at our center in FY 2011-2012. 17% were completed through our internal exchange program.
Post-Transplant Management

Melissa Mazur RN, BSN, CCTC
Post Transplant Coordinator
Post-Transplant Management

Patients are managed here at OSU throughout the life of their transplanted organ.

Patients are managed with the help of many other healthcare providers
- Primary Care Physician
- Referring Nephrologists
- Endocrinology
- Gastroenterology
- Other specialties
Post-Transplant Management

- Patients are assigned a transplant nurse coordinator following transplant.
  - Coordinator will meet the patient prior to discharge from the hospital.
  - Patients are encouraged to call the post transplant office with any questions or concerns.
  - The post transplant coordinator is the first line of contact when patients call the office.
- Post transplant phone number
  - 1-800-626-2538
Post-Transplant Management

- From transplant to 1 year patients are followed by a transplant surgeon
  - Patients are typically seen in the clinic
    - 1 month
    - 3 months
    - 6 months
    - And 1 year post transplant prior to being transferred to a transplant nephrologist

- Patients >1 year post transplant are then transferred to a transplant nephrologist.

- Patients are encouraged to follow up with their referring nephrologists and primary care physicians routinely.
Post-Transplant Management

- We manage more than just the transplant organ.

- All aspects of the transplant patients care is managed by our transplant team with the help of the patients referring physician and the rest of their healthcare team.

- We routinely draw the following labs:
  - Cholesterol levels
  - Iron studies
  - Liver and kidney functions
  - Electrolytes
  - CBC
  - PTH
Post-Transplant Management

- Patients are given access to our transplant computer software- Transchart.

- This gives them the ability to enter and review their vital signs and labs.
  - Enter Vital Signs
  - Review Labs
  - Review current medication list
  - and Request medication refills
  - This helps the patient to become more involved in their own care.

- Referring and treating physicians are also able to obtain access to Transchart to assist with coordinator of care for these patients.
Post-Transplant Management

- Post transplant office can be reached at
  - 1-800-626-2538

- Please call with any questions or concerns.
Type 1 Diabetes: Pancreas VS Islet Transplantation

Clinical Trial IRB#2006H0200

Amer Rajab, MD, FACS, PhD
Associate Professor of Surgery
Director Pancreas and Islet Transplantation
Director Pediatric Transplantation
The Comprehensive Transplant Center
The Ohio State University
Type 1 Diabetes

- Also known as juvenile diabetes
- Commonly diagnosed in children, adolescents, or young adults
- Over reactive immune response destroys insulin-producing islet beta cells
- Therefore, the body does not produce insulin to properly control blood glucose levels
Tissue replacement: whole pancreas or islet transplantation is currently the only way to restore physiologic glycemic control
Options

- The whole pancreas (standard of care)
  - Simultaneous with kidney transplantation (KP)
  - After kidney transplantation (PAK)
  - Alone (PTA)
- The islets only (experimental/clinical trials)
Statistics

- Number of transplant centers performing pancreas transplant: 107
- Total number of pancreas transplants: 17,888

- The total prevalence of diagnosed Insulin Dependent Diabetes Mellitus (IDDM) in the United States (all ages, 2005) is approximately 1,400,000-2,800,000 people
  
Statistics

- OSU (1988-2012):
  - 927 total pancreas transplants
  - K/P: 802
  - Pancreas: 125

- **Kidney/Pancreas**
  - Waiting times (median time to transplant):
    - 6 months (national average = 14 months)
  - Waitlist mortality:
    - 8% (national average = 6%)

- Survival rates: July 2012 SRTR
  - One year = 93% (national average = 97%)
Pancreas

- Waiting times (median time to transplant)
  10 months (national average = 23 months)

- Waitlist mortality:
  0% (national average = 3%)

- Survival rates: July 2012 SRTR
  One year = 88% (national average = 98%)
Anatomy of the Pancreas

- 75-125 g
- 15-20 cm long
- 80-90% Exocrine: acinar cells and ductular network
- 2% Endocrine: islets of Langerhans
- Remaining: connective tissues: vascular, nervous, lymphatics
Islet Transplantation

Donor
- Esophagus
- Diaphragm
- Liver
- Portal vein
- Gall Bladder
- Pancreas
- Stomach
- Common bile duct

Recipient
- Islets in pancreas
- Recipient with type 1 diabetes
- Isolated Islets
- Islet in portal vein

Once infused into the recipient's liver, islet cells release the insulin.
Islet Sources

- Only pancreata not used for whole organ transplantation are considered for islets:
  - Donors with significant atherosclerosis
  - Donors with prolonged down time, hypotension and hyperglycemia
  - Donors with extreme age
  - Fatty pancreas
  - Fibrotic pancreas
  - Pancreatitis
  - Pancreas with duodenal, parenchymal or splenic injury
Insulin Independence

Graph showing the percentage of insulin independence over months post last infusion for different total numbers of infusions received.
Pancreas VS Islet

- **Pancreas**
  - Standard of care
  - Maximally Invasive
  - Recipient Selection
  - Limited Supply
  - Immunosuppression Required
  - Re-Transplant is difficult
  - Currently more successful

- **Islet**
  - Research (few elite centers)
  - Minimally Invasive
  - All Diabetics Qualify
  - Potential for Unlimited Supply
  - Manipulate Islets for Tolerance
  - Can be repeated multiple times
Who should be considered for transplant referral?

- Patients with type 1 diabetes and kidney failure (on dialysis or not)
- Patients with type 1 diabetes and successful kidney transplants
Who should be considered for transplant referral?

- Patients with type 1 diabetes without a kidney failure who have:
  - Poor quality of life related to hypoglycemic unawareness and/or glycemic lability
  - Failure of intensive insulin therapy to prevent progression of diabetes complications
Additional patient considerations for transplantation

- Demonstrated efforts to control their diabetes through intensive insulin therapy
- Age 18-65 years old
- No medical conditions that would make transplantation potentially unsafe or unsuccessful
What should my patients know?

- Pancreas transplantation is treatment of choice for diabetic patient with kidney failure
  - Simultaneous with kidney
  - Staged after kidney transplantation
- Pancreas transplantation alone can be beneficial in select patients with severe glycemic lability, hypoglycemic unawareness and recurrent hypoglycemia.
- Benefits include improved glycemic control, reduced frequency of hypoglycemia, and halted progression of diabetes complications
Summary

- Pancreas transplantation is currently the treatment of choice for diabetic patients with kidney failure.
- Pancreas transplantation is also beneficial in diabetic patients without kidney failure who have severe glycemic lability, hypoglycemic unawareness and recurrent hypoglycemia.
Conclusion

- Transplantation should be considered when despite medical management diabetes complications progress
- Islet transplantation is a promising alternative