Kidney Transplantation
The Difficulties- Real and Perceived
Things to Know About Kidney Transplantation

- Why should a patient get a transplant?
- Who should consider transplantation?
- What are the types of kidneys available?
- How are patients selected to receive kidneys?
- Common Questions/Myths about transplant
Why Get A Transplant?
Patients Live Longer With Transplants

Expected Remaining Lifetimes

- US Population
- Dialysis Patients
- Transplant Recipients

USRDS Database
All Types of Patients Do Better

<table>
<thead>
<tr>
<th></th>
<th>Projected Life Without Transplant</th>
<th>Projected Life With Transplant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Patients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 years</td>
<td>20 years</td>
</tr>
<tr>
<td><strong>Disease</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>8 years</td>
<td>19 years</td>
</tr>
<tr>
<td>Glomerular</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10 years</td>
<td>19 years</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>23</td>
</tr>
</tbody>
</table>

Not Just Living Longer, Living Better

• Reports of enhanced quality of life (QOL) for patients post transplant versus dialysis include:

  – Increased physical activity, energy, and mobility

  – Better overall psychological health/well-being/self-esteem

  – Better social life
Comparison of Lifestyle

- **On Dialysis**
  - **Pregnancy**
    - Difficult/Impossible
  - **Activity**
    - Limited by time on dialysis
    - Limited by fatigue
  - **Travel**
    - International travel impossible
    - Domestic travel is limited

- **Post-transplant**
  - **Pregnancy**
    - Needs planning, but possible with high success rates
  - **Activity**
    - No limitation after 3 months
    - No need for masks/gloves
    - Increased energy
  - **Travel**
    - Unrestricted after 1 year
Comparison of Diet

• On Dialysis
  – Low Sodium
    • Chinese Food
    • Snacks/Chips
  – Low Potassium
    • Potatoes, Beans, Citrus Fruit, Green Leafy Vegetables
  – Low Phosphate
    • Dairy
  – Restricted Fluids
    • 2 liters a day

• Post-transplant
  – No Sushi/Raw Meats
    • For 6 months
  – No grapefruit/grapefruit juice
  – Low Potassium (rarely)
Who Should Get A Transplant

• Everyone!

• There are some conditions where transplant is not indicated:
  – If the surgery is not feasible
    • Severe Cardiac disease (if not fixable)
    • Extreme Vascular disease (no place to attach the kidney)
    • Severe Pulmonary disease (unable to wean from ventilator)
  – If the immune suppression will harm the patient
    • Active malignancy
    • Uncontrolled infection (HIV, Hepatitis, TB, Osteomyelitis)
  – If the patient can not manage the transplant afterwards
    • Lack of ability to take medication (lack of insurance, unstable living situation)
    • Active psychiatric condition
# The Two Basic Types of Transplants

<table>
<thead>
<tr>
<th></th>
<th>Living Donor Kidneys (LDK)</th>
<th>Deceased Donor Kidneys (DDK)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>90%+ Function Immediately</td>
<td>70% Function Immediately</td>
</tr>
<tr>
<td><strong>Kidney Lifespan</strong></td>
<td>Average 15-20 years</td>
<td>Average 10-12 years</td>
</tr>
<tr>
<td><strong>Immune Suppression</strong></td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td><strong>Time to Transplant</strong></td>
<td>Months</td>
<td>3-5 years on waitlist</td>
</tr>
<tr>
<td><strong>Scheduling</strong></td>
<td>When Convenient for patient and donor</td>
<td>Whenever organ is available</td>
</tr>
</tbody>
</table>
Transplant Survival and Time on Dialysis

Figure 2. Unadjusted graft survival in 56,587 recipients of cadaveric transplants by length of dialysis treatment before transplant.

The Problem

As of February 20, 2015, there are 101,513 patients on the kidney waiting list.

Figure III-2. Active/Inactive Status of Kidney Waiting List Candidates at Year-End, 1998-2007

Source: 2008 OPTN/SRTR Annual Report, Tables 5.1a, 5.1b.
How do Kidneys Compare to Others

Figure III-7. Unadjusted 1-Year (2005-2006), 5-Year (2001-2006), and 10-Year (1996-2006) Kidney Graft Survival*, by Donor Type

- **Living Donor**
  - 1-Year: 96%
  - 5-Year: 81%
  - 10-Year: 58%

- **Deceased Donor**
  - 1-Year: 92%
  - 5-Year: 71%
  - 10-Year: 45%

*Death is included as an event.

Source: 2008 OPTN/SRTR Annual Report, Tables 5.10a, b, d.

MedStar Georgetown University Hospital

Knowledge and Compassion Focused on You
Matching Donors to Recipients

• Blood Group Compatibility
  – Blood Group A is compatible with A or O (75% of the population)
  – Blood Group B is compatible with B or O (50% of the population)
  – Blood Group O is compatible with O (40% of the population)
  – Blood Group AB is compatible with all groups

• Cross-match Compatibility
  – Tests if the recipient has antibodies against donor proteins
    • Through pregnancy (exposure across the placenta)
    • Through blood transfusions
    • Through prior transplants
Principles of Organ Allocation for Deceased Donors

Scarcity

Fairness

Beneficence
Allocating Deceased Donor Kidneys

• Recipients are allocated kidneys by UNOS via the Kidney Allocation System
  – The latest modification in UNOS listing policies
  – 10 years in development
  – Became active on December 4, 2014
  – For the first time allocation based on beneficence as well as fairness

• Allocation is done on several tiers:
  – Local- based on the organ procurement organization (OPO)
  – Regional- based on the UNOS region
  – National- covering all 50 states
Gaining Points on the List

• Within the allocation priorities, recipients are chosen by a point system

• Patients gain points from their time of listing. Kidneys are offered to the recipient with the most points.
  – Recipients receive points in the following ways:
    • Time on the list
    • Sensitization (the presence of antibodies)
    • Prior Kidney Donation
    • Degree of class II MHC match
Time on the List

• Recipients receive 1 point for every year on the list
  – Given as fractions of a point each day

• **Time on the list begins from the point of ESRD**
  – This is a change with the new KAS
  – Old system counted time from listing
  – This has meant a re-ordering of the list recently

• For patients listed before ESRD, time still begins from listing
  – So long as their GFR is equal to or less than 20 mL/min
Sensitization

• Goal is to equalize the chance of highly sensitized patients receiving a kidney
• New system provides some points at all levels of sensitization
  – Provides far more support for high sensitization
  – Patients who were previously told they had little chance at transplant now have much greater hope

<table>
<thead>
<tr>
<th>CPRA Sliding Scale (Allocation Points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(CPRA&lt;98%)</td>
</tr>
<tr>
<td>(CPRA=98, 99, 100 receive 24.4, 50.09, and 202.10 points, respectively.)</td>
</tr>
</tbody>
</table>

New KAS

Old System
Results of the new KAS

System projected to result in:

- Maintenance of Access to Transplant for all patients
- 8,000+ additional life years gained annually
- Improved access for moderately and highly sensitized candidates
- Improved access for ethnic minority candidates
- Comparable levels of kidney transplants at regional/national levels
- Significant cost savings for Medicare
  - $230,000,000 Year 1
  - $47,000,000 following years
What is the Process to get Transplanted?

**Initial Evaluation**
- Patients are seen at a transplant center
- Start of patient education
- NOT the same as being listed
- This process takes weeks – months
- Needs to be completed promptly
- Testing is only good for a limited time

**Listing**

**Transplant**
What is the Process to get Transplanted?

Initial Evaluation

Done once all testing is complete
Even patients with living donors are listed

Listing

If patients become too sick, they can be inactivated
- Also called ‘status 7’
- this means they continue to accumulate time, but would not get a kidney until made active
- If patients are not getting better, they will be removed

Transplant
What is the Process to get Transplanted?

Initial Evaluation

Listing
- Average wait time is 3-5 years
- While listed, patients need monthly blood samples
- These are used for testing against donors
- Without current samples, transplant may be impossible
- Patients need routine visits at the transplant center
What is the Process to get Transplanted?

Initial Evaluation
- Time to walk: 1 day
- Time in hospital: 5 days
- Time to feeling ‘normal’: 4-6 weeks
  - loss of appetite
  - difficulty sleeping
  - lack of energy
- Time to going back to work: 2-3 months
- Time to full activity: 3-6 months

Listing
The Truth About Transplant Medications

- After transplant, patients take a ton of medications
The Truth About Transplant Medications

- After transplant, patients take a ton of medications  **FALSE**
  - Standard regimens are 2 drugs taken once or twice a day
  - For the few months after transplant, there are 3 other medications to prevent infection, but these are all stopped within 6 months
  - When we add 2 drugs, there are many others that are stopped
    - Vitamin D (Calcitriol, Hectorol, Zemplar)
    - Sensipar
    - Aranesp/Procrit
    - Phosphate Binders
    - Some high blood pressure pills
The Truth About Transplant Medications

- Immunosuppressive Medications have terrible side effects
The Truth About Transplant Medications

- Immunosuppressive Medications have terrible side effects  FALSE
  - Like any medications, there are side effects to transplant drugs
  - However they are no worse than many others
  - Typical side effects
    - Tremor
    - Bloating/diarrhea
    - Hair loss
    - Hair gain
    - Mouth sores
  - Most importantly, we have options- so if a drug is not good for a patient, we can switch to something else
The Truth About Transplant Medications

- Immunosuppressive Medications are incredibly expensive
The Truth About Transplant Medications

- Immunosuppressive Medications are incredibly expensive **TRUE**
  - Without insurance, these medications cost $1,500 to $2,000 per month
  - BUT, they are entirely covered by insurance
  - Most important thing is to maintain health insurance throughout the transplant
Any Questions?