The New Kidney Allocation System: What You Need to Know

Quality Insights Renal Network 3
Annual Meeting
October 2, 2014

Shamkant Mulgaonkar MD
Chief
Transplant Division
Barnabas Health

OPTN
Dialysis Status in USA

- 500,000 patients on dialysis in 2013
- 100,000 patients start dialysis each year
Why Transplant?

Quality of Life
- Diet
- Travel
- Pregnancy
- Job
- Lifestyle
- Athletics

Cost
- Society
  - 5 Year cost
    - Dialysis: 345,000
    - Transplant: 155,000
  - Patient

Long Term Issues
- Medical
- Psychosocial
- Dietary
- Financial
- Life Expectancy

Life Expectancy
Treatment Modalities for ESRD Patients

N = 331,320

- Transplantation
- Hemodialysis
- Peritoneal dialysis

10-Year Survival Rates by Modality

- Transplantation: 69%
- Hemodialysis: 28%
- Peritoneal dialysis: 3%

Annual Transplant Activity Vs. Waiting List [USA]
NUMBER OF LIVING AND DECEASED KIDNEY DONOR TRANSPLANTS, UNITED STATES, 1988 – 2013

Deceased

Living

1988

1988

2004

2013

11,162

9,359

6,647

5,732

7,061

1,817
Increasing Waiting List

- High Success Rates
- Elderly
- Diabetics
- Retransplants
- Multiorgans
NJ Transplant Centers:
Total Deceased Donor Volume

- 2010: BH (163), RWJ (57), HUMC (29), OLL (11)
- 2011: BH (158), RWJ (45), HUMC (30), OLL (17)
- 2012: BH (143), RWJ (50), HUMC (3), OLL (24)
- 2013: BH (149), RWJ (37), HUMC (7), OLL (15)

Total: 59
NJ Procurement: Kidney

Kidneys recovered and transplanted locally from 2010 to 2013:
- 2010: 281 kidneys recovered, 223 transplanted locally
- 2011: 273 kidneys recovered, 207 transplanted locally
- 2012: 261 kidneys recovered, 181 transplanted locally
- 2013: 260 kidneys recovered, 186 transplanted locally

** Does not include imports
TRANSPLANT CENTRE

BRING YOUR OWN ORGANS

"I had no idea things were quite so desperate."
Active Listing as of 2013
KI 1.10 Median years to kidney transplant for wait-listed adult patients

- Median years to transplant

- Y-axis: Median years to transplant
  - 5
  - 4
  - 3
  - 2
  - 1
  - 0

- X-axis: Year
  - 98
  - 00
  - 02
  - 04
  - 06
  - 08

- Lines:
  - Inactive at listing
  - ECD yes
  - Active at listing
  - All
Discard Rate

18%
## UNOS Point System

### Algorithm for organ allocation

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HLA Antigen matching</strong></td>
<td></td>
</tr>
<tr>
<td>0 mm</td>
<td>Mandatory share</td>
</tr>
<tr>
<td>0BDR MM</td>
<td>7</td>
</tr>
<tr>
<td>1BDRMM</td>
<td>5</td>
</tr>
<tr>
<td>2BDRMM</td>
<td>2</td>
</tr>
<tr>
<td><strong>PRA</strong></td>
<td></td>
</tr>
<tr>
<td>&gt;80%</td>
<td>4</td>
</tr>
<tr>
<td>&lt;80%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Waiting time</strong></td>
<td>1/year, 1 to longest waiting, others fraction based on position on the waiting list</td>
</tr>
<tr>
<td><strong>Pediatric</strong></td>
<td>&lt;11 : 3 additional, &gt;11 : 2 Additional</td>
</tr>
<tr>
<td><strong>Previous living donor</strong></td>
<td>additional points</td>
</tr>
</tbody>
</table>
41 year old black male developed ESRD secondary to hypertension at age 28.

Hemodialysis via AVF started at age 29.

Patient had 6 AV access surgeries.

Referred to Transplant Center at age 40.

Blood Group “O”
Blood group B wait times
We labeled kidneys as

- SCD (Young)
- ECD (Old or Marginal)
- DCD (Slow functioning)
- High Risk (Hep C +)
We Labeled Patient as

- Young children < 18
- Difficult to transplant based on PRA
- Unfortunate (Previous living donor)
- Great match
- Better match
- Waiting on the list longest (In the Queue first as opposed to Not on dialysis)
- By BG: No advantage given to Blood Group B
Case number 1

- 76 year old man ESRD due to hypertension.
- Creatinine 6.0 mg/dl
- Listed for transplantation 4 years ago when creatinine was 3.0 mg/dl
- In excellent health and all recent age appropriate testing is normal
- Great support system
- Admitted for a deceased donor transplant
Case number 1 Continued

- Donor is a 16 year old girl
- Brought to ICU intubated following drowning in the backyard pool
- Declared brain dead after 3 days of treatment
- 1 kidney Matched the 76 year old recipient and the other matched a 67 year old female
- 76 year old died 1 year later of an infection and the 67 year old lost the kidney due to BKV nephropathy after 2 years.
Both started dialysis
3 years old: My mom is the best!
7 years old: Mom I love you!
10 years old: Mom what ever!
17 years old: OMG my mom is so annoying!
25 years old: I wanna go back home!
35 years old: Mom you were right
50 years old: I dont wanna lose my mom!
70 years old: I would give everything to have my mom with me!
Objectives

- Explain the new kidney allocation policy and its goals
- Summarize basic changes in allocation components for deceased donor kidneys
- Describe patient indicators appropriate for transplant evaluation referral
- List resources for additional information including education of patients

OPTN

UNITED NETWORK FOR ORGAN SHARING
Why change kidney allocation?

- High kidney discard rates
- Variability in access to transplant
- Unrealized graft years
- Unnecessarily high re-transplant rates
Predicted outcomes of the change

- Approximately **8,000** additional life years gained annually
- Improved access for highly sensitized candidates
- Improved access for ethnic minority candidates
- Comparable levels of kidney transplants at regional/national levels
Current System

Priority

Pediatrics
Hi PRA
Living Donor
O Mismatch

Points

Points regardless of adult Age, Dialysis time, or life year benefit or regardless of kidney characteristic

Wait-List Time
Sharing and Payback System

18 Year Old donor

44 year old Listed 5 yr

78 Year old diabetic Recipient listed 6 mo

68 year Old Donor with CVA

NJ

Florida

NJ

Florida
Sharing and Payback System

16 Year Old donor

O MM

72 Year old diabetic Recipient listed 2 mo

NJ

68 year old Listed 1 yr

O MM

12 year Old Donor Drowning

NJ

Ca

Ca
Factors used to determine groups

- KDPI
  - Donor age
  - Race/ethnicity
  - Hypertension
  - Diabetes
  - Serum creatinine
  - COD CVA
  - Height
  - Weight
  - DCD
  - HCV

- Candidate
  - Estimated Post-Transplant Survival (EPTS)
    - Candidate Age
    - Candidate Diabetes
    - Prior transplant
    - ESRD time
Kidney Donor Profile Index (KDPI)

KDPI Variables

- Donor age
- Height
- Weight
- Ethnicity
- History of Hypertension
- History of Diabetes
- Cause of Death
- Serum Creatinine
- HCV Status
- DCD Status

KDPI values now displayed with all organ offers in DonorNet®
## Addressing System Limitations

<table>
<thead>
<tr>
<th>Stated Limitation of the Current System</th>
<th>Applicable Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mismatch between potential survival of the kidney and the recipient</td>
<td>Survival matching</td>
</tr>
<tr>
<td>Variability in access to transplantation by blood group and geographic location</td>
<td>A2/A2B, broader sharing</td>
</tr>
<tr>
<td>High discard rates of kidneys that could benefit candidates on the waiting list</td>
<td>KDPI, expedited placement,</td>
</tr>
<tr>
<td>Reduce differences in transplant access for populations described in NOTA (e.g., candidates from racial/ethnic minority groups, pediatric candidates, and sensitized candidates).</td>
<td>ESRD time, broader sharing, CPRA sliding scale, maintain peds priority</td>
</tr>
</tbody>
</table>
Major Allocation Components

- Replace SCD/ECD with **Kidney Donor Profile Index (KDPI)**
- Add *longevity matching* using Estimated Post-Transplant Survival (EPTS) score for candidates and KDPI for donors
- Increase access for *sensitized candidates* w/ CPRA sliding scale and additional sharing priority
- Include *pre-registration dialysis time* in waiting time calculation
- Increase access for **Blood Type B** candidates
- Base pediatric priority on KDPI
- Remove *payback system*
New System

Priority
- Pediatrics
- Hi PRA
- Living Donor

Points
- Points for Kidney with longevity
- Patient w life yr benefit
- Dialysis Time credit
- Advantage Blood Group B

Wait- List Time
Kidney
Longest survival

KDPI 20

EPTS Hi

10 year old

Patient
Longest survival

Kidney
Limited survival

KDPI 80

EPTS low

65 year old

Patient
Limited survival
Case number 2: CPRA

- 36 year old white female ESRD due to FSGS
- Started hemo at age 18 (Had 2 pregnancies)
- After 2 years received a LDK from a cousin
- 3 more pregnancies, 1 child
- Lost kidney due to recurrence at age 26
- Received 5 units of pack cells
- PRA 98
Sensitized Candidates

Current

CPRA ≤80% receive 4 additional points and zero points for moderately sensitized candidates

New

Points assigned based on a sliding scale starting at CPRA≥=20%
Point changes: Sensitization

CPRA Sliding Scale (Allocation Points)

CPRA<98%

Points

CPRA

0 0 0 0.08 0.21 0.34 0.48 0.81 1.09 1.58 2.46

New

Current

0 0 0 0 0 0 0 0 0 0 0

OPTN
Revised waiting time calculation

Current
Waiting time begins at/after registration with GFR $\leq 20$ ml/min OR On Dialysis

New
Waiting time points awarded for dialysis prior to registration (pediatric and adults)
• Recognizes time spent with ESRD as basis for priority

Reminder
Waiting time points based on GFR remains the same
<table>
<thead>
<tr>
<th>Sequence A</th>
<th>Sequence B</th>
<th>Sequence C</th>
<th>Sequence D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly Sensitized</td>
<td>Highly Sensitized</td>
<td>Highly Sensitized</td>
<td>Highly Sensitized</td>
</tr>
<tr>
<td>0-ABDRRmm (top 20% EPTS)</td>
<td>0-ABDRRmm</td>
<td>0-ABDRRmm</td>
<td>0-ABDRRmm</td>
</tr>
<tr>
<td>Prior living donor</td>
<td>Prior living donor</td>
<td>Prior living donor</td>
<td>Local + Regional National</td>
</tr>
<tr>
<td>Local pediatrician</td>
<td>Local pediatricics</td>
<td>Local</td>
<td></td>
</tr>
<tr>
<td>Local top 20% EPTS</td>
<td>Local adults</td>
<td>Regional</td>
<td></td>
</tr>
<tr>
<td>0-ABDRRmm (all)</td>
<td>Regional pediatricics</td>
<td>Regional adults</td>
<td></td>
</tr>
<tr>
<td>Local (all)</td>
<td>National pediatricics</td>
<td>National</td>
<td></td>
</tr>
<tr>
<td>Regional pediatricics</td>
<td>National (top 20%)</td>
<td>National adults</td>
<td></td>
</tr>
<tr>
<td>National (all)</td>
<td>National (all)</td>
<td>National (top 20%)</td>
<td></td>
</tr>
</tbody>
</table>

0-ABDRR Mismatch Priority
# Implementation

<table>
<thead>
<tr>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Data updates required</td>
<td>• New allocation rules applied</td>
</tr>
<tr>
<td>• New reports released</td>
<td>• Variances turned off</td>
</tr>
<tr>
<td>• Calculators made available</td>
<td>• Payback system turned off</td>
</tr>
</tbody>
</table>

Anticipated **mid** 2014  
 Anticipated **end** 2014
Early referral

- There is no established system to ensure that medically appropriate candidates are referred for transplantation
Importance of early referral

- Sensitized candidates receive additional priority
- Identify issues that may complicate/prevent transplant
- Waiting time accumulates while issues are addressed
- Slowly progressive renal diseases could receive pre-emptive transplant
- Accrue Waiting Time with GFR <=20ml/min

Receive 0-ABDR mismatch offers
Patients with chronic kidney disease (Stage 3 or higher) or ESRD should be referred for transplant evaluation.
Guidance on early referral

- Pre-emptive transplant and timely, early referral is the goal
  - GFR range = 25-30

- Education about transplant must begin before ESRD to be most effective
  - Stage 3-4 CKD

- Begin discussing the importance of living donors

- Initiate weight loss and smoking cessation counseling as necessary
Check for Prior Living Organ Donors

- Prior living organ donors get additional priority and 4 points
Kidney Allocation System
Communication, Education, and Resources
Resources for professionals

- Kidney Allocation Toolkit
  - FAQs
  - Sample messaging for discussing changes with patients
- Patient brochure
- Guidance for early referral considerations

Subscribe to RSS feeds and a monthly newsletter
http://transplantpro.org/kidney-allocation-system/
More information

OPTN web site - http://optn.transplant.hrsa.gov

UNOS web site* - http://www.unos.org

Transplant Living* - http://www.transplantliving.org

Transplant Pro* - http://transplantpro.org

*These are a service of United Network for Organ Sharing and are not produced under the OPTN contract.
Thank You