The KDPI Explained

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Disclosures: none
Three Strikes Rule* (2 AM)

42 yo M donor. MVA. Cre 3.6. Urine output 30-50 cc/hr

Strike 1: creatinine elevated
Strike 2: kidney on East Coast with 16 hours cold storage
Strike 3: 4 cm laceration in hilum with hematoma

*personal, subjective, unvalidated
Kidney Offer (3 AM)

52 yo Hispanic M died of CVA. Hx hypertension. No diabetes. HCV negative. 5’11”, 81 kg. sCreatinine 1.7 mg/dl. Donor after cardiac death. KDPI 63%

52 yo, not bad
Hispanic, +/
CVA, not good but OK
Hypertension* How long? Compliant?
No DM*, good
HCV -, good
Cre acceptable
Urine output?
Where is donor?

Anatomy? Check info and photo
Biopsy#?
Procurement issues? Call recovery surgeon
Recipient age?
Recipient location?
Accept or decline in 1 hour

* ambiguous # misleading
Kidney Donor Profile Index (KDPI)

A single number that summarizes the likelihood of graft failure after deceased donor transplant

Lower is better e.g. KDPI ≤20% have longer function than 80% of grafts

Figure 1: Estimated Graft Half Lives (years)
Validation of KDPI

**Graph:**
- Title: Death-censored Allograft-Survival by KDPI
- X-axis: Time of Follow up (years)
- Y-axis: Cumulative Death-censored Allograft-Survival
- Legend:
  - KDPI < 35%
  - KDPI 35 - 85%
  - KDPI > 85%

**Table: Patients at risk**

<table>
<thead>
<tr>
<th>KDPI range</th>
<th>Patients at risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>KDPI &lt; 35%</td>
<td>80 65 42 23 6 0</td>
</tr>
<tr>
<td>KDPI 35-85%</td>
<td>306 266 173 90 37 0</td>
</tr>
<tr>
<td>KDPI &gt; 85%</td>
<td>189 138 81 41 20 0</td>
</tr>
</tbody>
</table>
KDPI: 10 Donor Factors

- Age
- Height
- Weight
- Ethnicity
- Hx of hypertension
- Hx of diabetes
- Cause of death
- Serum creatinine
- HCV status
- Donor after cardiac death
KDPI not perfect

Hypertension and diabetes are binary
Less predictive of outcomes between KDPI 20-88

Recipient considerations:
Long waiting time (8-10 yrs in CA for blood group 0)
  Many offers
  Recently listed
  Dialysis access issues
  Quality of life
  Transplant Center outcomes
Factors not captured by KDPI

Recipient age and gender
When listed
HLA match
Cigarette smoking in donor
Cold storage time (pumped or not)
Gross appearance
Technical factors (e.g., cut ureter)
Number and state of vessels (e.g., hard, ulcerated plaque at orifice of artery)
Biopsy (% glomerulosclerosis, interstitial fibrosis, tubular atrophy, vascular changes)
Kidney Allocation Issues

Equity vs. utility
Remove geographical disparity
Decrease discards
Longevity matching

*Transplant best kidneys into best candidates*
Estimated post-transplant longevity (EPTS)

EPTS scores range from 0% to 100%.

Candidates with a lower EPTS score are expected to experience more years of graft function from high-longevity kidneys compared to candidates with higher EPTS scores.
Applied to adult candidates on the kidney waiting list

Four factors:
Candidate time on dialysis
Current diagnosis of diabetes
Prior solid organ transplants
Candidate age
Validation of EPTS

Patient survival by EPTS quintile

EPTS quintile

Years post transplant
EPTS scores of $\leq 20\%$ receive offers for kidneys from donors with KDPI scores of $\leq 20\%$ before other candidates at the local, regional, and national levels.

The EPTS score is not used in allocation of kidneys from donors with KDPI scores greater than 20\%.
KDPI and EPTS: Outcomes

A 5-year survival

B 10-year survival

UCI Health
KDPI > 85

Access to pool of expanded criteria donor grafts
Less waiting time
Especially relevant to older candidates
Patient must sign consent
Discussion with patient
The Car Analogy

Two lines to buy a used car
You’ll stand in both lines
Options: Lambo, Honda (no junkers)
You’re 65, going to Chicago not NY
Now you’re walking or riding the bus

If >55 yrs, ride in comfort
to Chicago in a Honda
KDPI > 85 and older age

![Graph showing survival rates with different KDPI categories and age groups. The log rank test shows a significant difference (p<0.01).]
QOL advantages of renal transplant

Independence from dialysis
Energy
Ease of travel
More dietary and fluid freedom
Cognitive improvement
Kidney allocation algorithm

Children are prioritized (KDPI<35)

Longevity matching related to KDPI and EPTS

Allocation points:
Highly sensitized (antibody to HLA antigens)
Waiting time
NEW: Proximity to donor hospital (250 nautical miles)
Our Team