To What Extent is Allocation of Higher KDPI Score Kidney Transplantation Occurring in the US?

Alex Litvintchouk[1], Adaeze Q. Amaefule[1], Ryan Lamm[2], John McAna[1], Carol Rabinowitz[3], Ashesh Shah[2], Vittorio Maio[1,3]

1. Jefferson College of Population Health, Thomas Jefferson University, Philadelphia, PA, 2. Department of Surgery, Thomas Jefferson University Hospital, Philadelphia, PA, 3. Asano-Gonnella Center for Research in Medical Education and Health Care Sidney Kimmel Medical College, Philadelphia, PA

Background

- In the US, there is a growing kidney shortage and widening gap between organ availability and the numbers of patients on the kidney transplant (KT) waitlist[1]
- In 2014, United Network for Organ Sharing (UNOS) adopted the current most effective scoring system in the US, the Kidney Donor Profile Index (KDPI)[2]
- In the KDPI scoring system, each organ receives a score from 0-100 using ten donor factors; a higher score equates to a predicted lower longevity graft[3]
- Current guidance recommends the expanded use of kidneys with higher KDPI score to offset the limited supply of standard criteria donors

Objective

To describe changing trends of KT utilization in the last ten years according to the KDPI score and evaluate patient characteristics associated with higher KDPI KT

Methods

- **Study Design:** A retrospective analysis was conducted using the UNOS's Organ Procurement and Transportation Network (UNOS OPTN) database
- **Study population:** Individuals aged 18-99 years old, who received a KT between 2010–2019 with a complete dataset were included in the study
- **Data collection:** Recipient characteristics and frequencies of KT stratified by KDPI score (<35, 35-85, >85) were retrieved
- **Statistical analysis:** A logistic regression was conducted to assess recipients' characteristics associated with >85 KDPI KT

Results

Baseline recipient characteristics of kidney transplants by KDPI score[1]

	Total KTs N=106,448	KDPI score <35 n=43,142	35- 85 n=56,017	>85 n=7,289
Age, y				
mean ±SD	53.0 (13.3)	48.5 (13.8)	55.2 (12.0)	62.8 (9.4)
<30	5.9	10.2	3.2	0.5
30-59	57.6	65.0	55.5	30.2
60-69	27.8	20.0	31.4	45.5
≥70	8.7	4.8	9.8	23.8
Gender				
Male	59.9	59.1	60.1	63.5
Female	40.1	40.9	39.9	36.5
BMI				
mean ±SD	28.3 (5.4)	28.2 (5.6)	28.4 (5.3)	28.2 (5.0)
<18.5	1.7	2.1	1.5	1.3
18.5-24.9	28.2	29.3	27.7	26.6
25-29.9	33.5	32.1	34.2	36.9
≥ 30	36.5	36.5	36.6	35.2
Ethnicity				
White	39.4	40.2	39.0	37.4
Black, Non-Hispanic	33.8	33.3	34.1	34.7
Hispanic	17.5	17.9	17.2	17.2
Other	9.4	8.7	9.7	10.7
Time Period				
2010-2012	27.7	28.0	27.0	31.2
2013-2015	29.7	30.0	29.7	27.8
2016-2019	42.6	42.0	43.3	41.0

[1] Unless indicated, column numbers are reported as percentages

Figure 1. Odds Ratio of receiving a >85 KDPI KT by age group (reference: age <30)

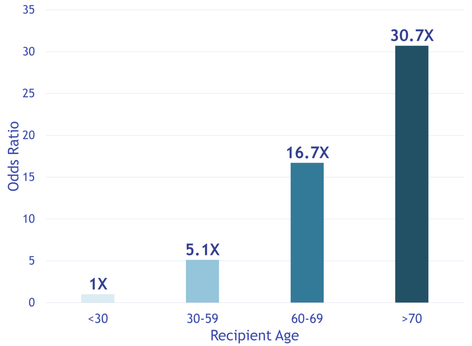


Figure 2. Odds Ratio of receiving a >85 KDPI KT by Ethnicity (reference: White)

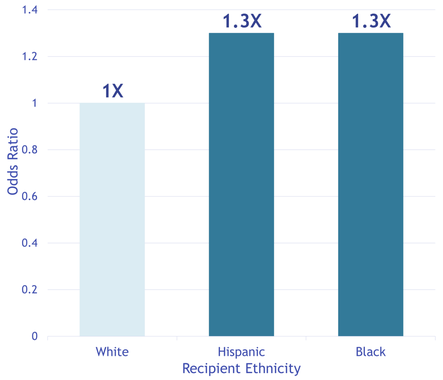
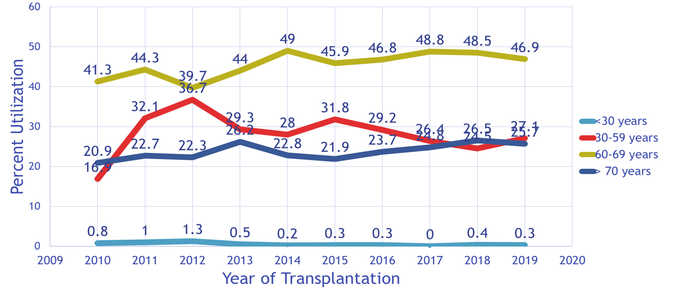


Figure 3. Percentage of KDPI score >85 kidney transplants (KT) in each age group by year



Conclusion

- The overall utilization of >85 KDPI kidneys remained modest during 2010-2019
- Several recipient characteristics were found to affect utilization of >85 KDPI KT, including ethnicity, primary diagnosis, and age
- These findings can help aid policy makers to leverage the discussion of restructuring the current transplantation system

References

1. Voora, S., & Adey, D. B. (2019). Management of Kidney Transplant Recipients by General Nephrologists: Core Curriculum 2019. American journal of kidney diseases : the official journal of the National Kidney Foundation, 73(6), 866–879. https://doi.org/10.1053/j.ajkd.2019.01.031

2. Dahmen, M., Becker, F., Pavenstädt, H., Suwelack, B., Schütte-Nütgen, K., & Reuter, S. (2019). Validation of the Kidney Donor Profile Index (KDPI) to assess a deceased donor's kidneys' outcome in a European cohort. *Scientific reports*, *9*(1), 11234. https://doi.org/10.1038/s41598-019-47772-7

3. "A Guide to Calculating and Interpreting the Kidney Donor Profile Index (KDPI)", Organ Procurement and Transplantation Network, 1 Apr. 2022, https://optn.transplant.hrsa.gov/media/j34dm4mv/kdpi_guide.pdf

Contact

Alex Litvintchouk, PharmD, MMS alexander.litvintchouk@jefferson.edu

Authors have no relevant conflict of interest to disclose.