

2023 Annual Report

Kidney Transplantation

Royal Prince Alfred Hospital

Transplantation Services

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Executive Summary

In 2023, a total of 89 kidney transplants were performed at Royal Prince Alfred Hospital. The kidney transplantation service continues to strive to provide exceptional care to all our patients being worked up, waiting for or receiving a transplant. Catering for both pre and post-transplant care to 15 referring centres in addition to RPAH based patients.

Of the 89 kidney transplants performed, 63 recipients received kidneys from deceased donors, (52% donation after brain death and 48% from donation after circulatory death). There were 26 living donor transplants performed. With relatively stable total numbers of patients on the waiting list (182 in total).

The 12 month overall patient survival was 96% (ie reflecting transplants from the previous 12 months). The 12 month graft survival was 97%.

We acknowledge all the generous donors and donor families, who make transplantation possible. We also thank our multidisciplinary team of clinicians and all staff involved across this hospital and beyond, for their dedication and support.

Prof Kate Wyburn
A/Professor Jerome Laurence
Mark Wells
Karen Chan

RPAH Kidney Transplant Team

Surgeons	Jerome Laurence	Carlo Pulitano	David Joseph
	Charbel Sandroussi	Raffi Qasabian	Paul Sved
	Suzanna Lam		
Living Donor surgeons	Arthur Vasilaris	Scott Leslie	
Transplant Physicians	Kate Wyburn	Steve Chadban	David Gracey
	Leyla Aouad	Tracey Ying	
Anaesthetists	Greg Lindsay	Robert Hackett	Gerald Wong
Psychiatrists	Kirsty Morris		
Surgical Fellows	Andrew Jacques		
Medical Fellows	Rose-Marie Scarlato	Sophie Harmos	
Radiologists	Richard Waugh	Jim Raleigh	Chris Rogan
Kidney Transplant Coordinators	Jane Mawson	Allyson Newman	Marvin Marquez
Nursing Team in Operating Suite	Kate Barraclough	Alfonzo Mayngo	Deb Goh
	Rachel Jang		
Inpatient Nurse Unit Managers	Breeana Alder		
Post Transplant Ambulatory Care Team	Ainslie Mansell	Christopher De Leon	Gillian Orr
	Michelle Burton		
Clinical Nurse Educators	Ashanthi Abeyewardene		
Clinical Trials Team	Ellen Yeo	Lin Lin	Karen Jeffrey
Dietitians	Arian Chong	Bridget Heathcote	
Social Workers	Jacqueline Rist	Matthew Nutt	

Data Management

Mark Wells

Karen Chan

Suganthi Manickam

Administrative Support

Rose Musumeci

Michelle Dubuisson

Jane Manzie

Marc De Palma

Sandra Rees

Sylvia Micallef

Gylcy Eiroa

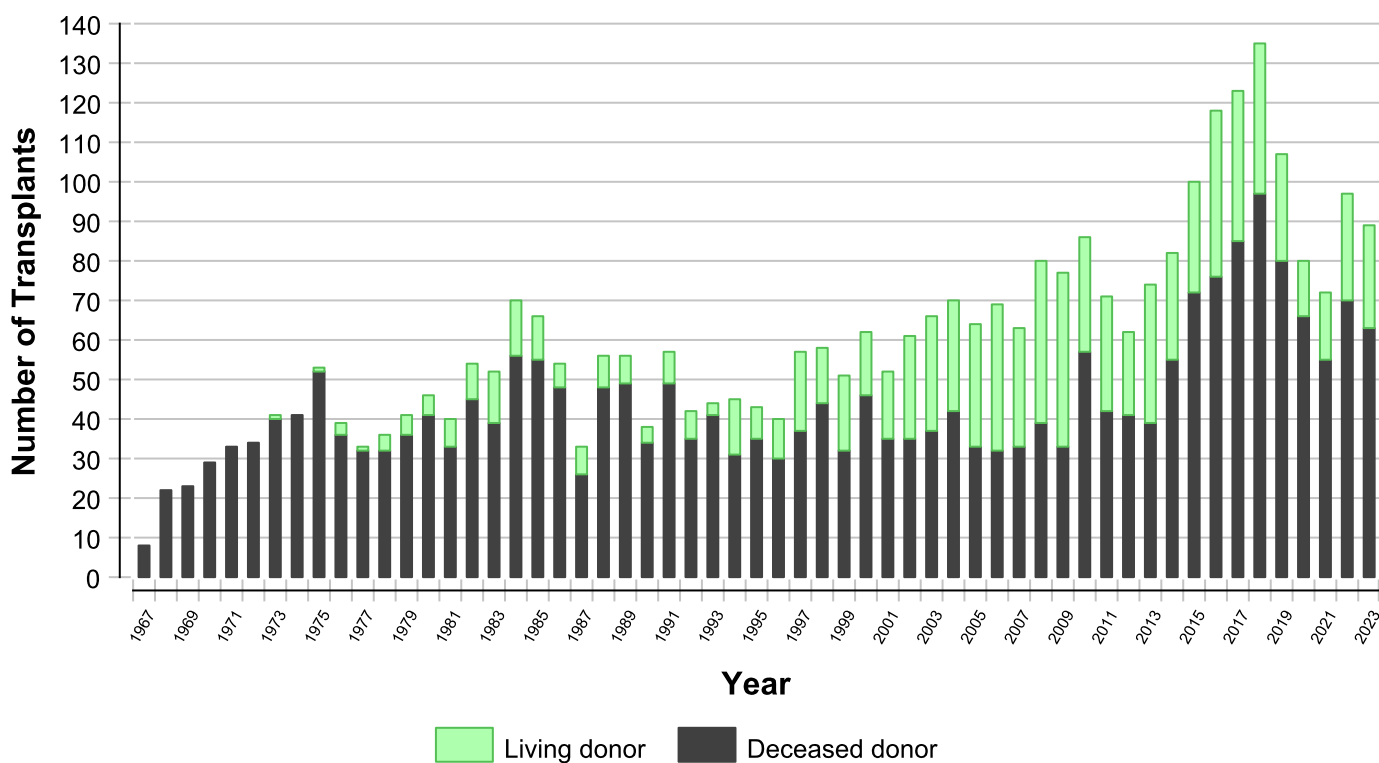
Jessica Hobson

Melanie Pike

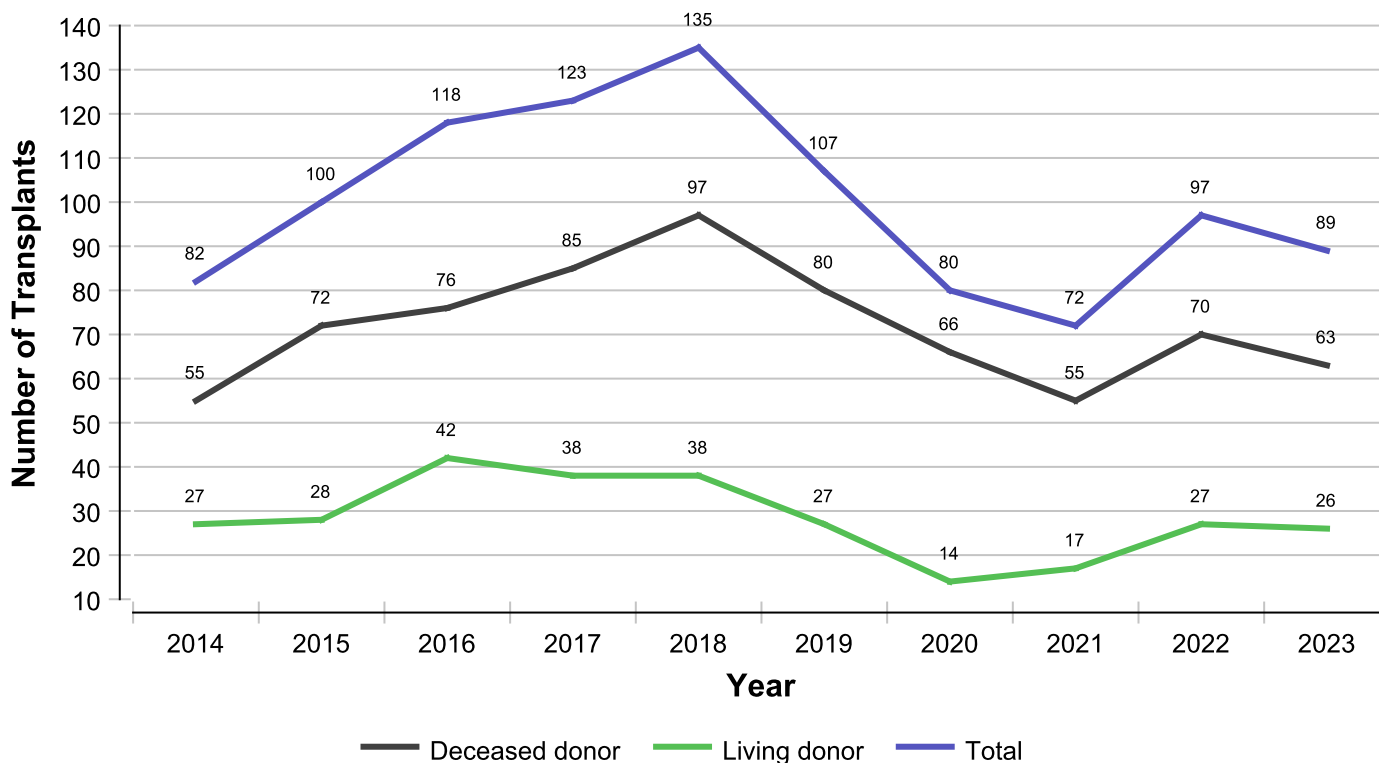
Ewa Fedorowicz

Kidney Transplant Activity at RPAH

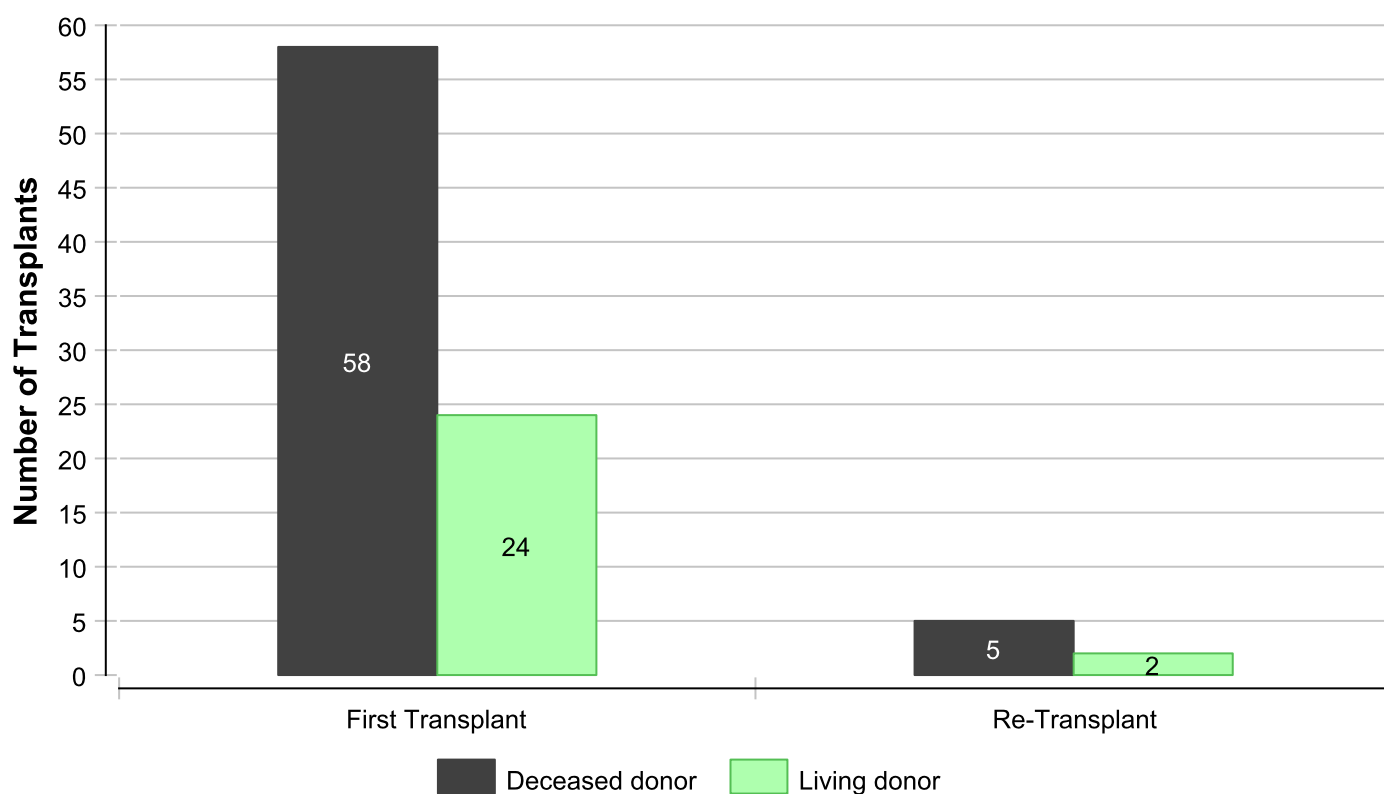
Kidney Transplantation at RPAH (n=3395)



Kidney Transplantation Trend at RPAH from 2014 to 2023 (n=1003)



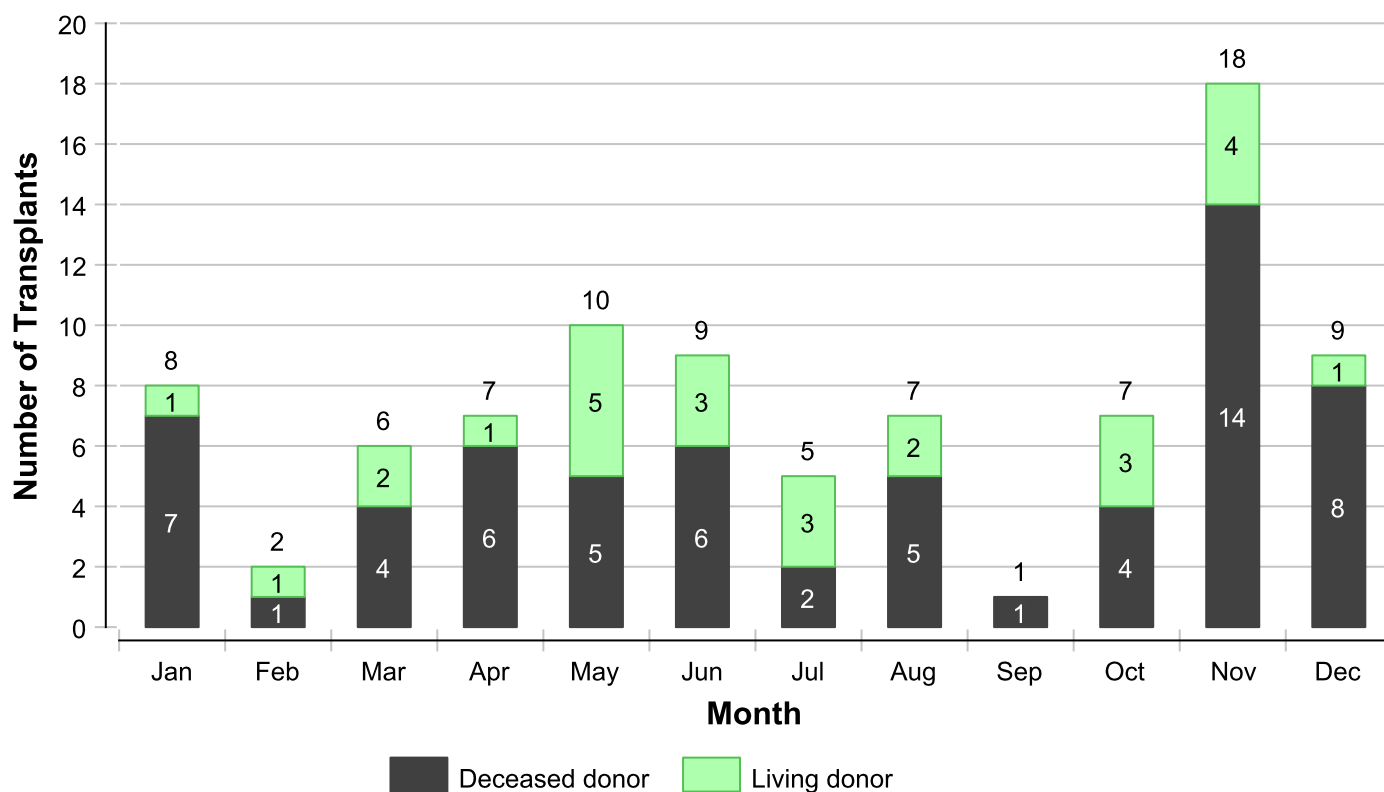
Kidney Transplant Donors at RPAH in 2023 (n=89)



Deceased donor n=63. Living donor n=26

Considerably more first transplants, the majority from deceased donors

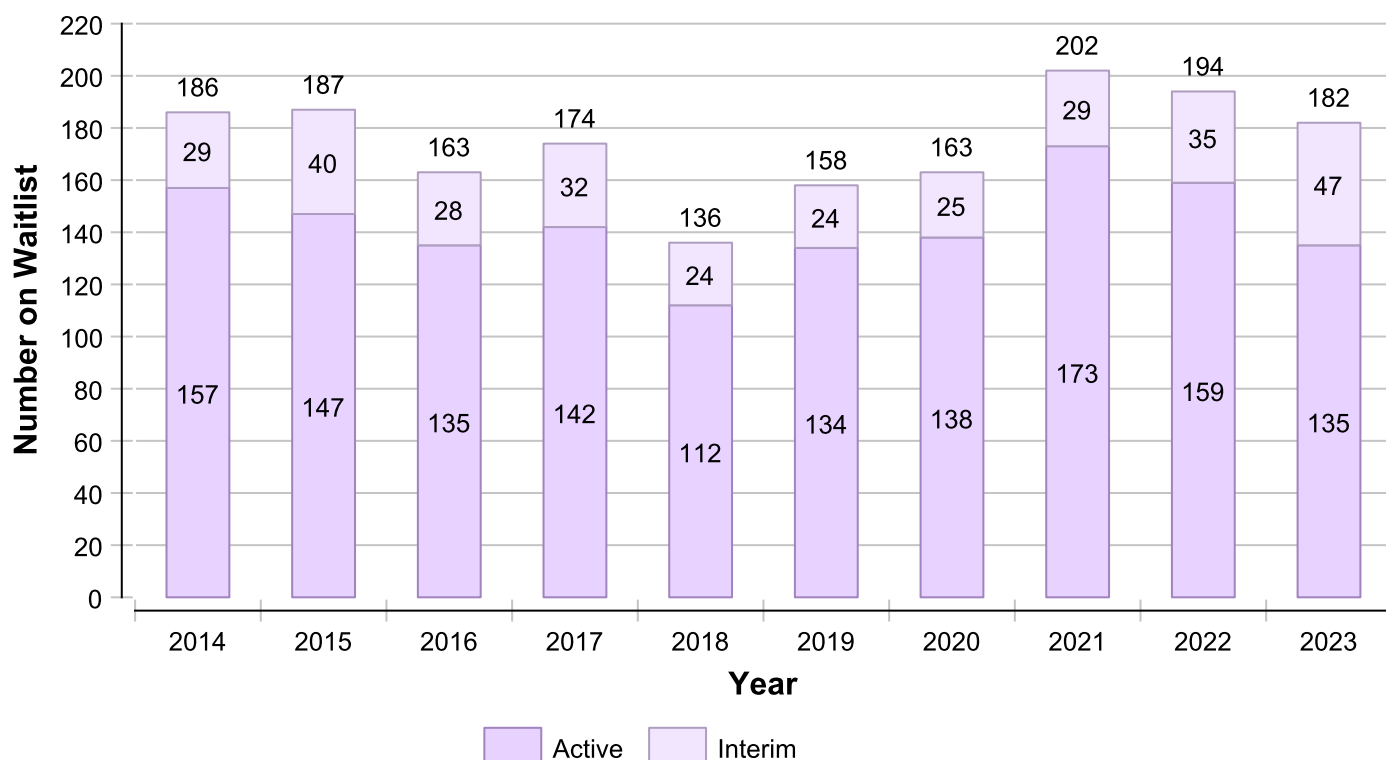
Monthly Kidney Transplantation at RPAH in 2023 (n=89)



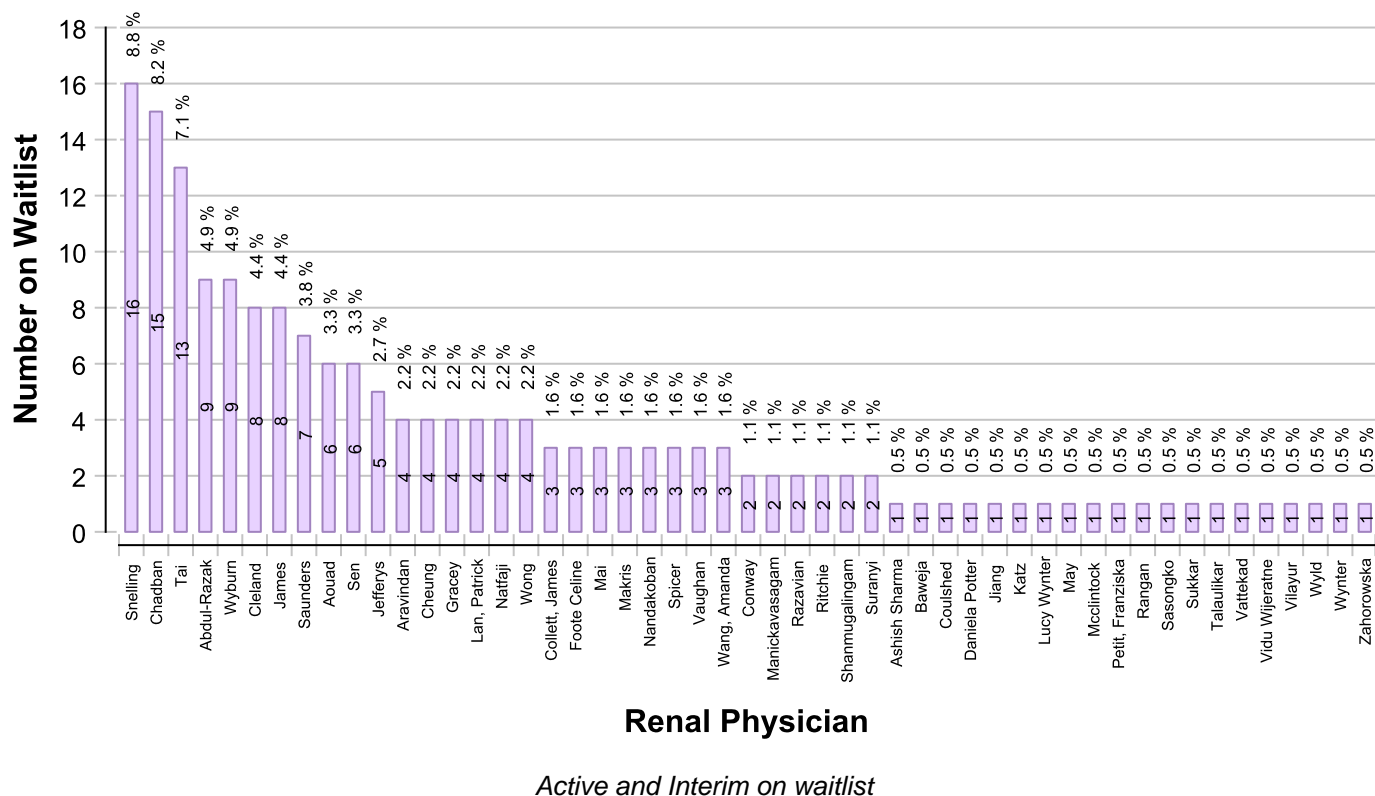
Month on month variation with a low of 1 transplant, and peak of 18

Waiting List for Kidney Transplantation at RPAH (excludes New Caledonia)

Kidney Waitlist Trend at RPAH from 2014 to 2023 (at 31-Dec, n=806)



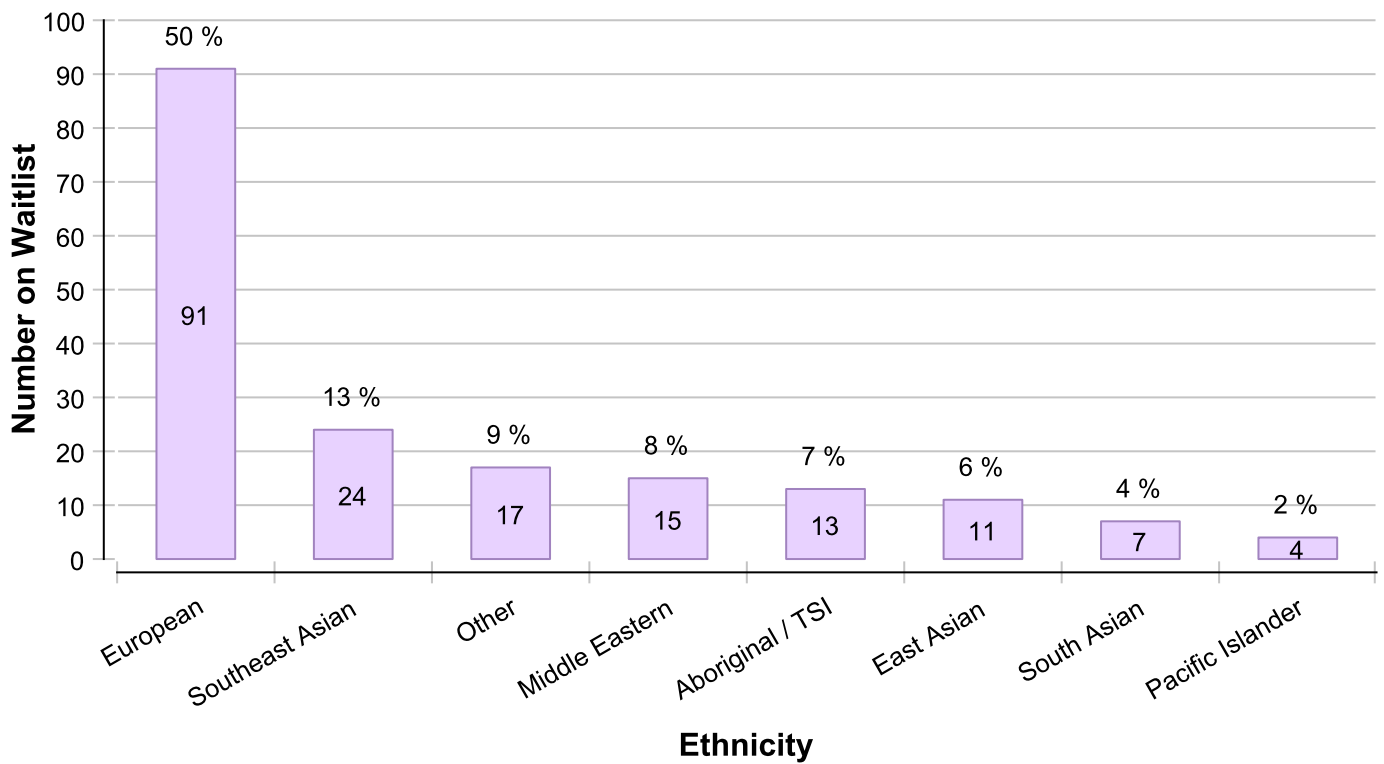
Physician of Patients on Kidney Waitlist at RPAH in 2023 (at 31-Dec, n=182)



Renal Physician

Active and Interim on waitlist

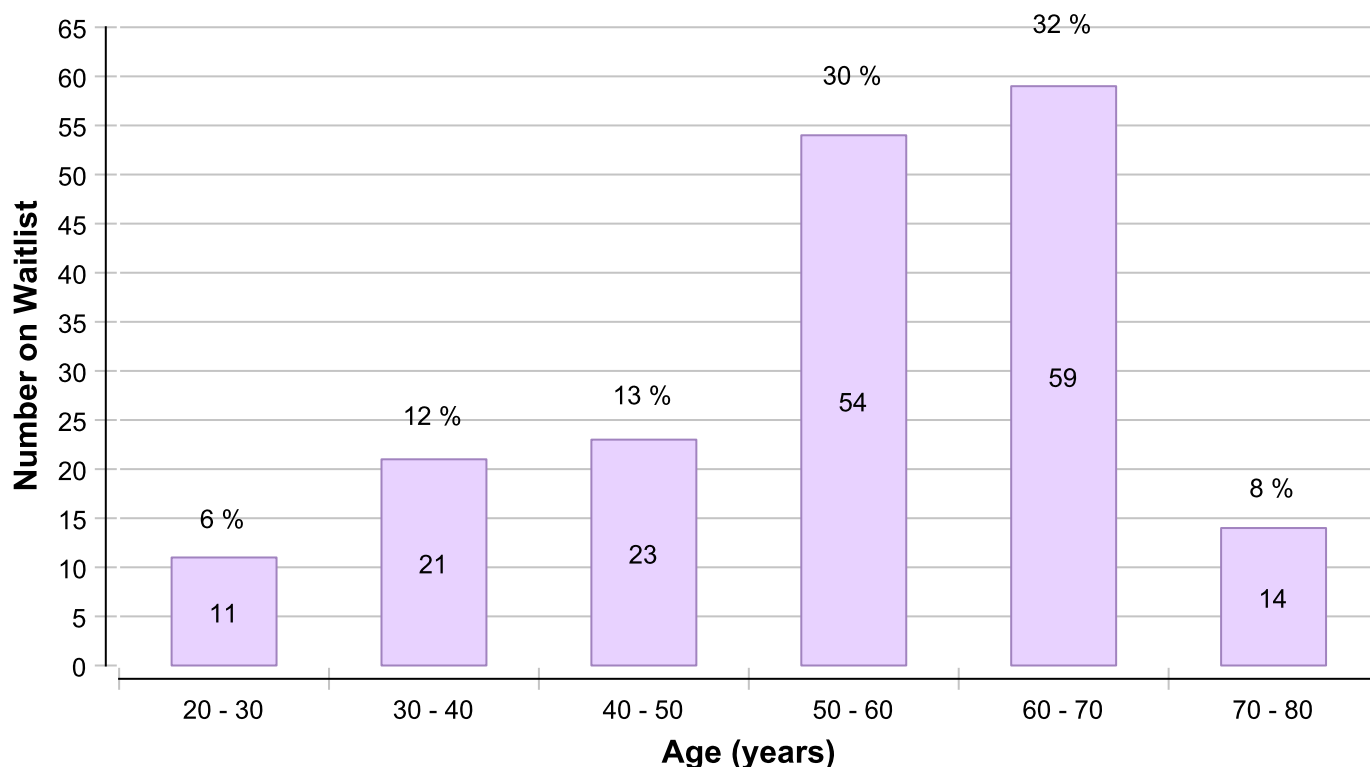
Ethnicity of Patients on Kidney Waitlist at RPAH in 2023 (at 31-Dec, n=182)



Active and Interim on waitlist

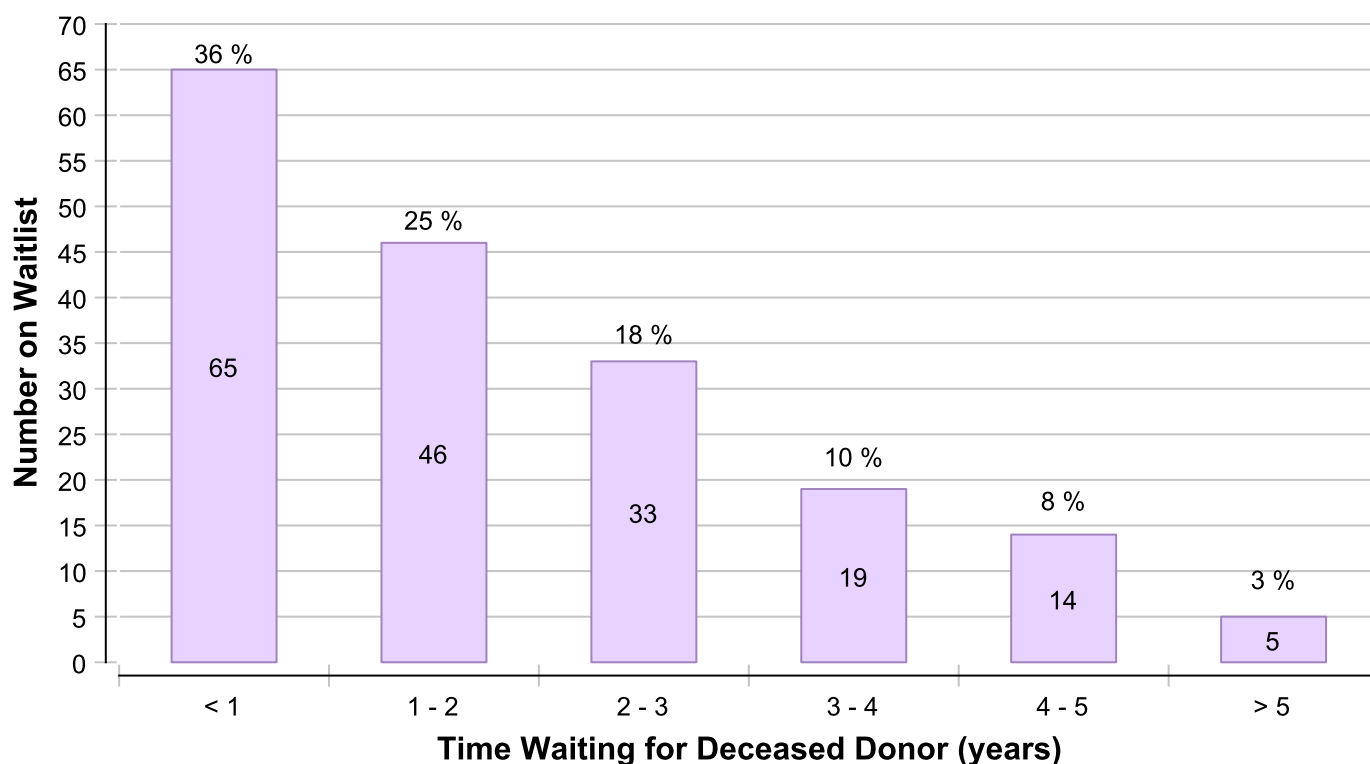
Waitlist ethnicity at the end of the year was predominantly European, around half, with indigenous representation under 10%

Age of Patients on Kidney Waitlist at RPAH in 2023 (at 31-Dec, n=182)



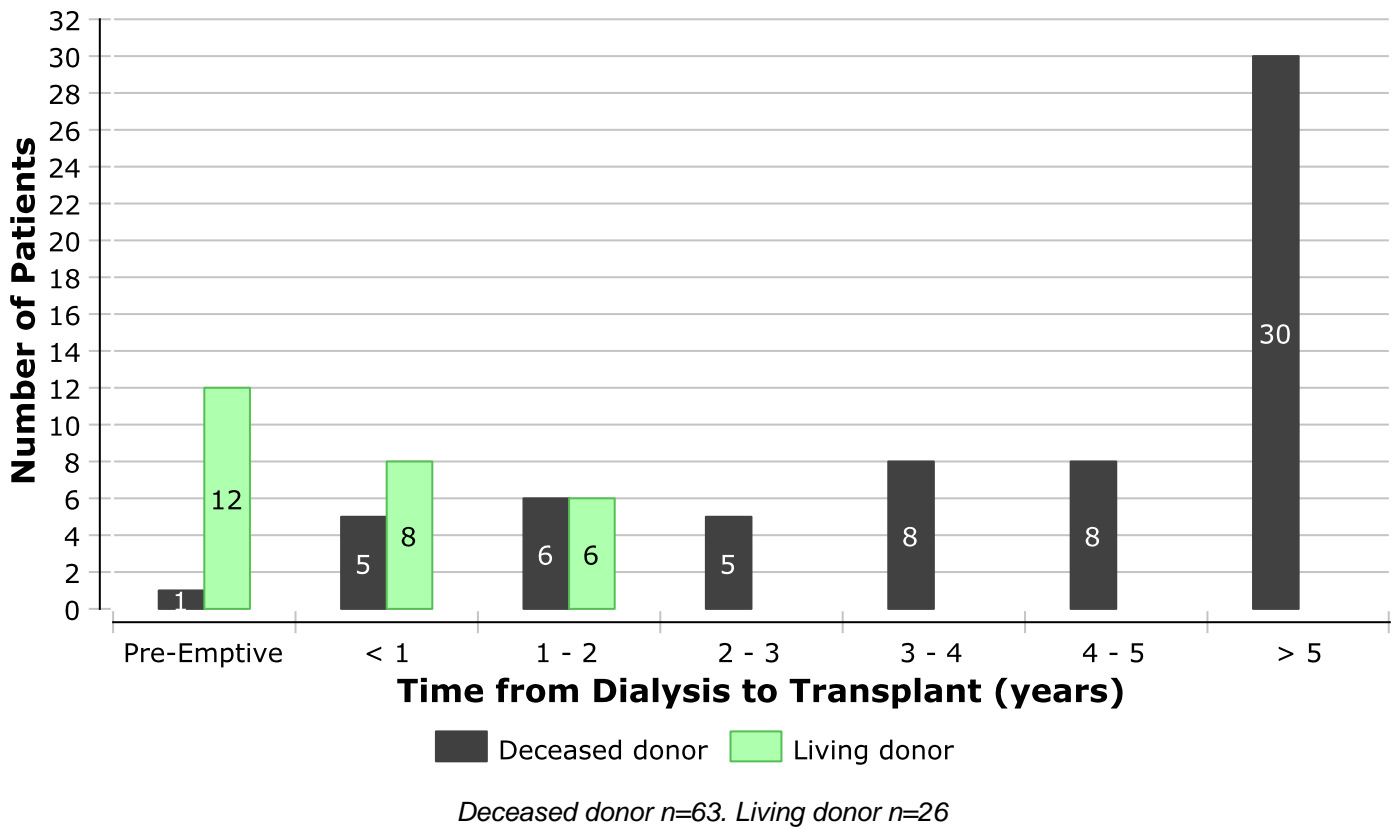
Active and Interim on waitlist

Time on Kidney Waitlist at RPAH in 2023 (at 31-Dec, n=182)



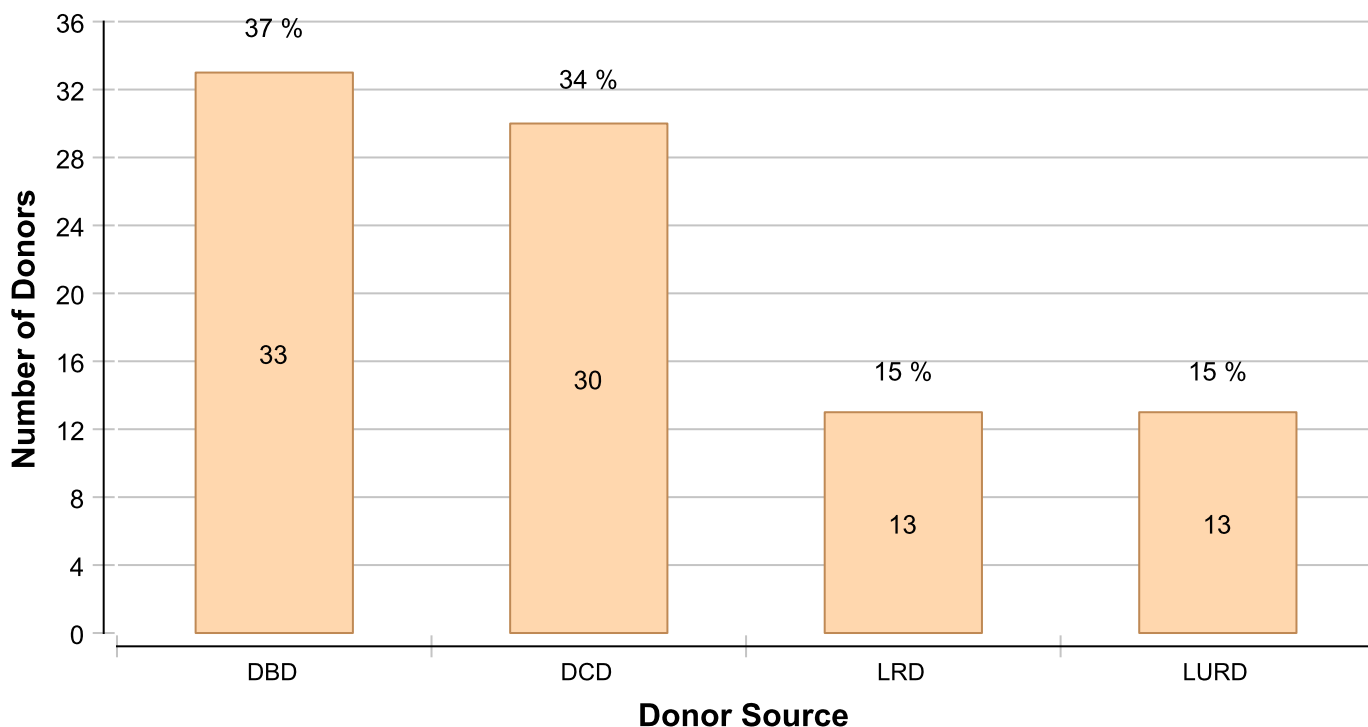
Time on the waitlist at the end of the year was predominantly less than 1 year

Kidney Transplantation Waiting time at RPAH in 2023 (n=89)



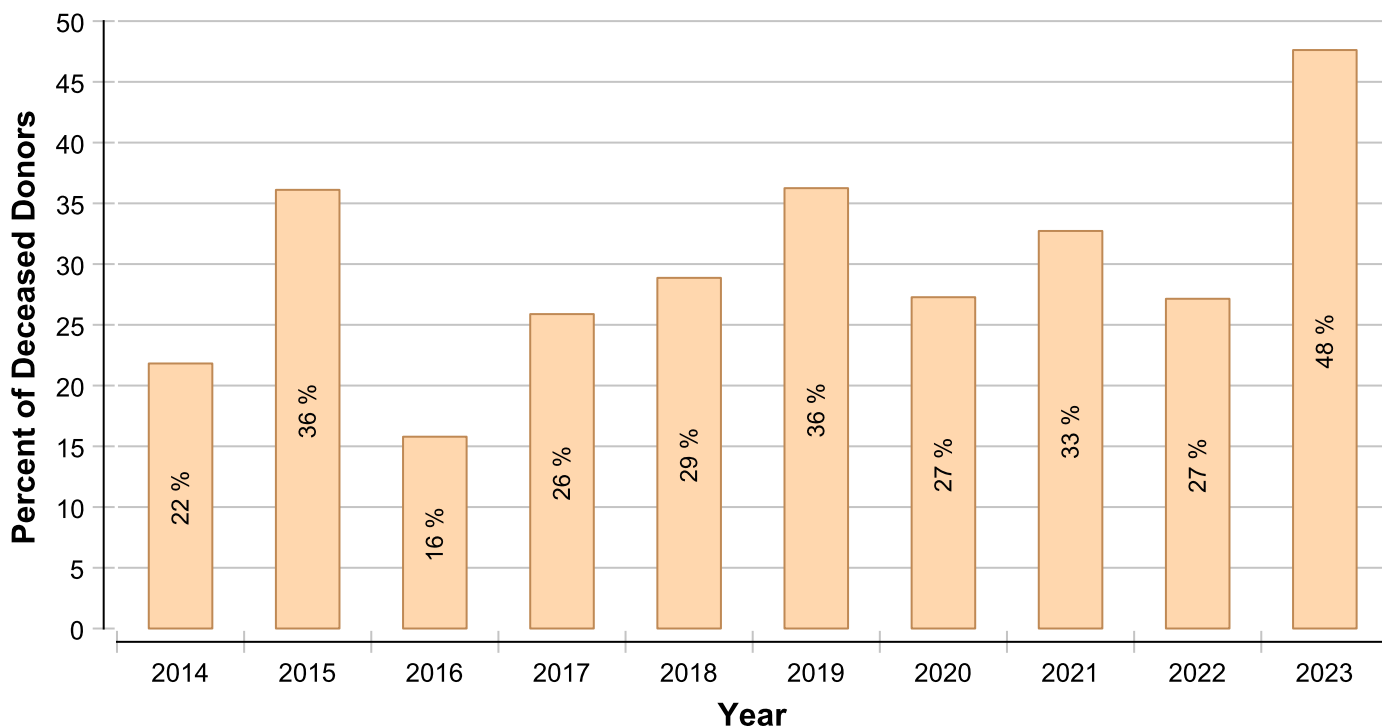
Kidney Donor Demographics

Kidney Donor Source for RPAH in 2023 (n=89)



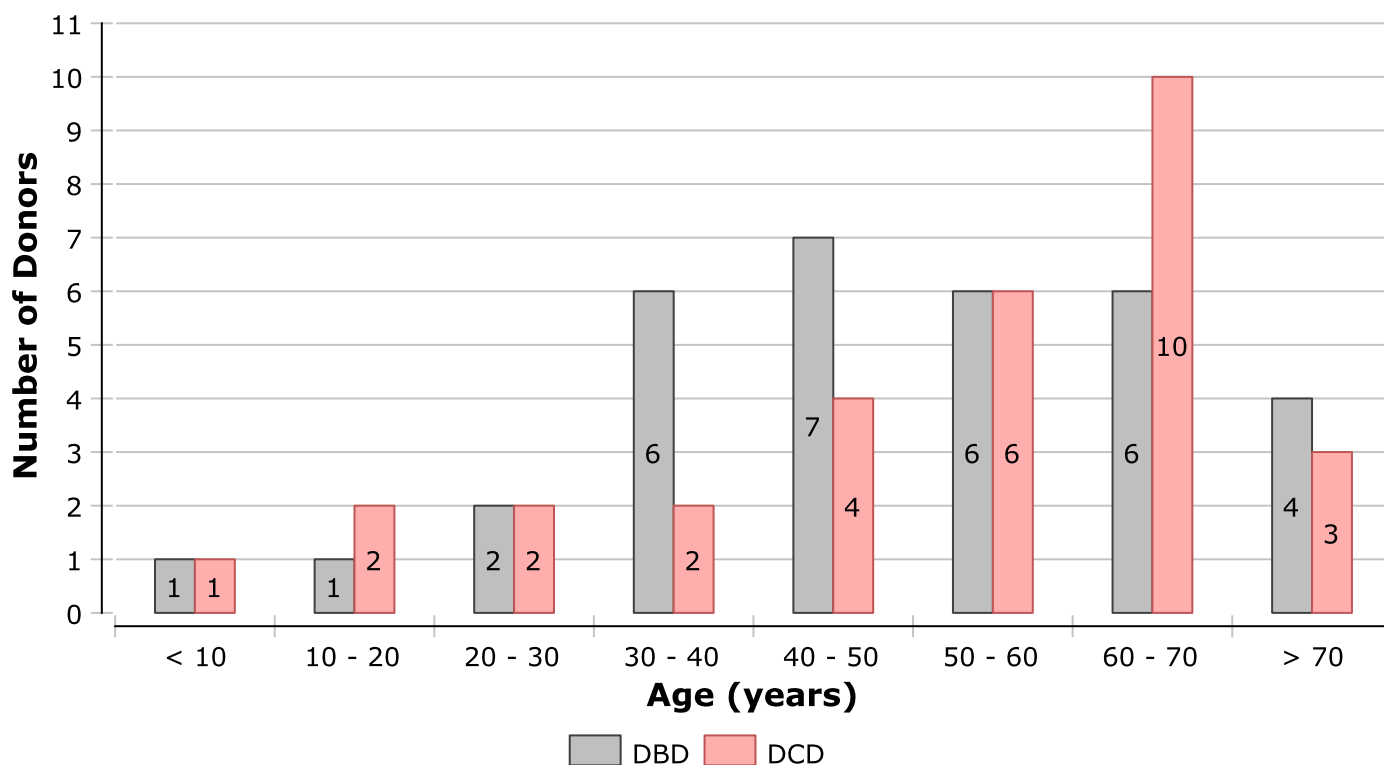
Donation after Brain Death was the predominant source of donors, followed by Donation after Circulatory Death, then Living Related Donor and Living Un-Related Donor

DCD Kidney Transplantation Trends for RPAH from 2014 to 2023 (n=214)



Donation after circulatory death as percentage of annual deceased donor transplants at RPAH

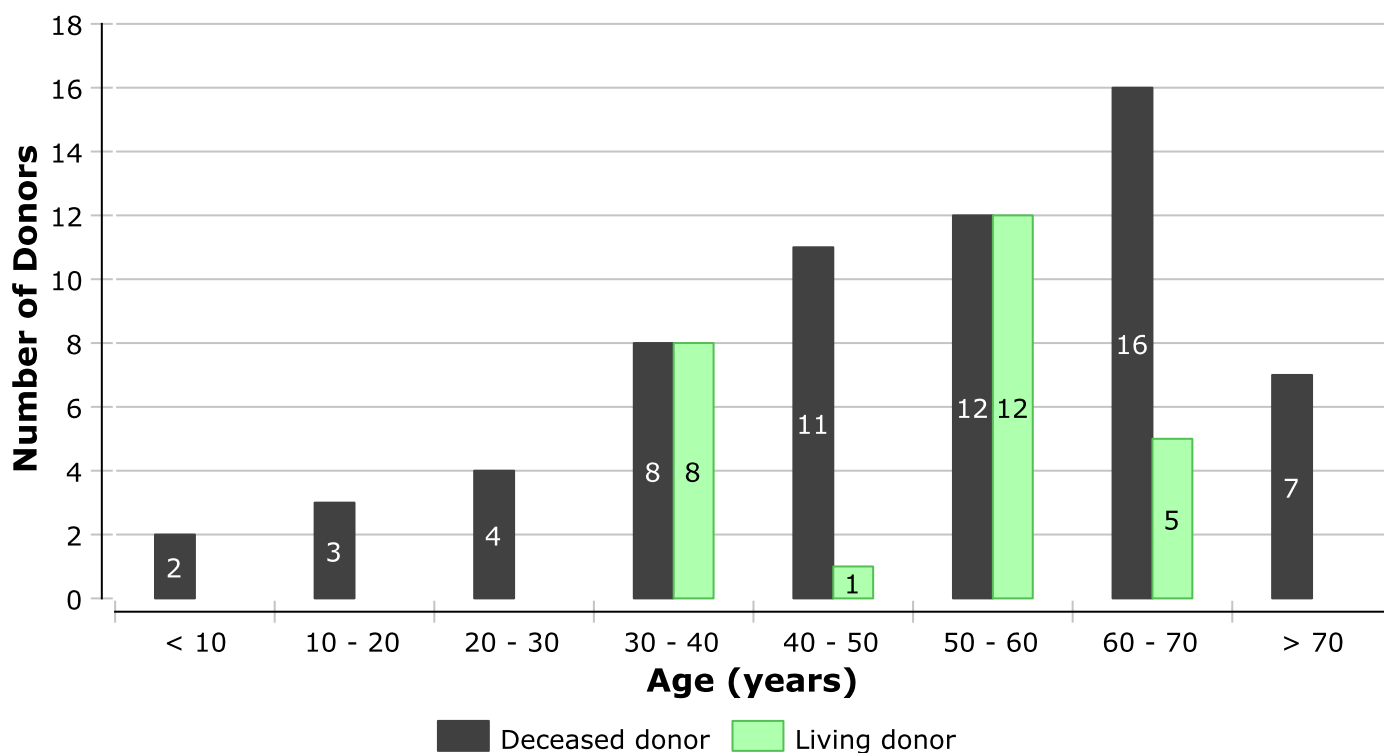
Age of Deceased Donor for RPAH in 2023 (n=63)



Donation after brain death n=33. Donation after circulatory death n=30

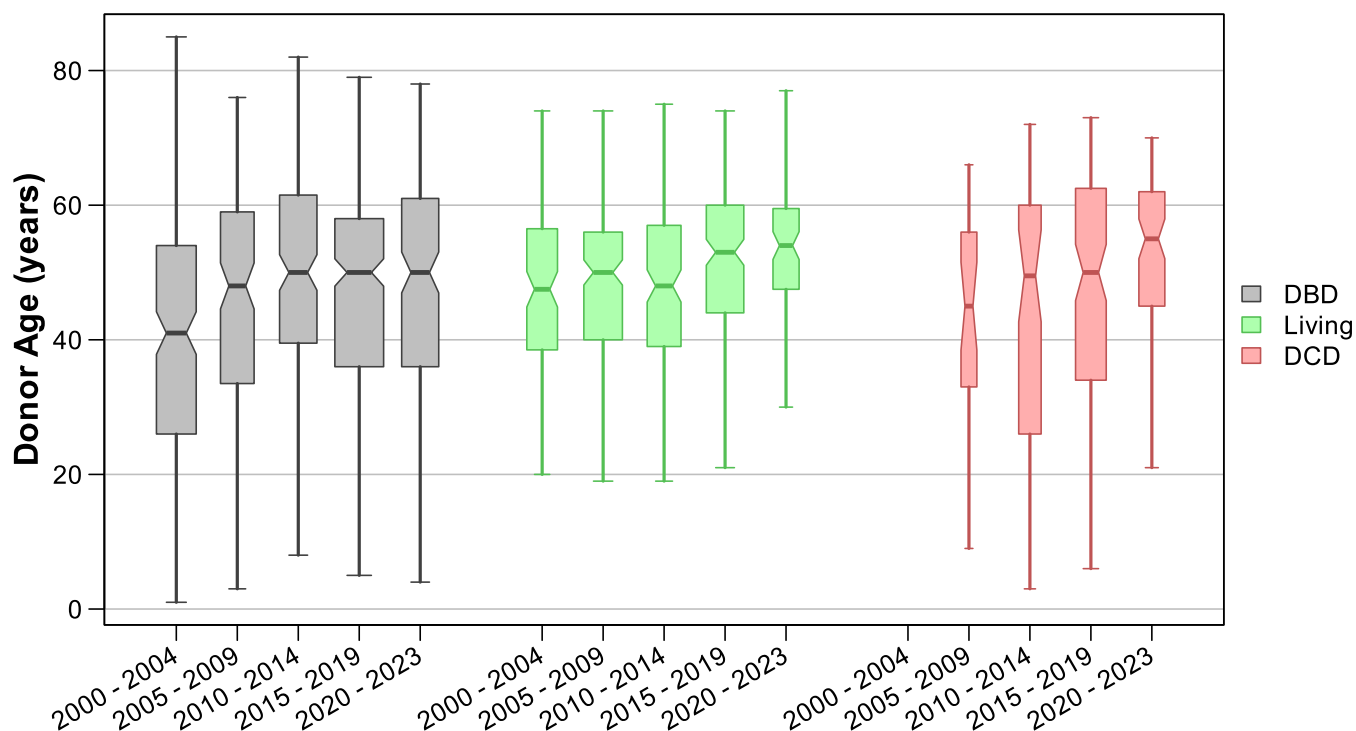
The peak age for Donation after Brain Death was 40-50 yr, while the peak for Donation after Circulatory Death was 60-70 yr

Donor Type and Age of Kidney Donors for RPAH in 2023 (n=89)



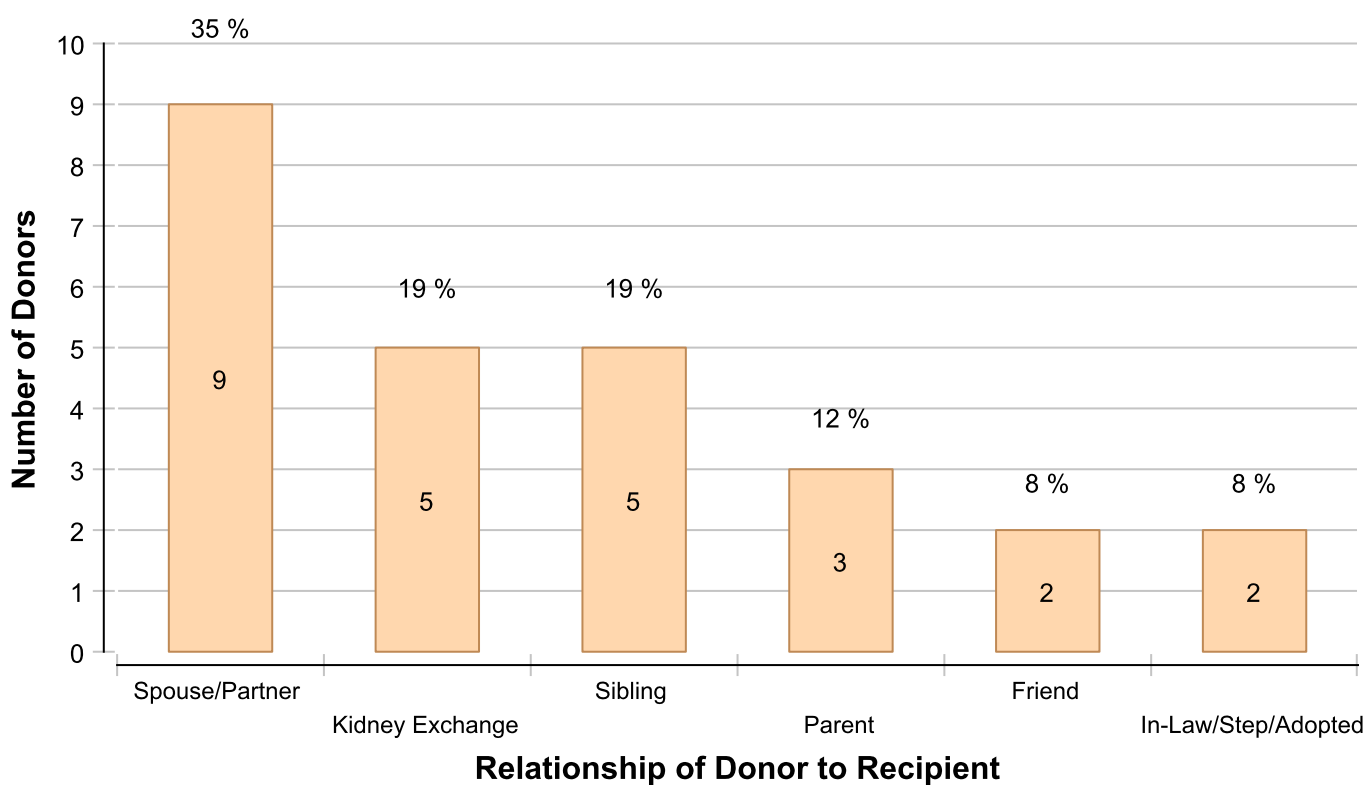
Deceased median age 52, n=63. Living median age 54, n=26

Donor Age Trends at RPAH by Donor Source



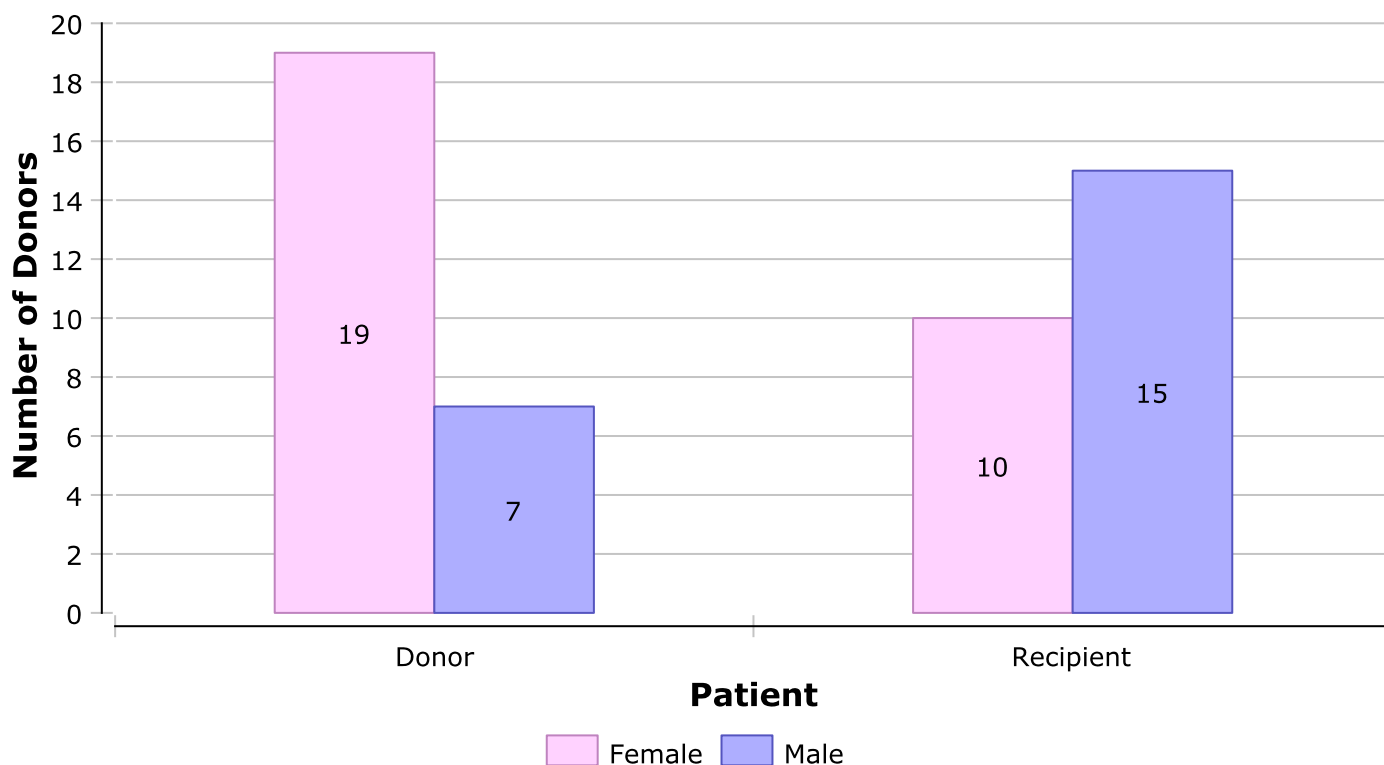
Median line. Notches ~95% confidence of median. Box interquartile range. Whiskers furthest case < 1.5xIQR from quartile. Outliers not shown

Relationship of Living Kidney Donors at RPAH in 2023 (n=26)



The most common relationships of living donors last year were Spouse/Partner, followed by Kidney Exchange and Sibling

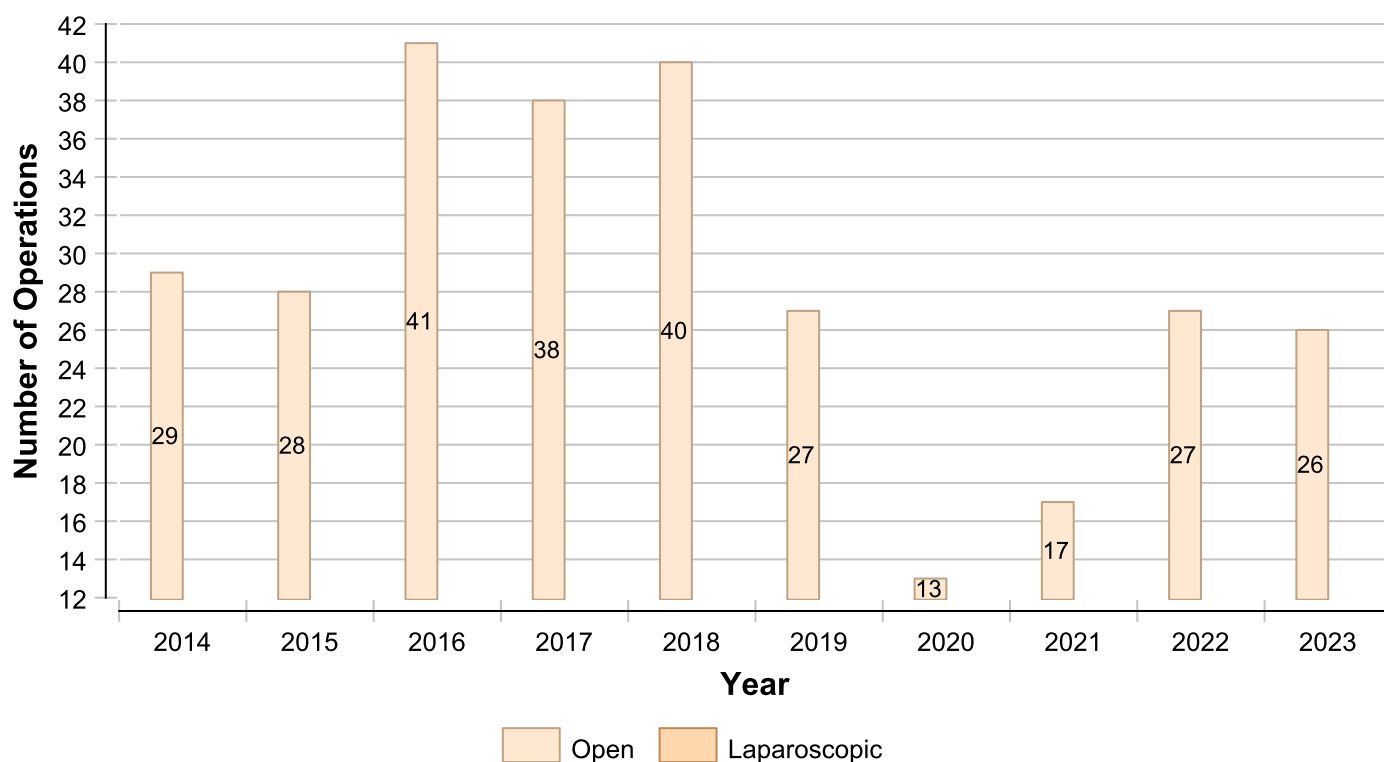
Gender of Living Kidney Donors and Recipients at RPAH in 2023



Living Donors n=26, Recipients of Living Donors n=25

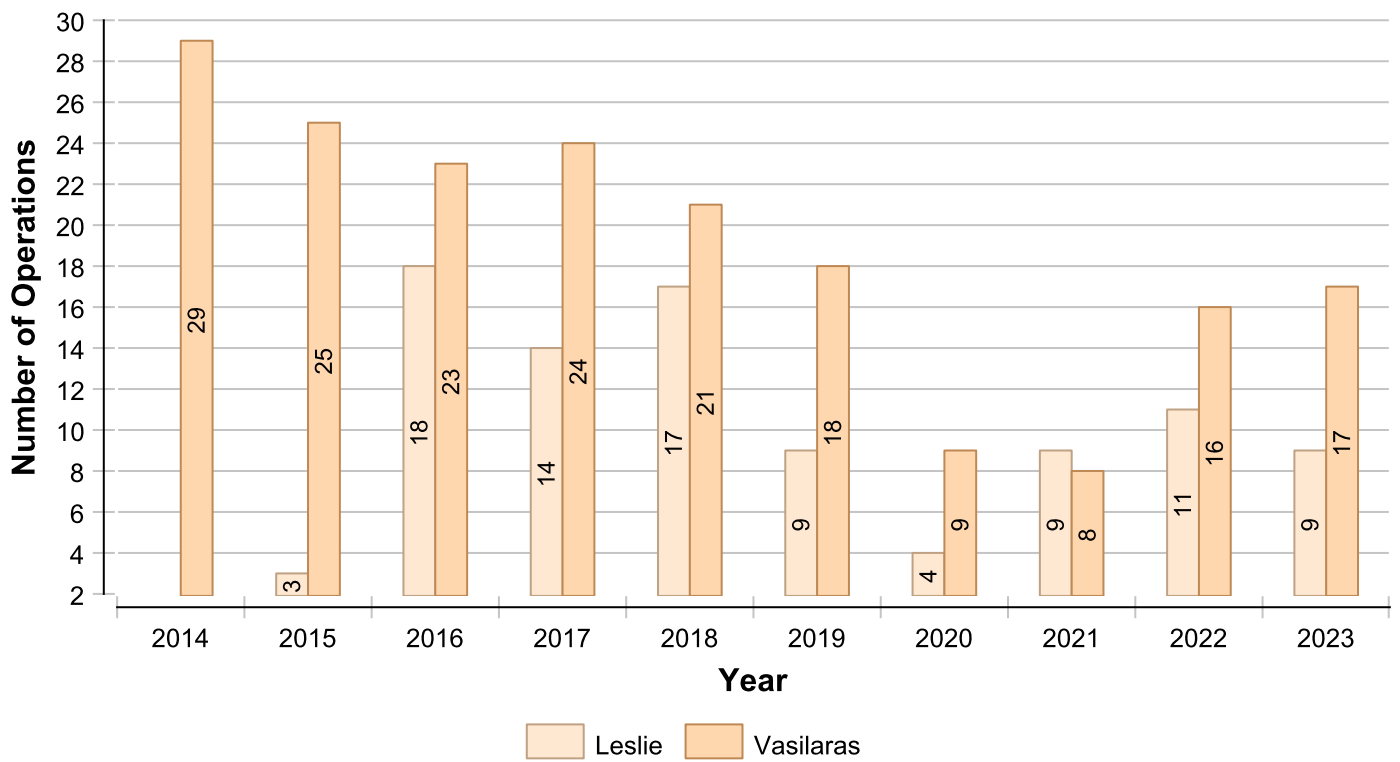
One Living donation to other center

Living Donor Nephrectomies at RPAH from 2014 to 2023 (n=286)



Includes Kidney Exchange and Non-directed donations.

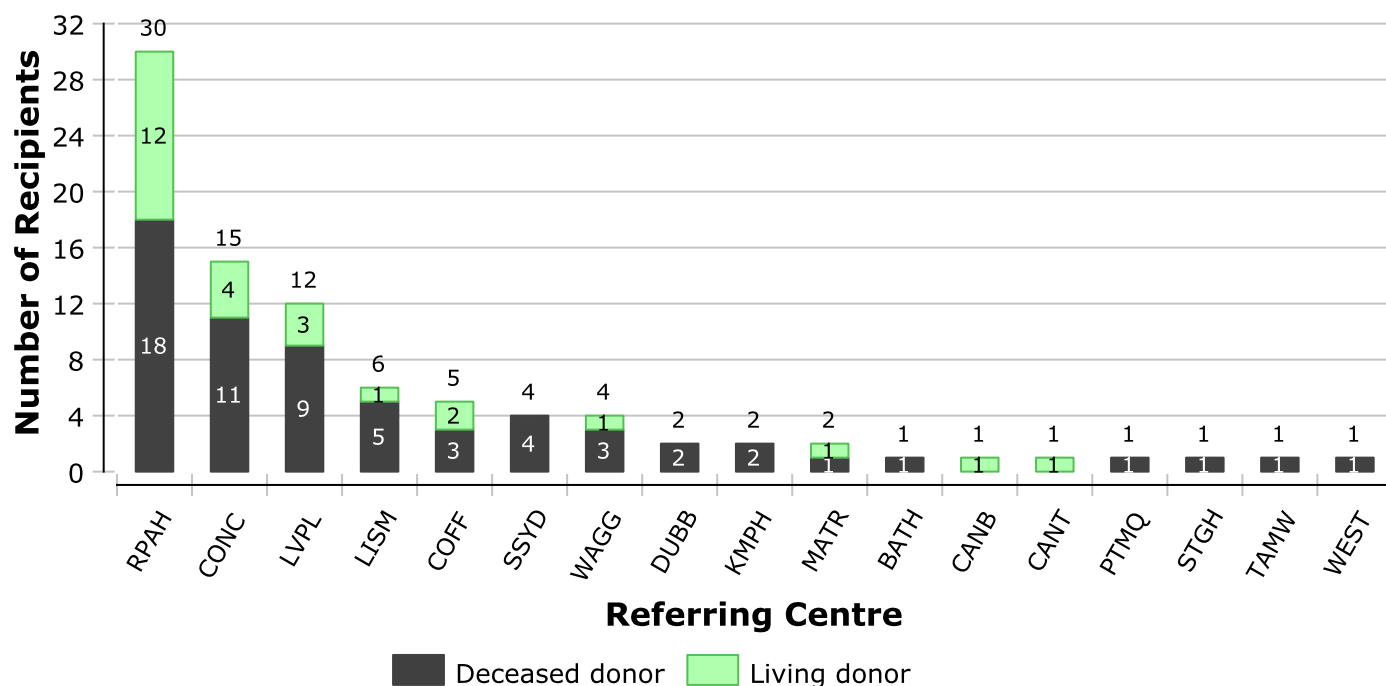
Living Donor Surgeon Trend at RPAH from 2014 to 2023 (n=284)



Includes Kidney Exchange and Non-directed donations.

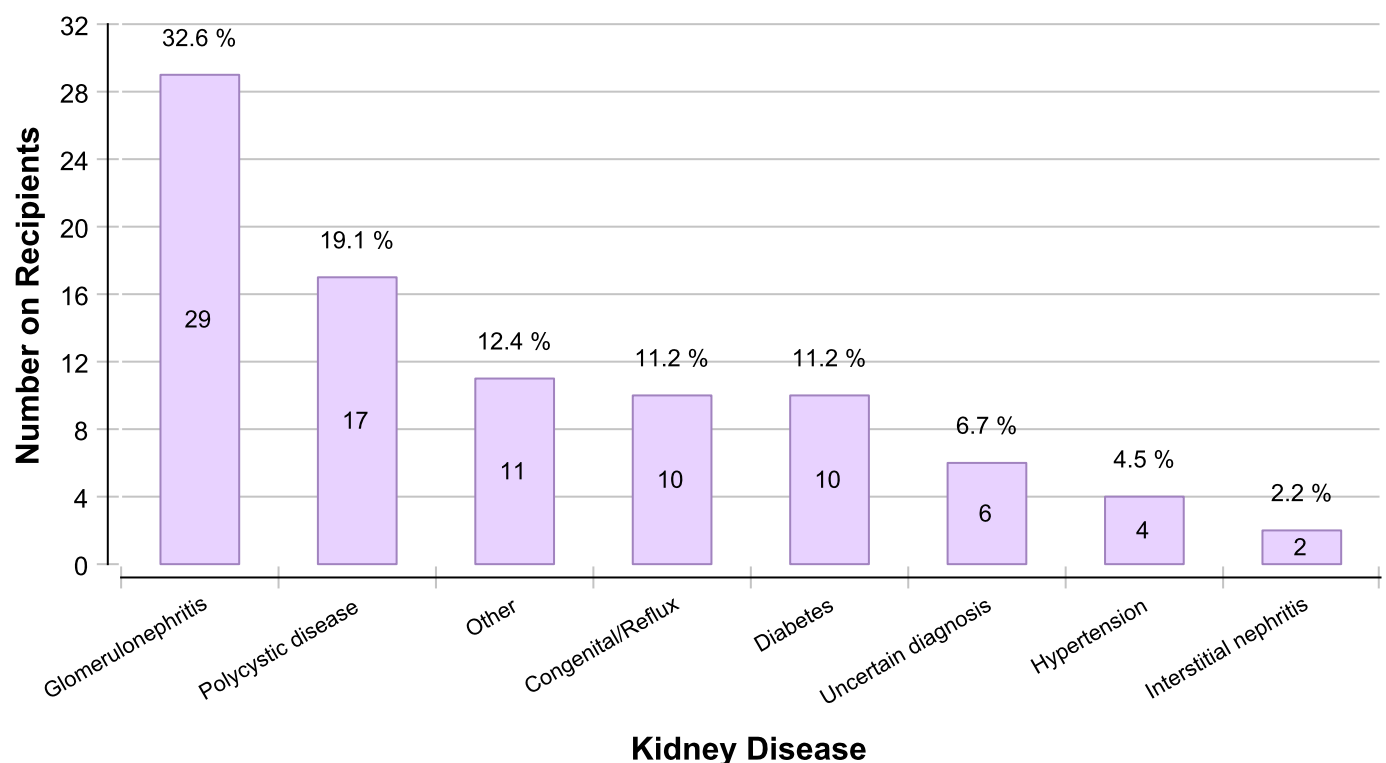
Kidney Recipient Demographics

Referring Centre for Kidney Recipients at RPAH in 2023 (n=89)

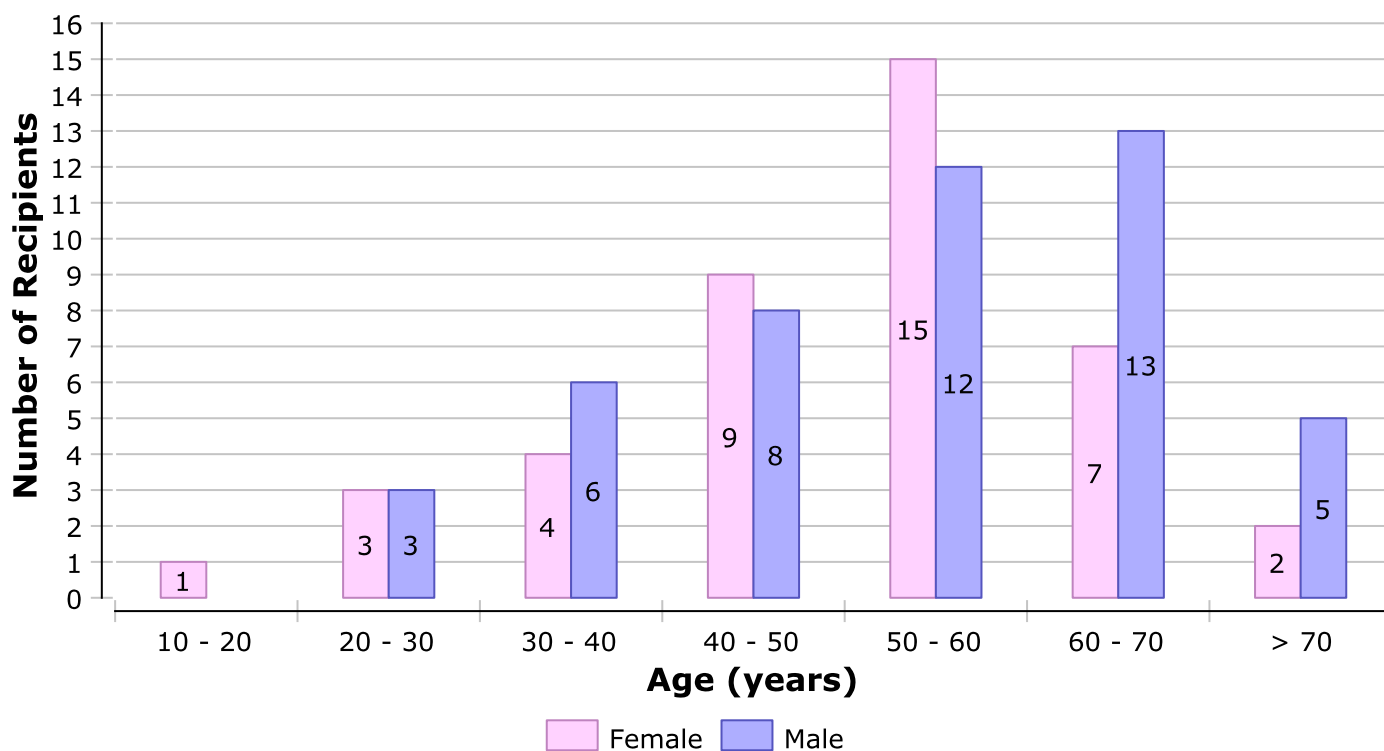


Deceased donor n=63. Living donor n=26

Primary Disease of Kidney Recipients at RPAH in 2023 (n=89)



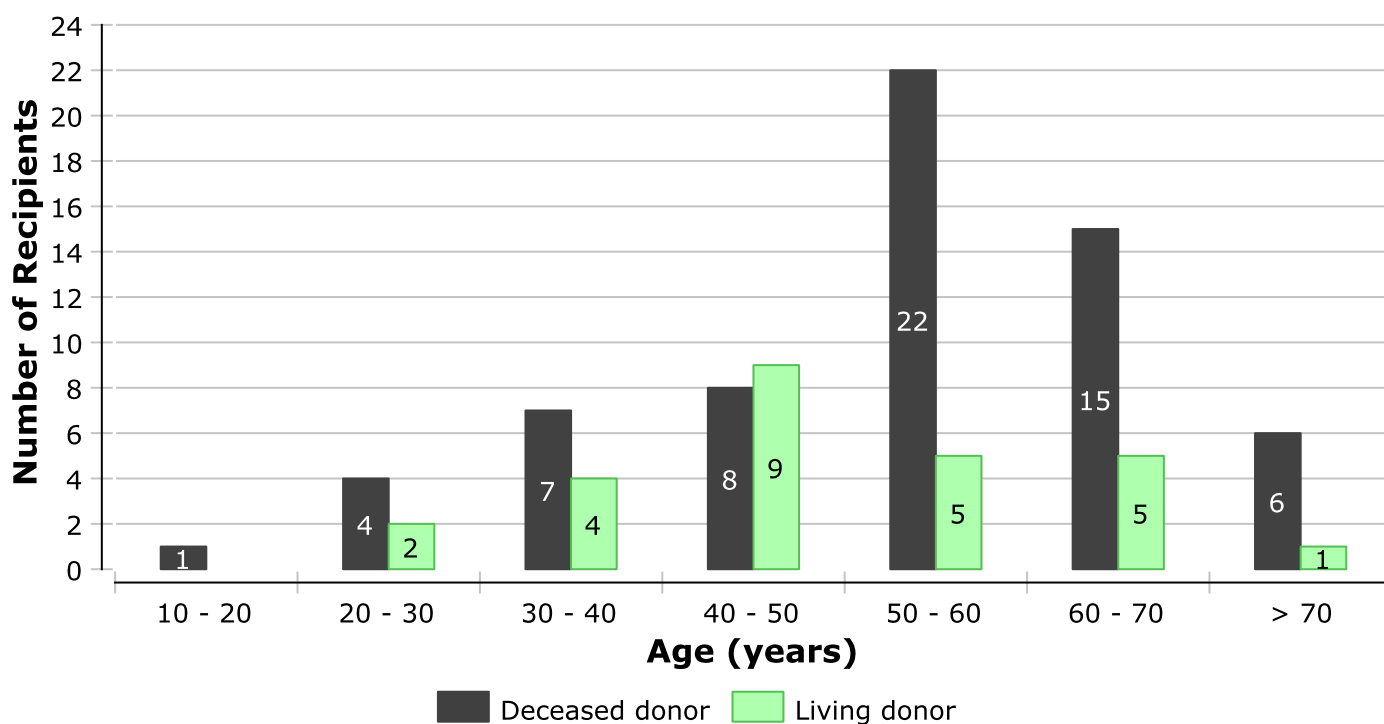
Age and Gender of Kidney Recipients at RPAH in 2023 (n=88)



Female median age 51, n=41. Male median age 55, n=47

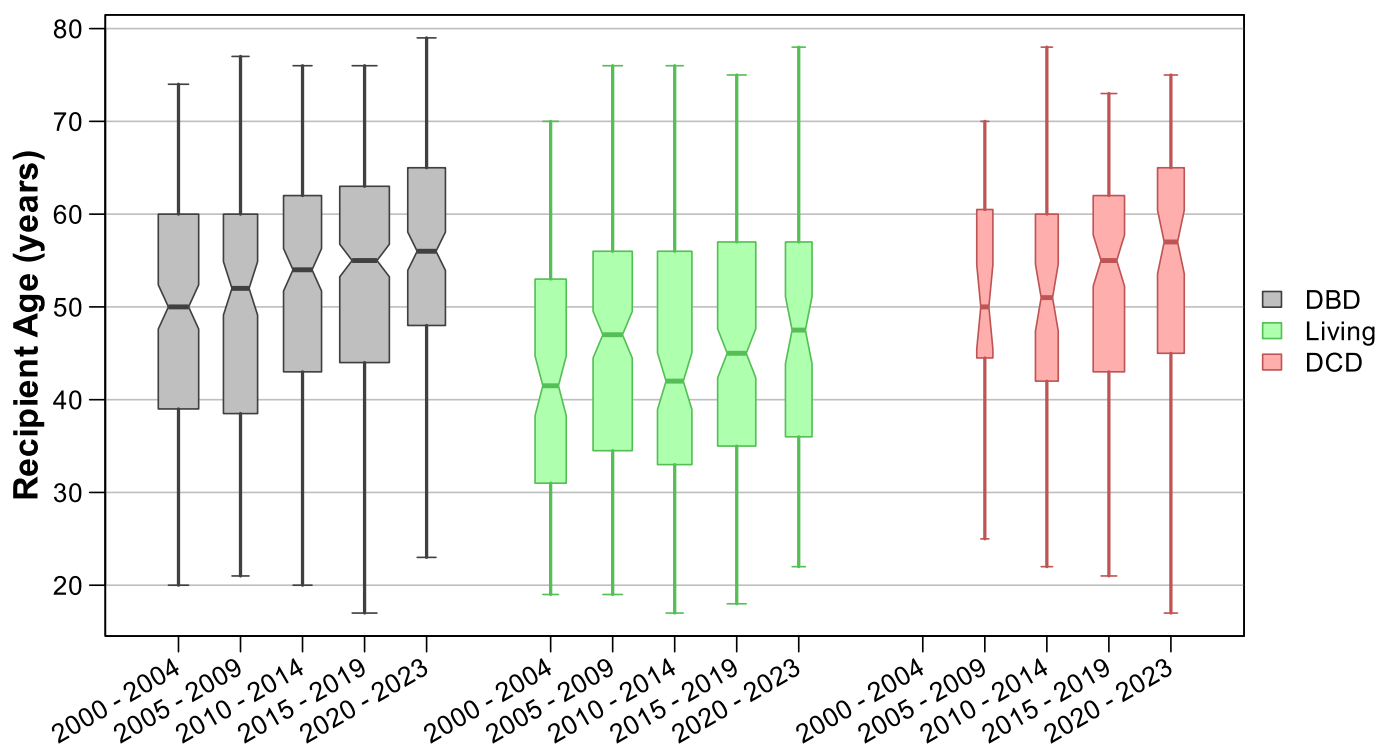
The peak age for Female transplant recipients was 50-60 yr, while it was 60-70 yr for Male recipients

Donor Type and Age of Kidney Recipients at RPAH in 2023 (n=89)



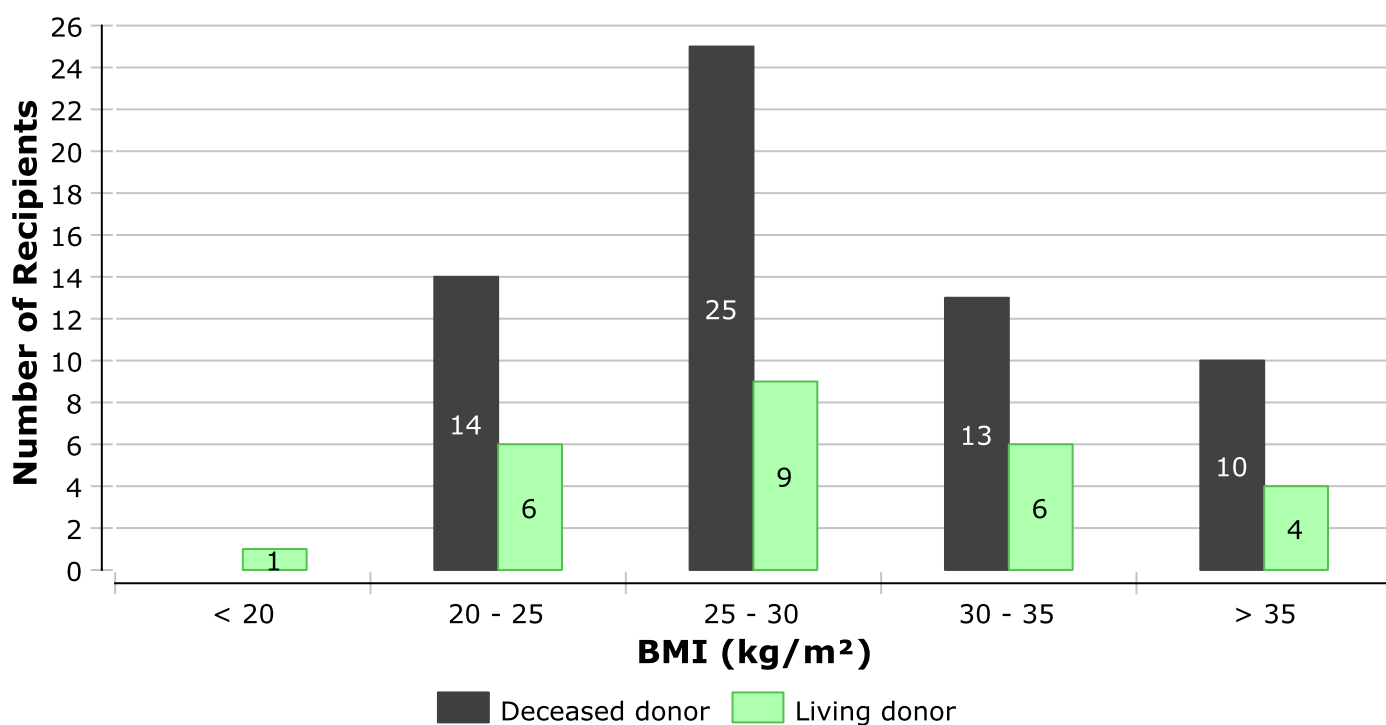
Deceased median age 54, n=63. Living median age 48, n=26

Recipient Age Trends at RPAH by Donor Source



Median line. Notches ~95% confidence of median. Box interquartile range. Whiskers furthest case < 1.5xIQR from quartile. Outliers not shown

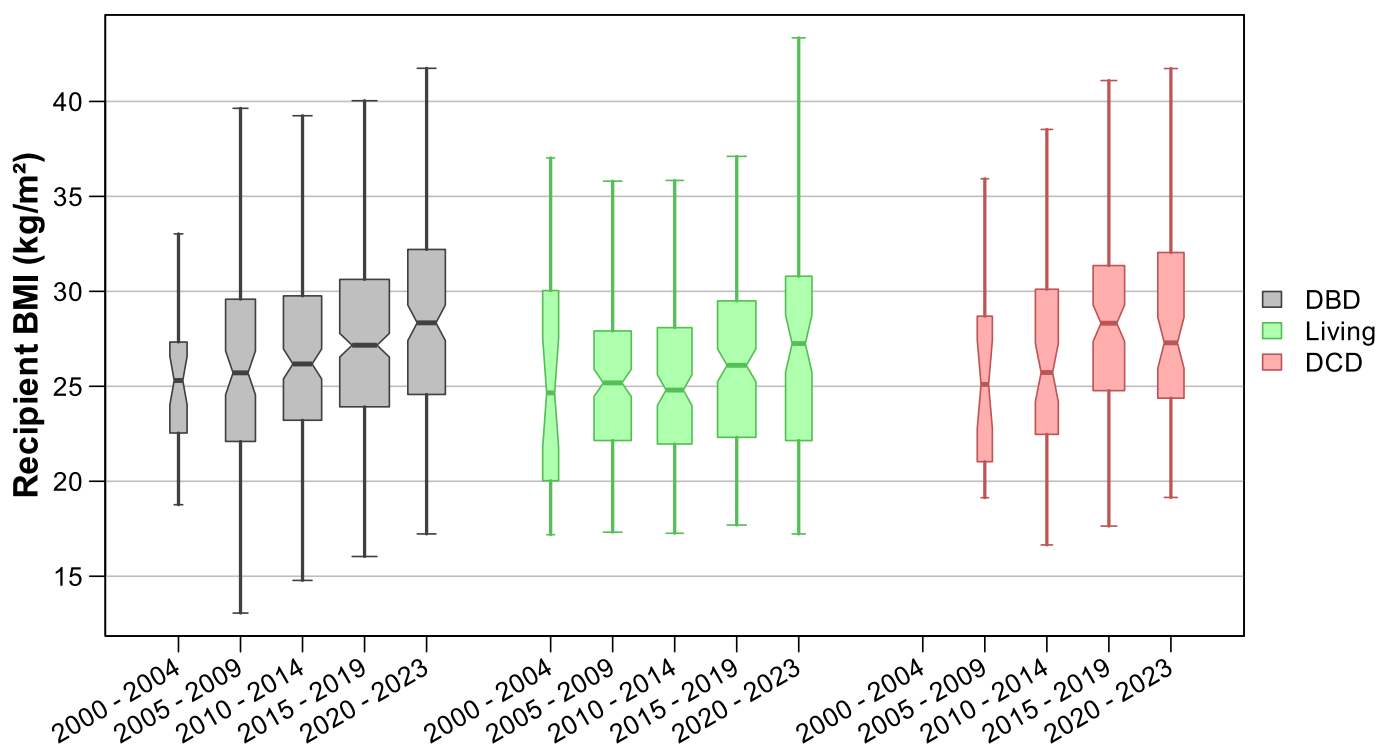
Body Mass Index of Kidney Recipients at RPAH in 2023 (n=88)



Deceased donor n=62. Living donor n=26

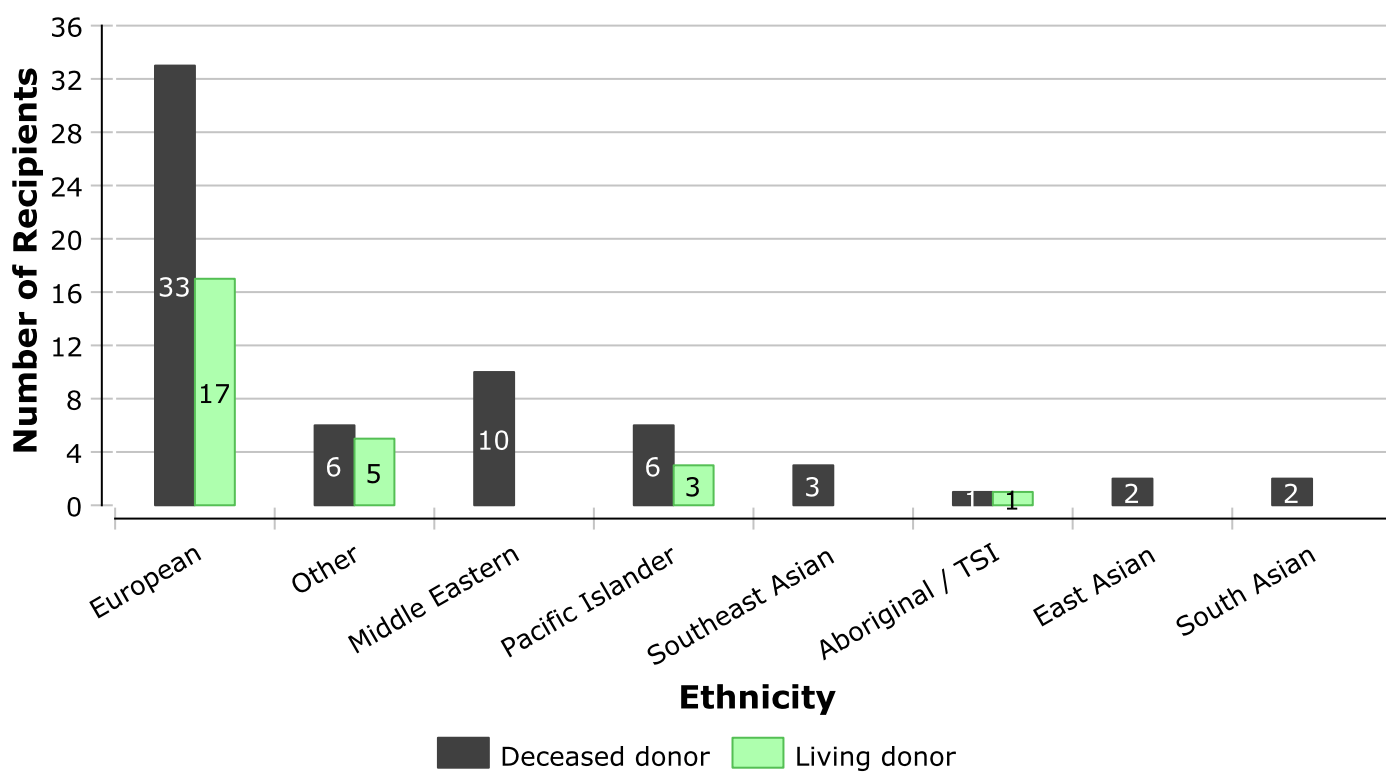
The peak Body Mass Index for recipients of both deceased donors and living donors was 25-30 km/m²

Recipient BMI Trends at RPAH by Donor Source



Median line. Notches ~95% confidence of median. Box interquartile range. Whiskers furthest case < 1.5xIQR from quartile. Outliers not shown

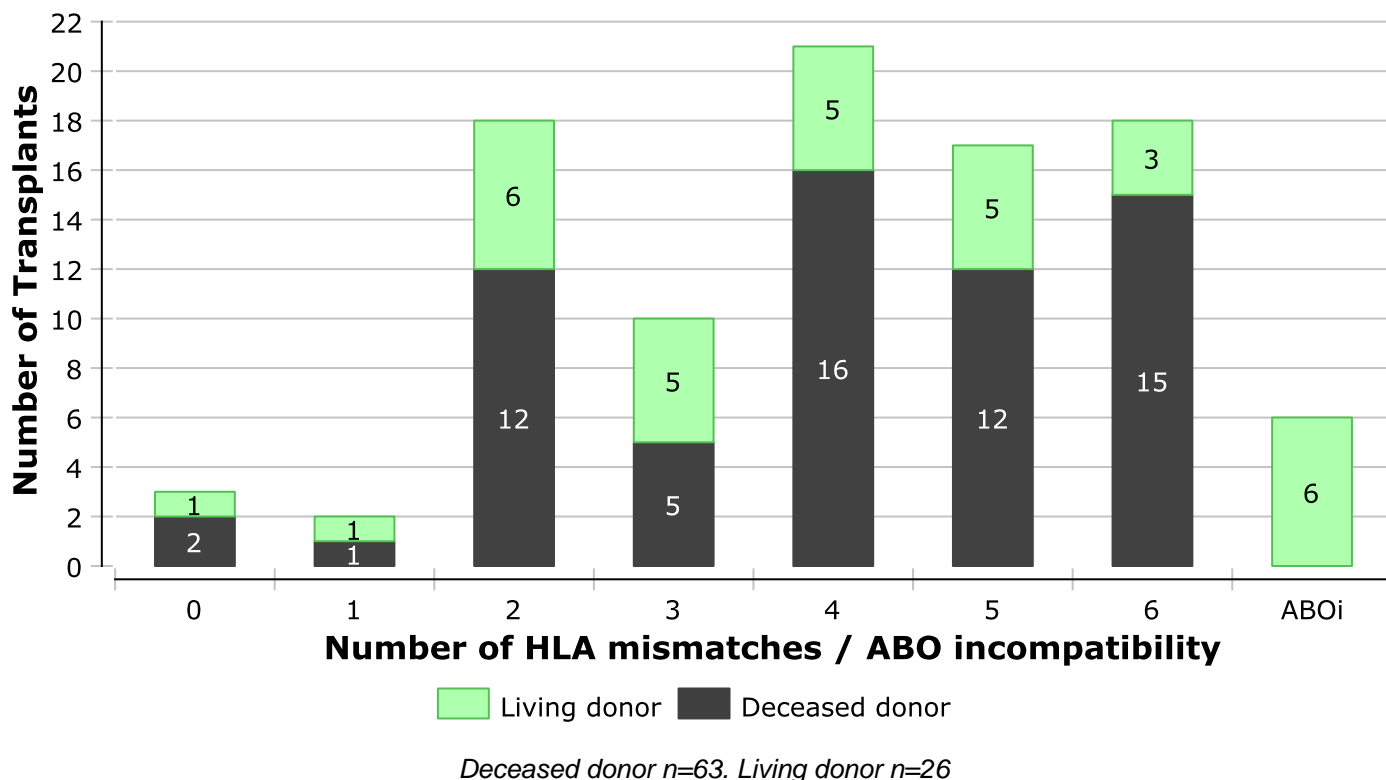
Ethnicity of Kidney Recipients at RPAH in 2023 (n=89)



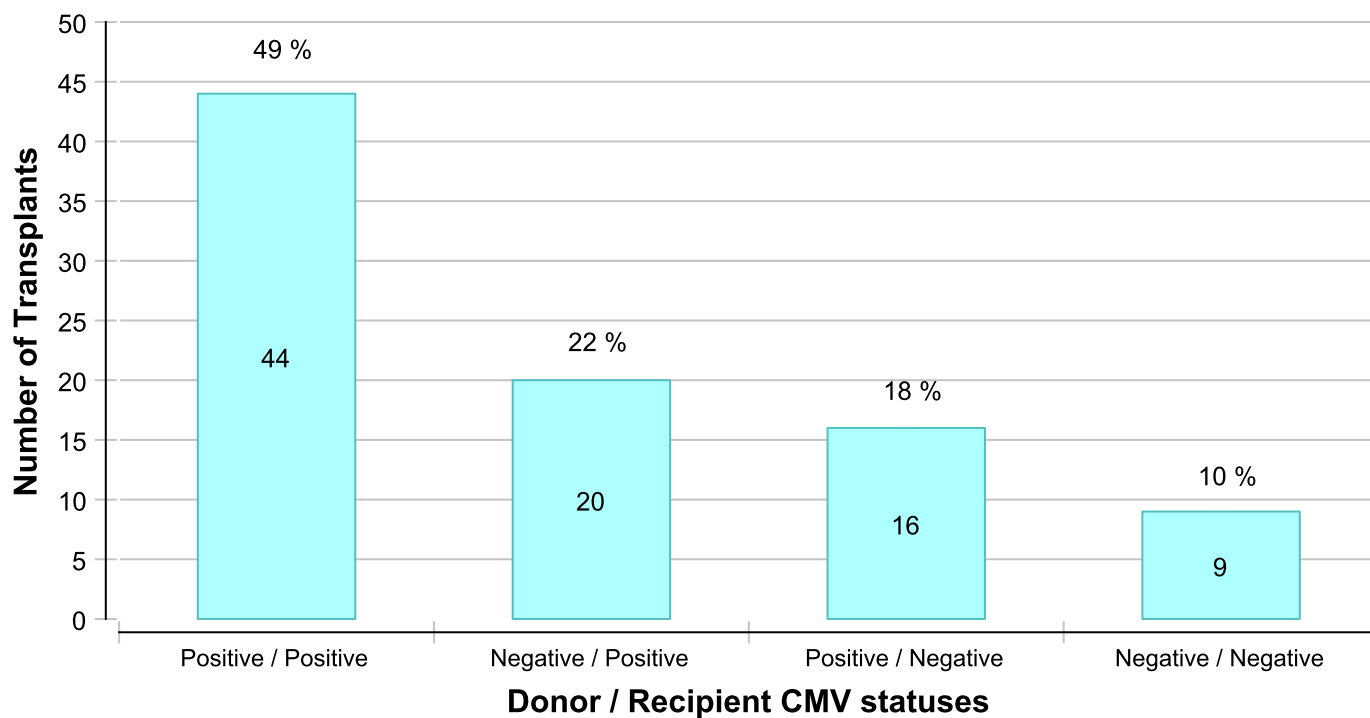
Deceased donor n=63. Living donor n=26. Includes New Caledonia (Pacific Island) recipients. The ethnicity of recipients for both deceased and living donors was predominantly European

Kidney Transplant Characteristics

Kidney Transplantation HLA Mismatches and ABO Incompatible at RPAH in 2023 (n=89)

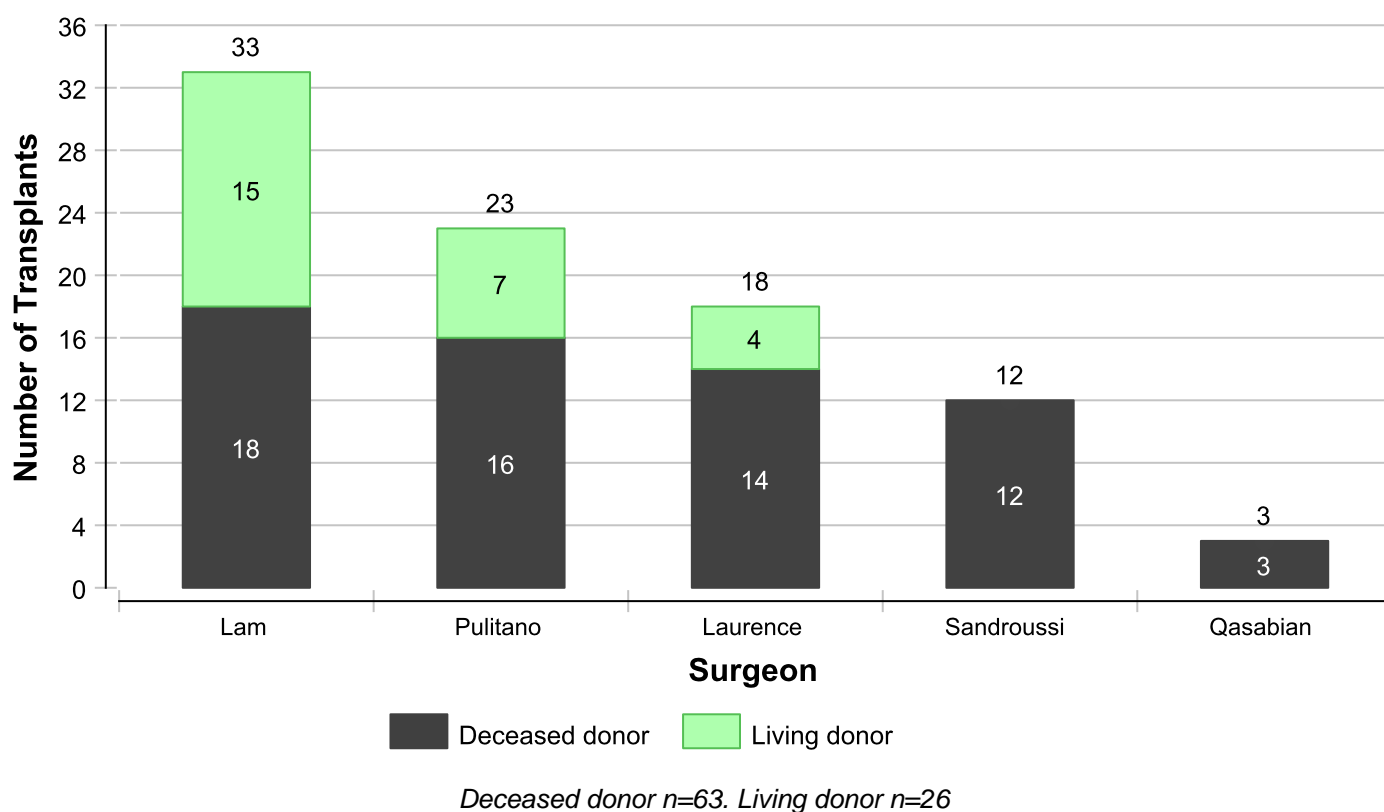


Kidney Transplantation Donor / Recipient CMV Matching at RPAH in 2023 (n=89)

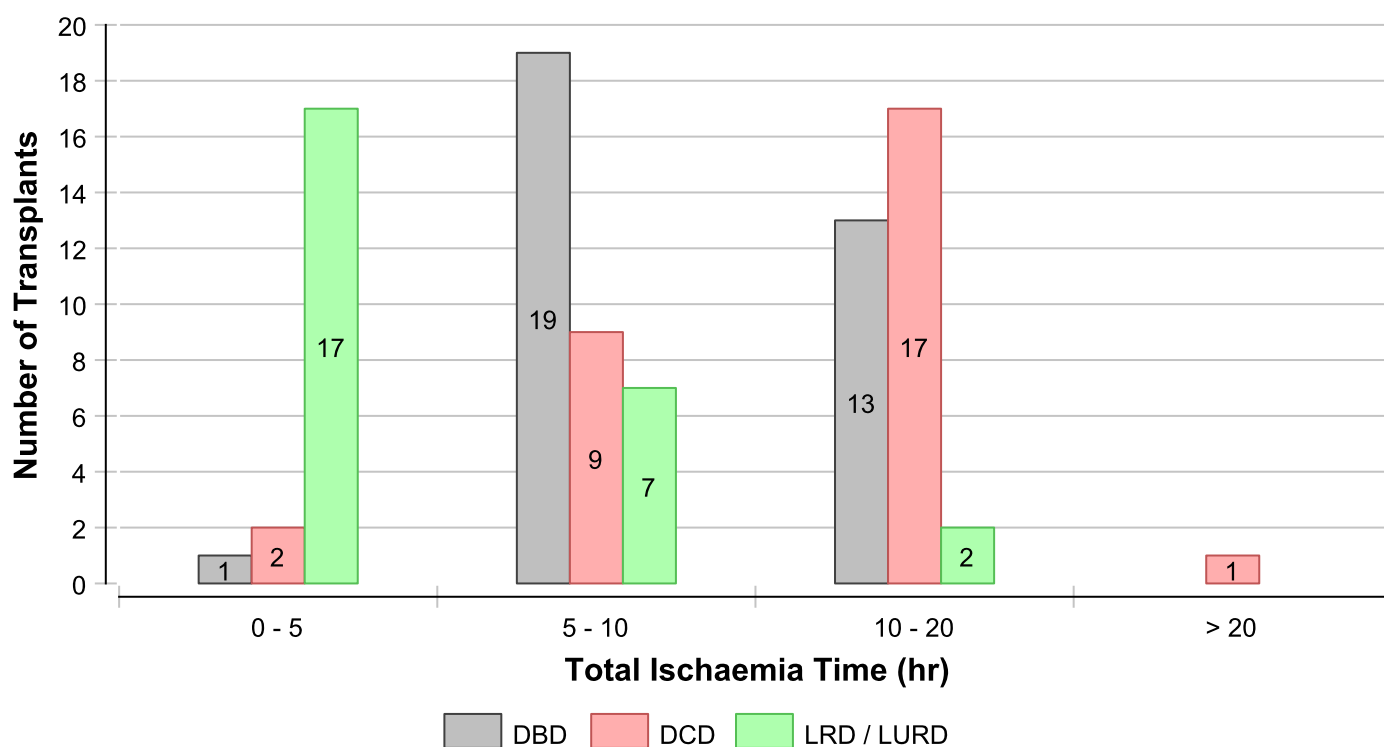


The majority of transplants were for CMV Positive donor and Positive recipient, followed by Negative donor and Positive recipient

Surgeon for Kidney Transplant at RPAH in 2023 (n=89)

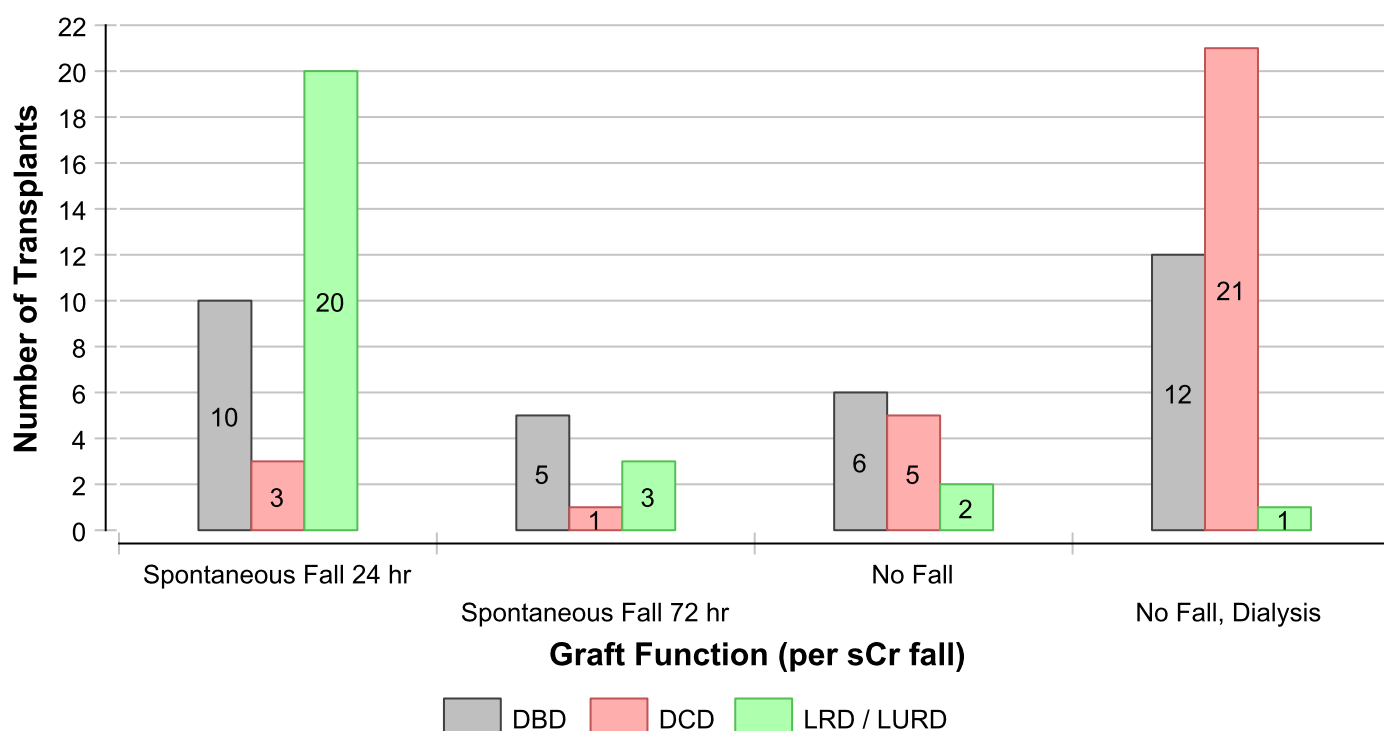


Total Ischaemia Time at RPAH in 2023 (n=88)



DBD median time 9.17 hr, DCD median time 10.8 hr, LRD / LURD median time 4.32 hr (includes PKE)

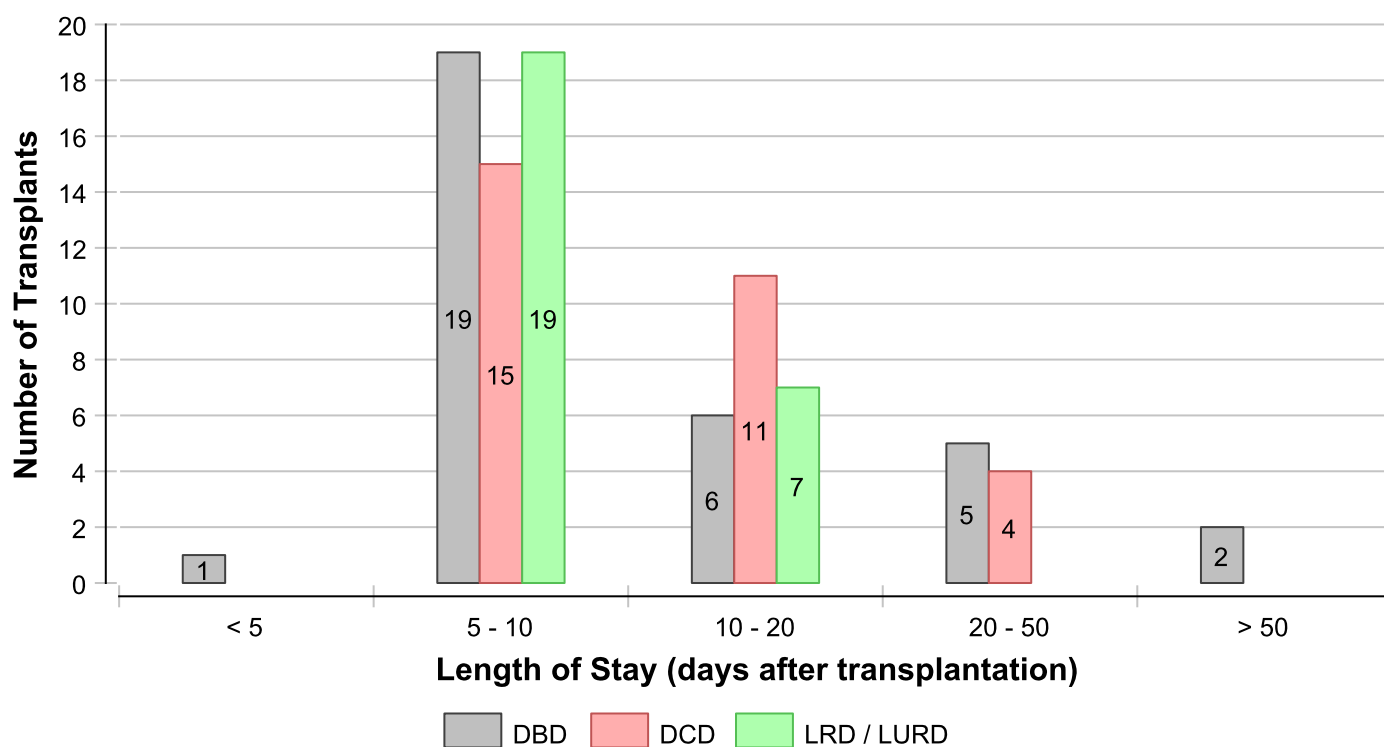
Initial Graft Function at RPAH in 2023 (n=89)



DBD n=33, DCD n=30, LRD / LURD n=26

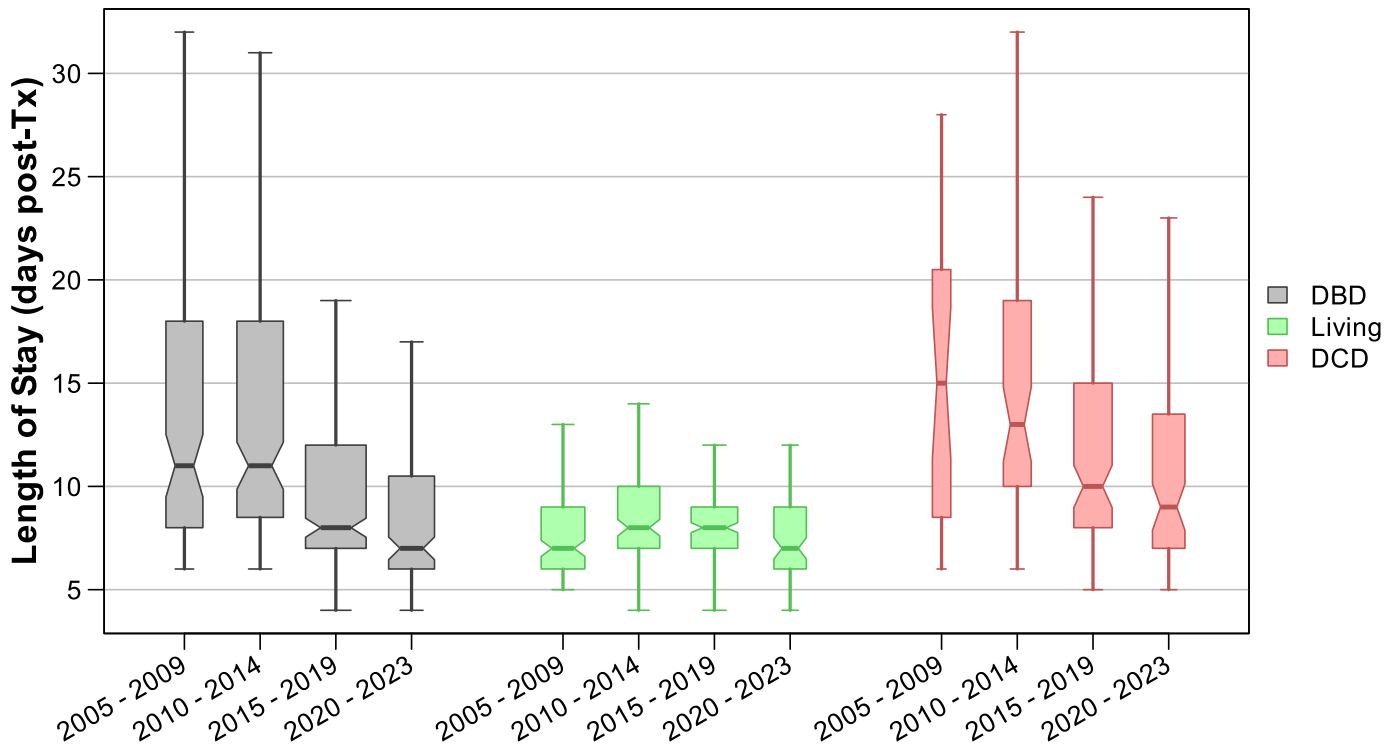
Initial graft function for living donor transplants was predominasntly spontaneous within 24 hr. For DCD donors the majority was No fall requiring dialysis, while for DBD donors it was bi-modal with peaks at both spontaneously fall within 24 hr then No fall requiring dialysis

Transplantation Length of Stay at RPAH in 2023 (n=89)



DBD median 7.00 days, DCD median 9.50 days, LRD / LURD median 6.50 days

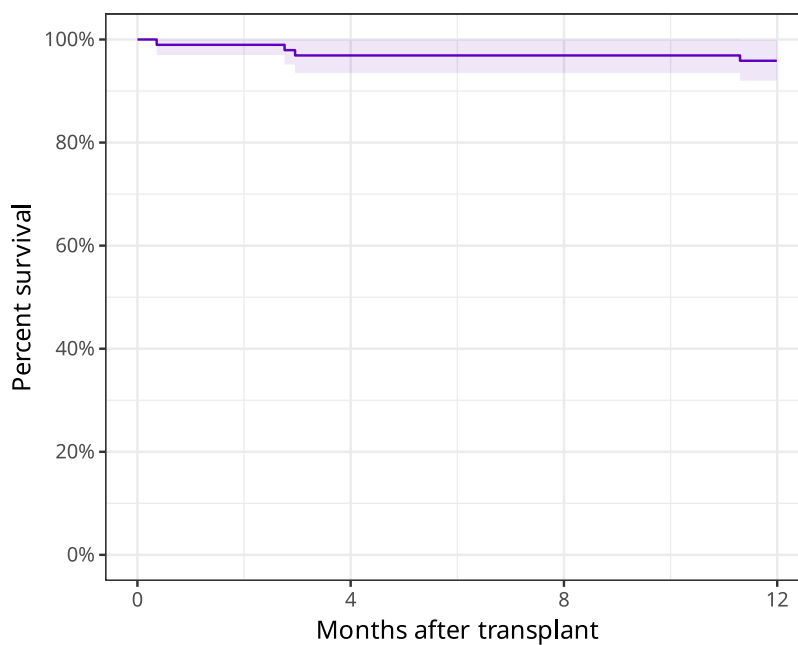
Post Operative Length of Stay Trends at RPAH by Donor Source



Median line. Notches ~95% confidence of median. Box interquartile range. Whiskers furthest case < 1.5xIQR from quartile. Outliers not shown

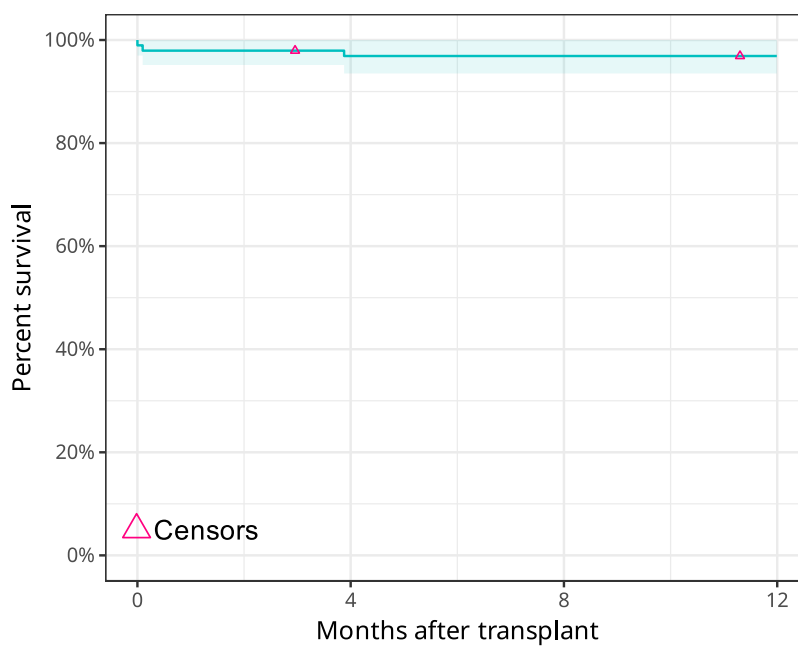
Kidney Graft and Patient Survival

12 Month Patient Survival at RPAH for 2022 Transplants (n=97)



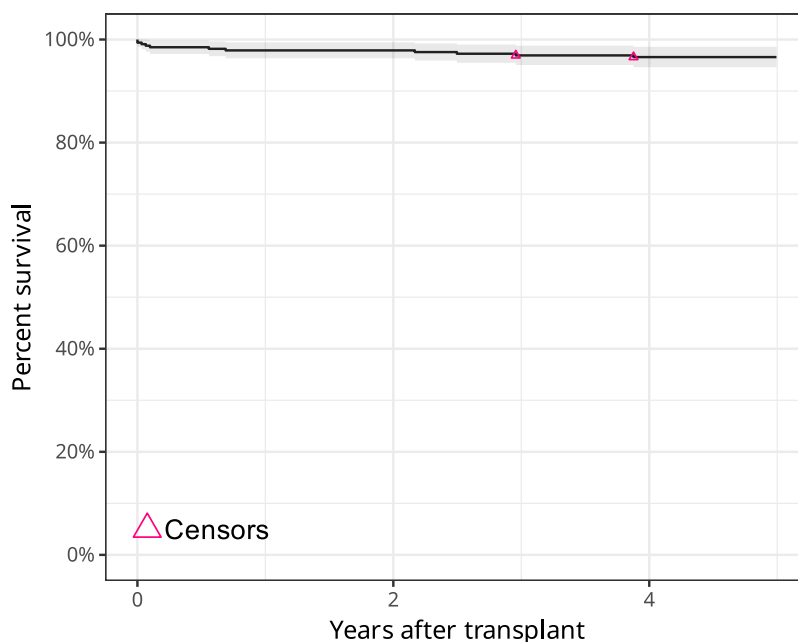
Survival at 12 months = 95.9 %

12 Month Graft Survival at RPAH for 2022 Transplants (n=97)



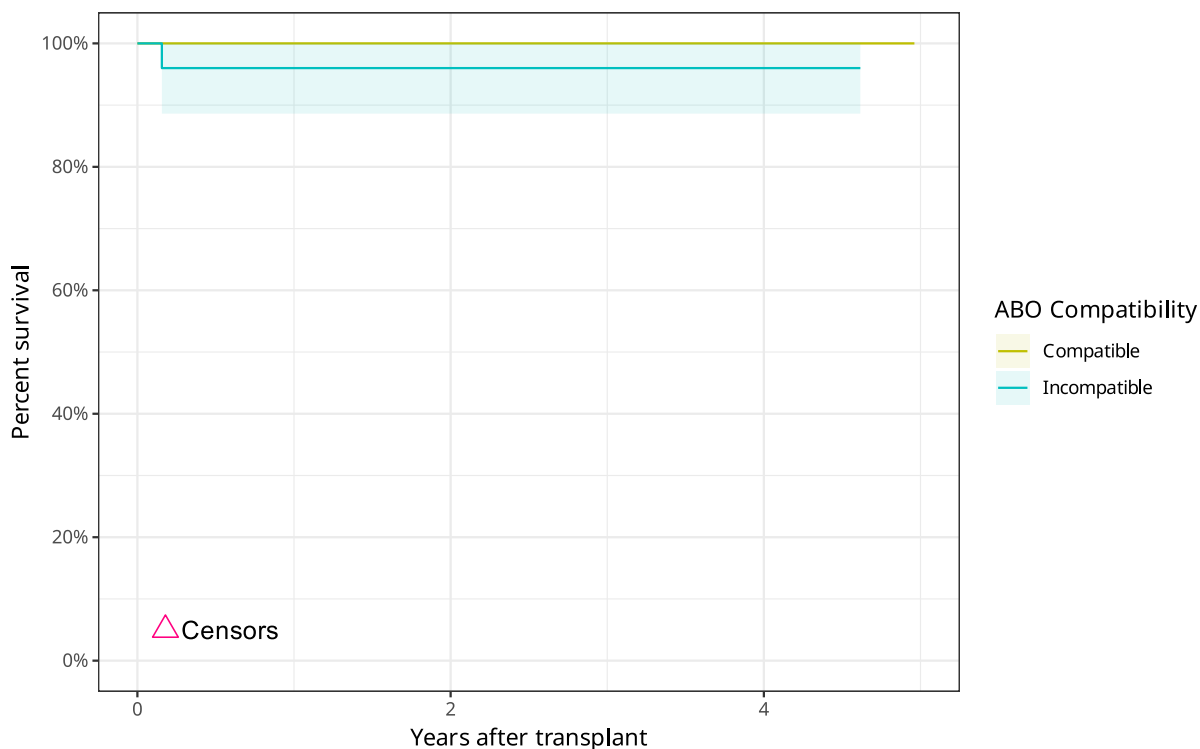
Survival at 12 months = 96.9 %. Death censored Graft survival

5 Year Graft Survival for Deceased Donors for Kidney Transplantation at RPAH from 2019 to 2023 (n=334)



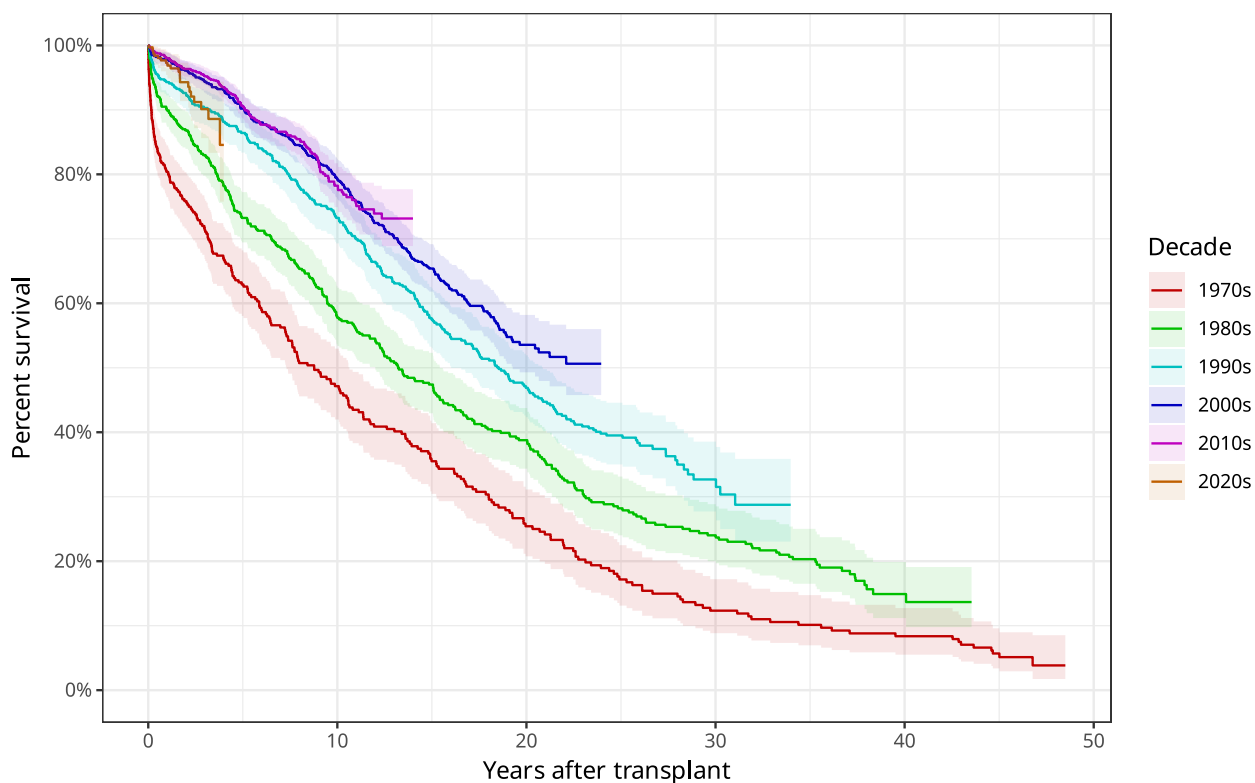
Survival at 5 years = 91.9 %. Death censored Graft survival

5 Year Graft Survival for Living Donors by ABO Compatibility for Kidney Transplantation at RPAH from 2019 to 2023 (n=111)



Compatible = 100 % (n = 84) & Incompatible = 96.0 % (n = 27) survival at 5 yr. Death censored Graft survival

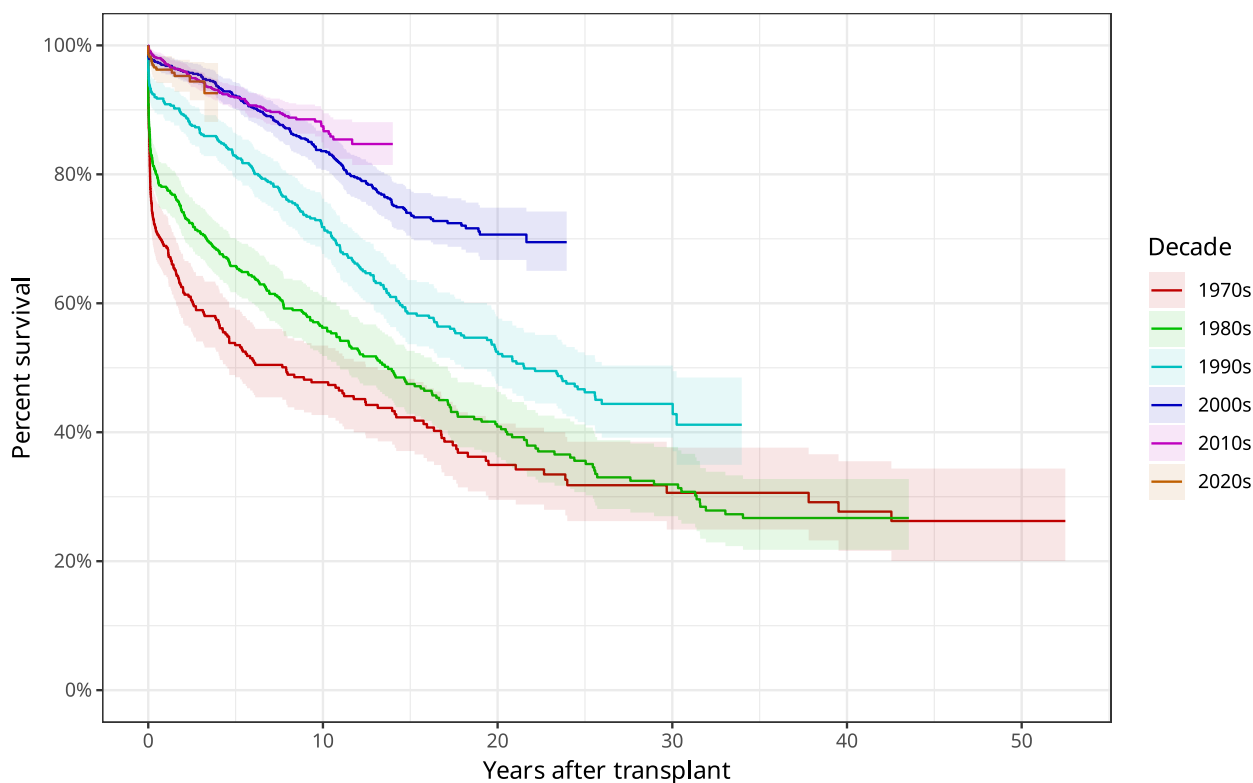
Patient Survival by Decade for Kidney Transplantation at RPAH from 1970 to 2023 (n=3342)



	1970s	1980s	1990s	2000s	2010s
Survival	3.84 %	13.7 %	28.8 %	50.6 %	73.1 %
At	48 yr	44 yr	34 yr	24 yr	14 yr
n	380	527	475	664	958

Improvement in patient survival seen decade on decade

Graft Survival by Decade for Kidney Transplantation at RPAH from 1970 to 2023 (n=3342)



Graft survival, patient death censored (not shown)

	1970s	1980s	1990s	2000s	2010s
Survival	26.2 %	26.7 %	41.2 %	69.5 %	84.7 %
At	52 yr	44 yr	34 yr	24 yr	14 yr
n	380	527	475	664	958

Improvement in graft survival seen decade on decade

Acknowledgements

Data sources

- Renal Transplant Clinical Database. Transplantation Services, Royal Prince Alfred Hospital, Camperdown NSW 2050

Data preparation and transformation

- M.R. Berthold, N. Cebron, F. Dill, T.R. Gabriel, T Kötter, T. Meinl, P. Ohl, C. Sieb, K. Thiel and B. Wiswedel. KNIME: The Konstanz Information Miner. Studies in Classification, Data Analysis, and Knowledge Organization (2007), Springer, ISBN 978-3-540-78239-1
- Eclipse BIRT. Report Design extension of KNIME
- R environment and packages. Scripting Integration of KNIME

Table, Chart and Statistics generation

- Eclipse BIRT: Business Intelligence and Reporting Tools. URL <https://www.eclipse.org/birt>
 - R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>
 - Therneau T. A Package for Survival Analysis in R. R package version 3.1-12, URL <https://CRAN.R-project.org/package=survival>
 - H. Wickham. ggplot2: Elegant Graphics for Data Analysis. Springer-Verlag New York, 2016
 - Masaaki Horikoshi and Yuan Tang. ggfortify: Data Visualization Tools for Statistical Analysis Results. URL <https://CRAN.R-project.org/package=ggfortify>
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