



CHAPTER 6

Australian Transplant Waiting List

Reporting the deceased donor kidney transplant waiting list dynamics in Australia, the demographics of patients on the waiting list, and transplantation rates and survival for wait listed patients.

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Summary and Highlights

This chapter focuses on wait listing for deceased donor kidney transplantation in Australia. Although guidelines on patient eligibility for deceased donor kidney transplantation are published by The Transplantation Society of Australia and New Zealand (TSANZ), the decision to wait list a patient for this treatment ultimately rests with the transplanting unit performing the clinical assessment of a potential transplant candidate. Variations in wait listing practices may represent differences in local clinical practice, variation in patient characteristics and preferences or specific local or individual barriers to accessing timely transplant work up.

The number of patients active on the Australian deceased donor waiting list has continued to grow over the last 5 years, reaching 1,158 at the end of 2020. However, unlike previous years, the number of patients made newly active actually decreased from 1,101 in 2019 to 897 in 2020 and growth in overall waiting list numbers was primarily due to a decreased number of transplants performed. Both of these trends may have been impacted by the global COVID-19 pandemic which not only directly affected transplant programs but may also have impaired access to transplant work up as healthcare systems adapted to the viral pandemic.

Data presented in this chapter highlight the complexity of assessing variation in access to transplantation for patients with kidney failure in Australia. Figure 6.1 demonstrates that the proportion of patients treated with kidney replacement therapy (KRT) who have either been transplanted or waitlisted, not only varies widely across age groups but also by geographic region.

For those patients who are made active on the deceased donor kidney waiting list, transplant rate varies by age, blood group and the transplanting region they are listed in (Figures 6.3-6.5), with the more populous, multicentre transplanting regions having lower transplant rates for patients who are active on the list compared to less populous, single centre transplanting regions.

As access to deceased donor transplantation is dependent on both being placed on the waiting list and timely allocation of a suitable organ, it is important these factors are considered together when assessing variations in practice across transplanting regions.

Suggested Citation

ANZDATA Registry. 44th Report, Chapter 6: Australian Transplant Waiting List. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2021. Available at: <http://www.anzdata.org.au>

Waiting List Dynamics

On 1 April 2019 Australia implemented a new national clinical transplant system for the management of solid organ transplant waiting lists and organ allocation known as OrganMatch that replaced the previous National Organ Matching System (NOMS). The waiting list data presented in this chapter has been provided to ANZDATA by NOMS and OrganMatch for reporting purposes and relates to wait-listing for deceased donor (DD) kidney-only transplants. Patients wait-listed for multi-organ transplants are excluded. Data has been sourced from NOMS prior to 1 Jan 2019 and from OrganMatch from 1 Jan 2019 onwards. The OrganMatch data includes NOMS data migrated to OrganMatch from 1 Jan 2019 to 1 April 2019 as NOMS was the clinical system in use during this time period.

The number of people moving on and off the active waiting list is shown. Patients are categorised as either active or off the list - an 'on hold', 'interim' or 'temporarily off list' status is considered to be off list, since these patients will not be allocated kidneys. A number of de-listed patients may return to the list in subsequent years. If a patient was listed and de-listed more than once in a calendar year, only the net change is counted.

The ANZDATA registry does not currently receive deceased donor kidney waiting list data for New Zealand and hence this is not reported.

Table 6.1 shows the waiting list dynamics tables for Australia for each year. Live donor (LD) transplants performed in patients who were not on the DD waiting list are not included in this table.

Table 6.1 Australian Kidney Transplant Waiting List Dynamics 2015-2020

Event	2015	2016	2017	2018	2019	2020
Active start of year	1145	1071	953	965	966	1122
Made active	767	823	963	998	1101	897
Taken off list	156	135	144	146	120	193
DD graft	633	759	751	811	787	634
LD graft	42	37	45	34	33	31
Overseas graft	2	1	1	0	0	0
Died on list	8	9	10	6	5	3
Active end of year	1071	953	965	966	1122	1158

Table 6.2 shows data for non-Indigenous and Indigenous patients respectively.

Table 6.2 Australian Kidney Transplant Waiting List Dynamics by Ethnicity 2015-2020

Ethnicity	Event	2015	2016	2017	2018	2019	2020
Non-Indigenous	Active start of year	1105	1032	906	919	907	1044
	Made active	718	770	913	910	1002	837
	Taken off list	142	127	133	137	110	174
	DD graft	597	724	711	747	719	576
	LD graft	42	35	45	33	31	30
	Overseas graft	2	1	1	0	0	0
	Died on list	8	9	10	5	5	3
	Active end of year	1032	906	919	907	1044	1098
Indigenous	Active start of year	35	33	36	35	44	62
	Made active	40	41	41	67	81	50
	Taken off list	11	7	9	9	9	16
	DD graft	31	30	33	48	53	48
	LD graft	0	1	0	0	1	0
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	1	0	0
	Active end of year	33	36	35	44	62	48
Not reported	Active start of year	5	6	11	11	15	16
	Made active	9	12	9	21	18	10
	Taken off list	3	1	2	0	1	3
	DD graft	5	5	7	16	15	10
	LD graft	0	1	0	1	1	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	0	0
	Active end of year	6	11	11	15	16	12

The numbers of both dialysis patients and transplants vary with age; in table 6.3 the waiting list dynamics for the years 2015-2020 is shown by broad age groups.

Table 6.3 Australian Kidney Transplant Waiting List Dynamics by Age 2015-2020

Age	Event	2015	2016	2017	2018	2019	2020
0-17	Active start of year	7	11	22	14	16	13
	Made active	13	26	25	29	18	25
	Taken off list	0	1	3	1	0	1
	DD graft	9	13	28	25	21	14
	LD graft	0	0	2	1	0	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	1	0	0	0	0
	Active end of year	11	22	14	16	13	22
18-44	Active start of year	276	297	258	286	317	389
	Made active	202	199	245	276	329	294
	Taken off list	28	38	21	34	33	53
	DD graft	140	182	173	185	201	184
	LD graft	12	17	20	23	21	14
	Overseas graft	1	0	1	0	0	0
	Died on list	0	1	2	3	2	2
	Active end of year	297	258	286	317	389	430
45-54	Active start of year	272	249	239	237	247	281
	Made active	157	202	232	234	271	239
	Taken off list	38	25	37	38	27	38
	DD graft	131	177	182	184	203	158
	LD graft	8	8	12	2	5	7
	Overseas graft	1	0	0	0	0	0
	Died on list	2	2	3	0	2	1
	Active end of year	249	239	237	247	281	316
55-64	Active start of year	322	292	249	261	252	305
	Made active	229	222	289	295	307	253
	Taken off list	43	45	50	43	34	66
	DD graft	204	213	217	253	215	201
	LD graft	8	6	7	6	5	4
	Overseas graft	0	1	0	0	0	0
	Died on list	4	0	3	2	0	0
	Active end of year	292	249	261	252	305	287
65+	Active start of year	268	222	185	167	134	134
	Made active	166	174	172	164	176	86
	Taken off list	47	26	33	30	26	35
	DD graft	149	174	151	164	147	77
	LD graft	14	6	4	2	2	5
	Overseas graft	0	0	0	0	0	0
	Died on list	2	5	2	1	1	0
	Active end of year	222	185	167	134	134	103

Differences between transplanting regions are shown in table 6.4. Waiting list numbers in each region are reflective of both listing practices and donation rates, both current and historical.

Table 6.4 Australian Kidney Transplant Waiting List Dynamics by State 2015-2020

State	Event	2015	2016	2017	2018	2019	2020
NSW/ACT	Active start of year	511	444	361	378	370	455
	Made active	240	227	329	316	384	316
	Taken off list	70	66	64	52	51	74
	DD graft	207	219	215	251	225	186
	LD graft	23	21	29	17	21	20
	Overseas graft	2	0	1	0	0	0
	Died on list	5	4	3	4	2	2
	Active end of year	444	361	378	370	455	489
VIC/TAS	Active start of year	393	382	385	366	319	346
	Made active	254	295	299	322	332	255
	Taken off list	52	39	57	62	41	63
	DD graft	200	234	244	297	253	185
	LD graft	11	14	11	10	10	7
	Overseas graft	0	1	0	0	0	0
	Died on list	2	4	6	0	1	1
	Active end of year	382	385	366	319	346	345
QLD	Active start of year	117	126	104	107	134	151
	Made active	133	155	178	194	191	190
	Taken off list	20	16	14	18	15	29
	DD graft	99	161	159	146	157	123
	LD graft	5	0	2	3	0	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	2	0
	Active end of year	126	104	107	134	151	188
SA/NT	Active start of year	65	75	62	82	99	107
	Made active	91	75	85	85	96	64
	Taken off list	8	10	7	11	12	19
	DD graft	69	76	55	52	74	69
	LD graft	3	2	2	4	2	2
	Overseas graft	0	0	0	0	0	0
	Died on list	1	0	1	1	0	0
	Active end of year	75	62	82	99	107	81
WA	Active start of year	59	44	41	32	44	63
	Made active	49	71	72	81	98	72
	Taken off list	6	4	2	3	1	8
	DD graft	58	69	78	65	78	71
	LD graft	0	0	1	0	0	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	1	0	1	0	0
	Active end of year	44	41	32	44	63	55

Table 6.5 shows the same data by blood group.

Table 6.5 Australian Kidney Transplant Waiting List Dynamics by Blood group 2015-2020

Blood group	Event	2015	2016	2017	2018	2019	2020
A	Active start of year	329	312	242	252	227	302
	Made active	301	301	328	348	425	342
	Taken off list	40	29	36	31	17	49
	DD graft	255	322	273	331	321	267
	LD graft	19	18	8	8	12	7
	Overseas graft	1	0	1	0	0	0
	Died on list	3	2	0	3	0	0
	Active end of year	312	242	252	227	302	321
AB	Active start of year	24	17	24	27	15	18
	Made active	37	32	46	47	38	41
	Taken off list	2	0	2	1	0	2
	DD graft	41	25	41	56	34	29
	LD graft	1	0	0	2	1	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	0	0
	Active end of year	17	24	27	15	18	27
B	Active start of year	210	187	175	188	199	224
	Made active	97	117	144	148	155	118
	Taken off list	32	23	34	36	26	38
	DD graft	83	97	84	95	96	101
	LD graft	3	7	10	5	7	8
	Overseas graft	0	0	0	0	0	0
	Died on list	2	2	3	1	1	1
	Active end of year	187	175	188	199	224	194
O	Active start of year	582	555	512	498	525	578
	Made active	332	373	445	455	483	396
	Taken off list	82	83	72	78	77	104
	DD graft	254	315	353	329	336	237
	LD graft	19	12	27	19	13	15
	Overseas graft	1	1	0	0	0	0
	Died on list	3	5	7	2	4	2
	Active end of year	555	512	498	525	578	616

Proportion of Patients Transplanted or on Waiting List

Figure 6.1 shows the proportion of prevalent kidney replacement therapy patients who were either transplanted or actively wait-listed at the end of 2020, by state and age group.

Figure 6.1 - Proportion of KRT Patients Transplanted or on Waiting List - By State or Territory and Age, Dec 2020

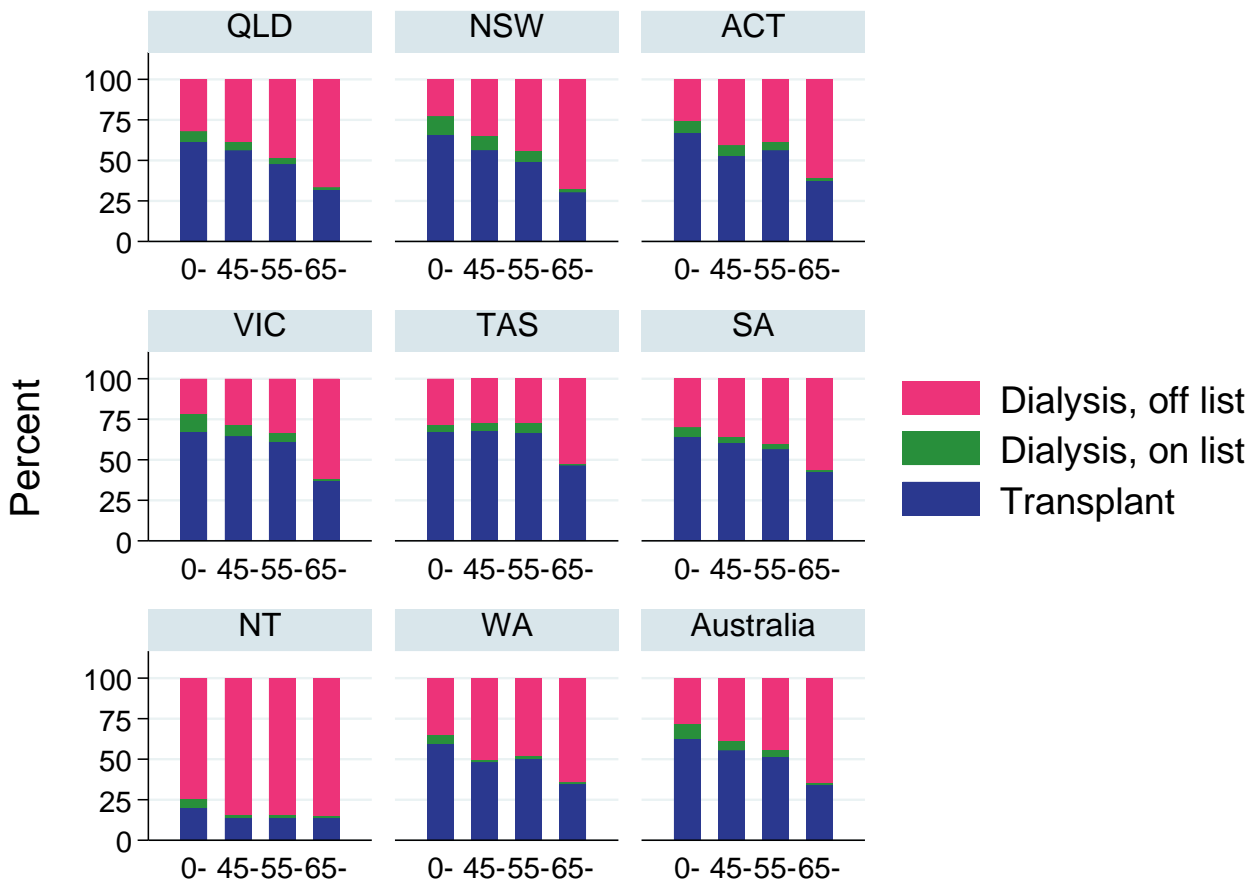
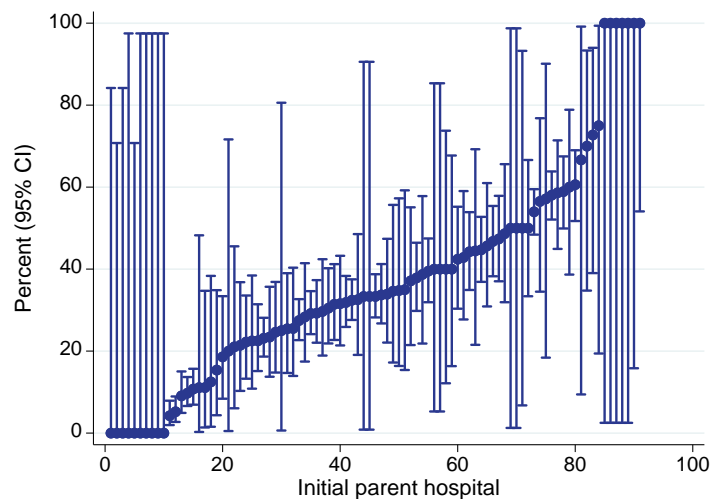


Figure 6.2 shows differences in access to the waiting list or transplantation for incident patients, by treating hospital. This analysis is restricted to patients aged 18-60 who commenced renal replacement therapy in Australia over 2015-2019, and shows the proportion of these patients who had either been made active on the kidney transplant waiting list or received a kidney transplant within one year of starting KRT.

Figure 6.2 - Proportion of new KRT patients aged 18-60 who were wait-listed and/or transplanted within 1 year of commencing KRT - Australia 2015-2019



Waiting List Demographics

Table 6.6 shows the demographic characteristics of actively wait-listed patients over 2015-2020.

Table 6.6 Demographics of the Australian Kidney Transplant Waiting List 2015-2020

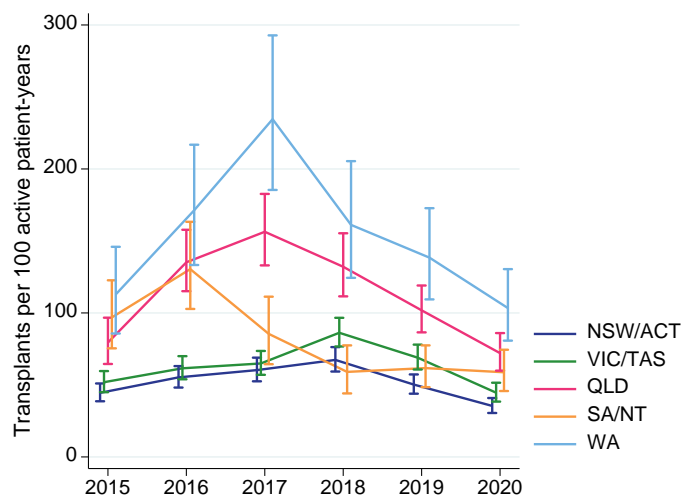
Factor	2015	2016	2017	2018	2019	2020
N	1071	953	965	966	1124	1158
Waiting time (years), median (IQR)	2.4 (1.3, 4.1)	2.3 (1.4, 3.9)	2.2 (1.2, 3.6)	2.1 (1.2, 3.6)	2.1 (1.2, 3.6)	2.2 (1.3, 3.5)
Blood group						
A	312 (29.1%)	242 (25.4%)	252 (26.1%)	227 (23.5%)	304 (27.0%)	323 (27.9%)
AB	17 (1.6%)	24 (2.5%)	27 (2.8%)	15 (1.6%)	18 (1.6%)	27 (2.3%)
B	187 (17.5%)	175 (18.4%)	188 (19.5%)	199 (20.6%)	225 (20.0%)	194 (16.8%)
O	555 (51.8%)	512 (53.7%)	498 (51.6%)	525 (54.3%)	577 (51.3%)	614 (53.0%)
Previous grafts						
0	773 (72.2%)	690 (72.4%)	723 (74.9%)	733 (75.9%)	860 (76.5%)	894 (77.2%)
1	242 (22.6%)	215 (22.6%)	201 (20.8%)	196 (20.3%)	222 (19.8%)	229 (19.8%)
2	50 (4.7%)	42 (4.4%)	39 (4.0%)	35 (3.6%)	40 (3.6%)	33 (2.8%)
3	6 (0.6%)	6 (0.6%)	2 (0.2%)	2 (0.2%)	2 (0.2%)	2 (0.2%)
Age (years)						
0-44	360 (33.6%)	297 (31.2%)	300 (31.1%)	312 (32.3%)	357 (31.8%)	384 (33.2%)
45-54	261 (24.4%)	244 (25.6%)	237 (24.6%)	240 (24.8%)	274 (24.4%)	280 (24.2%)
55-64	292 (27.3%)	255 (26.8%)	261 (27.0%)	259 (26.8%)	306 (27.2%)	314 (27.1%)
65+	158 (14.8%)	157 (16.5%)	167 (17.3%)	155 (16.0%)	187 (16.6%)	180 (15.5%)
Gender						
Male	662 (61.8%)	595 (62.4%)	611 (63.3%)	585 (60.6%)	690 (61.4%)	723 (62.4%)
Ethnicity						
Aboriginal/Torres Strait Islander	33 (3.1%)	36 (3.8%)	35 (3.6%)	44 (4.6%)	62 (5.5%)	48 (4.1%)
Other	995 (92.9%)	875 (91.8%)	882 (91.4%)	862 (89.2%)	1015 (90.3%)	1071 (92.5%)
Not reported	43 (4.0%)	42 (4.4%)	48 (5.0%)	60 (6.2%)	47 (4.2%)	39 (3.4%)
Primary kidney disease						
Diabetic Kidney Disease	139 (13.0%)	129 (13.5%)	138 (14.3%)	159 (16.5%)	188 (16.7%)	164 (14.2%)
Glomerulonephritis	451 (42.1%)	412 (43.2%)	403 (41.8%)	380 (39.3%)	420 (37.4%)	451 (38.9%)
Hypertension	73 (6.8%)	73 (7.7%)	74 (7.7%)	80 (8.3%)	109 (9.7%)	90 (7.8%)
Polycystic Disease	137 (12.8%)	110 (11.5%)	116 (12.0%)	121 (12.5%)	140 (12.5%)	149 (12.9%)
Reflux Nephropathy	83 (7.7%)	69 (7.2%)	66 (6.8%)	70 (7.2%)	74 (6.6%)	84 (7.3%)
Other	147 (13.7%)	122 (12.8%)	119 (12.3%)	108 (11.2%)	133 (11.8%)	151 (13.0%)
Uncertain	38 (3.5%)	31 (3.3%)	33 (3.4%)	39 (4.0%)	44 (3.9%)	56 (4.8%)
Not reported	3 (0.3%)	7 (0.7%)	16 (1.7%)	9 (0.9%)	16 (1.4%)	13 (1.1%)
Comorbidities						
Diabetes	237 (22.2%)	226 (23.8%)	217 (22.6%)	233 (24.1%)	305 (27.3%)	280 (24.2%)
Coronary artery disease	172 (16.1%)	194 (20.5%)	182 (18.9%)	182 (18.8%)	233 (20.9%)	204 (17.7%)
Peripheral vascular disease	97 (9.1%)	97 (10.2%)	95 (9.9%)	92 (9.5%)	110 (9.9%)	93 (8.1%)
Cerebrovascular disease	61 (5.7%)	56 (5.9%)	55 (5.7%)	55 (5.7%)	54 (4.8%)	70 (6.1%)
Chronic lung disease	96 (9.0%)	101 (10.7%)	92 (9.6%)	92 (9.5%)	90 (8.1%)	87 (7.5%)

Transplant Rate

The transplant rate represents the likelihood of receiving a kidney transplant in patients who are actively wait-listed. For these analyses the transplant rate was calculated as the number of deceased donor kidney-only transplants performed (numerator) per 100 patient-years on the active kidney-only waiting list (denominator). The transplant rate depends on the number of organs available, the number of patients on the waiting list, and the kidney allocation system. Figures 6.3-6.6 show the transplant rate by state, age, ethnicity and blood group respectively.

Figure 6.3 shows the transplant rate by transplanting region.

Figure 6.3 - Deceased Donor Transplant Rate by Transplanting Region - Per 100 Active Patient-Years



Transplant rate by age group is shown in Figure 6.4, for people of Aboriginal and Torres Strait Islander ethnicity compared to other ethnicities in Figure 6.5, and by blood group in Figure 6.6.

Figure 6.4 - Deceased Donor Transplant Rate by Age - Per 100 Active Patient-Years

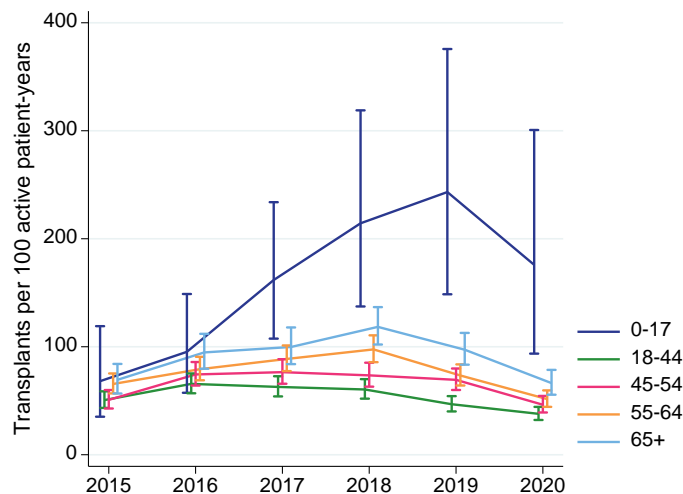


Figure 6.5 - Deceased Donor Transplant Rate by Ethnicity - Per 100 Active Patient-Years

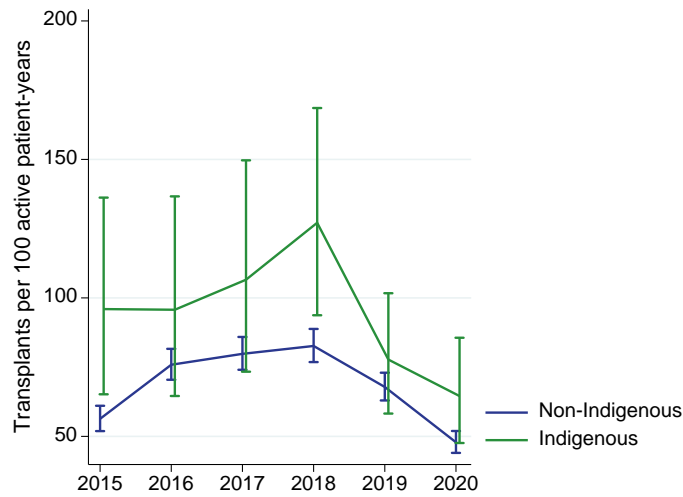
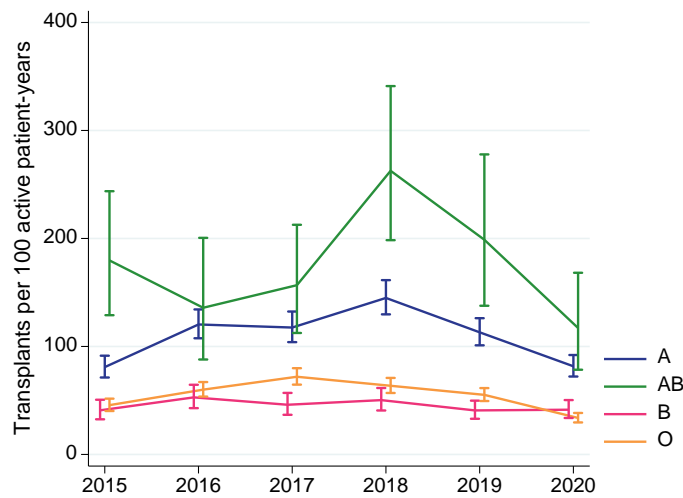


Figure 6.6 - Deceased Donor Transplant Rate by Blood Group - Per 100 Active Patient-Years



Outcomes of Wait-listing

Figures 6.7-6.9 show the outcomes of patients who commenced dialysis during 2015-2020 and were subsequently wait-listed for a kidney transplant. These analyses show the cumulative incidence of deceased donor transplantation, living donor transplantation or death. Each outcome is considered a competing risk for the other outcomes, and only the first event is considered.

Figure 6.7 - Outcomes after wait-listing - Australian incident dialysis patients 2015-2020

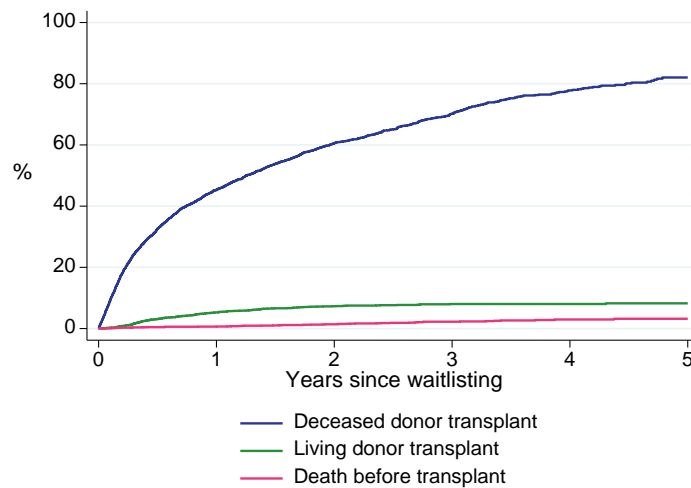


Figure 6.8 - Outcomes after wait-listing - Australian incident dialysis patients 2015-2020

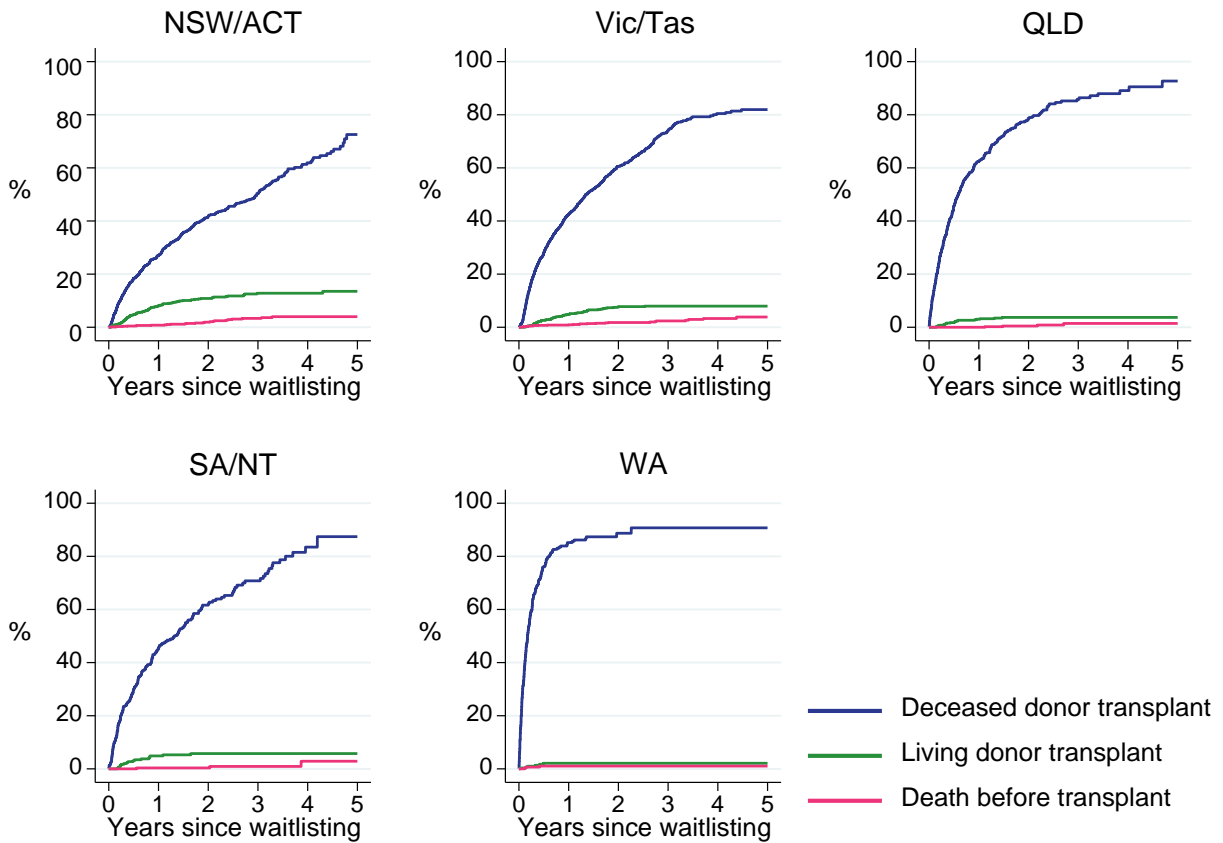
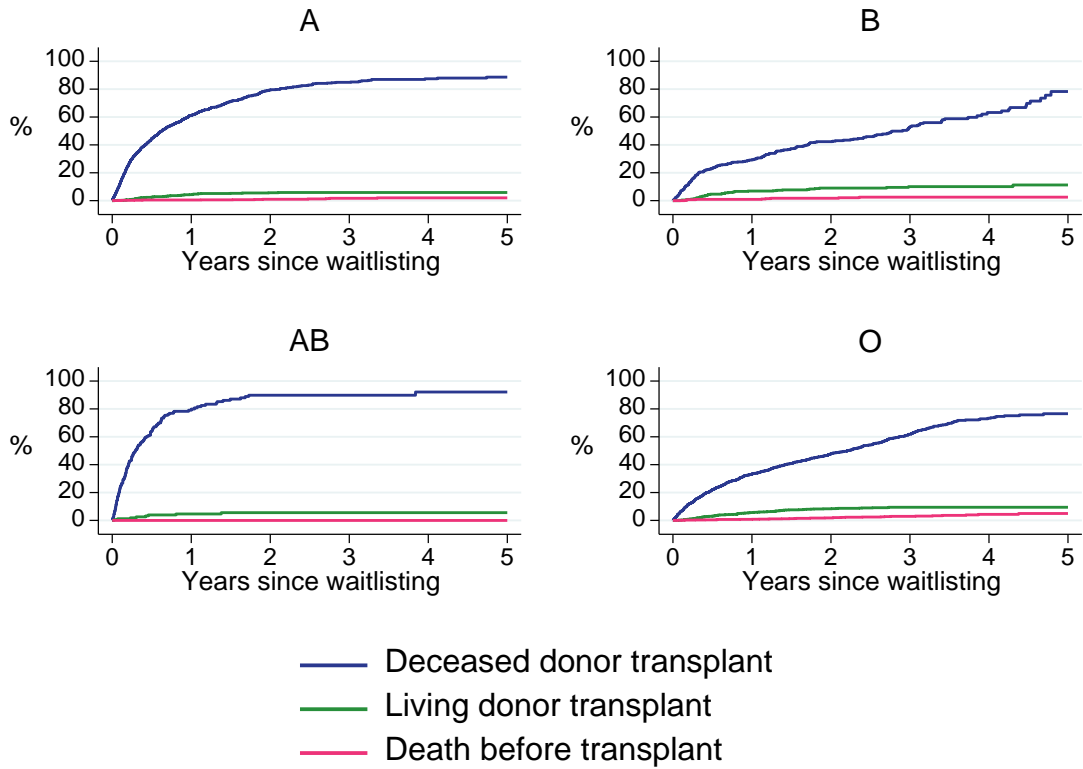


Figure 6.9 - Outcomes after wait-listing - Australian incident dialysis patients 2015-2020



Survival after Wait-listing

Figure 6.10 shows the survival of patients who commenced dialysis in Australia over 2015-2020 and were subsequently wait-listed for a deceased donor kidney-only transplant. Survival is shown from the time of listing and is censored at transplantation (but not at removal from the list). Survival at 1- and 3-year was 99.1% and 94.1% respectively and the mortality rate was 1.6 deaths per 100 patient-years (95% CI 1.3-2.1).

Figure 6.10 - Survival after wait-listing - Australian incident dialysis patients 2015-2020 Censored at transplantation

