

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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Suggested citation

ANZDATA Registry. 40th Report, Chapter 6: Australian transplant waiting list. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2018. Available at: <http://www.anzdata.org.au>

Waiting list dynamics

The waiting list data reported here are derived from the Australian National Organ Matching System (NOMS) and ANZDATA only relates to wait listing for deceased donor (DD) kidney-only transplants. Patients wait-listed for multi-organ transplants are excluded. Recipients of living donor (LD) transplants may or may not be on the waiting list prior to transplantation.

To understand the relative contributions of deceased and living donor transplants to patients on (and off) the kidney-only waiting list, LD transplants to recipients not on the kidney-only waiting list are also included.

The numbers of people moving on and off the active waiting list for any reason are shown. Patients are categorised as either active or off the list - an "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.

Table 6.1 shows the waiting list dynamics tables for Australia for each year. The recent increase in deceased organ donor numbers has been matched by an increase in the number of patients being listed, such that overall numbers on the waiting list are stable. 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 2011-2016

Event	2011	2012	2013	2014	2015	2016
Active start of year	1181	1086	1075	1073	1142	1067
Made active	708	746	778	854	765	820
Taken off list	199	155	141	147	156	135
DD graft	532	552	581	573	632	757
LD graft	61	44	54	56	42	37
Overseas graft	2	0	1	0	2	1
Died on list	9	6	3	9	8	9
Active end of year	1086	1075	1073	1142	1067	948

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

Table 6.2 Australian Kidney Transplant Waiting List Dynamics by Ethnicity 2011-2016

Race	Event	2011	2012	2013	2014	2015	2016
Non-indigenous	Active start of year	1132	1051	1038	1032	1097	1019
	Made active	677	714	738	799	707	764
	Taken off list	180	146	137	136	143	127
	DD graft	507	532	551	533	591	717
	LD graft	60	44	53	56	41	32
	Overseas graft	2	0	1	0	2	1
	Died on list	9	5	2	9	8	9
	Active end of year	1051	1038	1032	1097	1019	897
Indigenous	Active start of year	49	33	34	36	32	31
	Made active	29	30	37	44	41	39
	Taken off list	19	8	4	11	10	7
	DD graft	25	20	29	37	32	30
	LD graft	1	0	1	0	0	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	1	1	0	0	0
	Active end of year	33	34	36	32	31	32
Not reported	Active start of year	0	2	3	5	13	17
	Made active	2	2	3	11	17	17
	Taken off list	0	1	0	0	3	1
	DD graft	0	0	1	3	9	10
	LD graft	0	0	0	0	1	4
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	0	0
	Active end of year	2	3	5	13	17	19

The numbers of both dialysis patients and transplants vary with age; in table 6.3 the waiting list dynamics for the years 2011-2016 is shown by broad age groups.

Table 6.3 Australian Kidney Transplant Waiting List Dynamics by Age 2011-2016

Age	Event	2011	2012	2013	2014	2015	2016
0-14	Active start of year	3	5	6	11	10	16
	Made active	13	10	17	15	16	26
	Taken off list	0	1	0	2	0	1
	DD graft	11	6	11	12	10	17
	LD graft	0	2	1	2	0	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	0	1
	Active end of year	5	6	11	10	16	22
15-44	Active start of year	294	309	314	352	380	387
	Made active	200	203	252	258	257	265
	Taken off list	34	28	34	46	41	52
	DD graft	124	147	157	154	192	244
	LD graft	25	20	22	29	16	18
	Overseas graft	1	0	0	0	1	0
	Died on list	1	3	1	1	0	1
	Active end of year	309	314	352	380	387	337
45-54	Active start of year	279	269	266	277	303	274
	Made active	178	192	182	214	188	210
	Taken off list	40	33	28	38	45	27
	DD graft	130	151	130	141	161	202
	LD graft	13	11	13	8	7	9
	Overseas graft	0	0	0	0	1	0
	Died on list	5	0	0	1	3	2
	Active end of year	269	266	277	303	274	244
55-64	Active start of year	370	329	314	293	304	285
	Made active	199	214	219	245	226	226
	Taken off list	69	61	41	41	41	39
	DD graft	155	159	183	177	189	205
	LD graft	13	6	14	11	12	6
	Overseas graft	1	0	1	0	0	1
	Died on list	2	3	1	5	3	3
	Active end of year	329	314	293	304	285	257
65+	Active start of year	235	174	175	140	145	105
	Made active	118	127	108	122	78	93
	Taken off list	56	32	38	20	29	16
	DD graft	112	89	100	89	80	89
	LD graft	10	5	4	6	7	3
	Overseas graft	0	0	0	0	0	0
	Died on list	1	0	1	2	2	2
	Active end of year	174	175	140	145	105	88

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 Transplanting Region 2011-2016

State	Event	2011	2012	2013	2014	2015	2016
NSW/ACT	Active start of year	546	516	531	474	508	441
	Made active	252	268	226	293	239	227
	Taken off list	110	82	75	69	70	66
	DD graft	132	142	167	151	206	217
	LD graft	31	27	38	36	23	21
	Overseas graft	2	0	0	0	2	0
	Died on list	7	2	3	3	5	4
	Active end of year	516	531	474	508	441	360
VIC/TAS	Active start of year	354	323	340	383	393	382
	Made active	211	247	268	278	254	293
	Taken off list	44	43	45	55	52	39
	DD graft	179	172	166	192	200	234
	LD graft	19	12	13	16	11	14
	Overseas graft	0	0	1	0	0	1
	Died on list	0	3	0	5	2	4
	Active end of year	323	340	383	393	382	383
QLD	Active start of year	141	127	106	112	117	125
	Made active	116	112	128	130	132	155
	Taken off list	15	12	14	10	20	16
	DD graft	109	120	108	114	99	161
	LD graft	5	1	0	1	5	0
	Overseas graft	0	0	0	0	0	0
	Died on list	1	0	0	0	0	0
	Active end of year	127	106	112	117	125	103
SA/NT	Active start of year	52	57	56	65	65	75
	Made active	72	76	82	80	91	75
	Taken off list	8	10	2	10	8	10
	DD graft	56	63	68	67	69	76
	LD graft	3	3	3	2	3	2
	Overseas graft	0	0	0	0	0	0
	Died on list	0	1	0	1	1	0
	Active end of year	57	56	65	65	75	62
WA	Active start of year	88	63	42	39	59	44
	Made active	57	43	74	73	49	70
	Taken off list	22	8	5	3	6	4
	DD graft	56	55	72	49	58	69
	LD graft	3	1	0	1	0	0
	Overseas graft	0	0	0	0	0	0
	Died on list	1	0	0	0	0	1
	Active end of year	63	42	39	59	44	40

Table 6.5 shows the same data by blood group. Turnover is highest for blood group AB patients.

Table 6.5 Australian Kidney Transplant Waiting List Dynamics by Blood Group 2011-2016

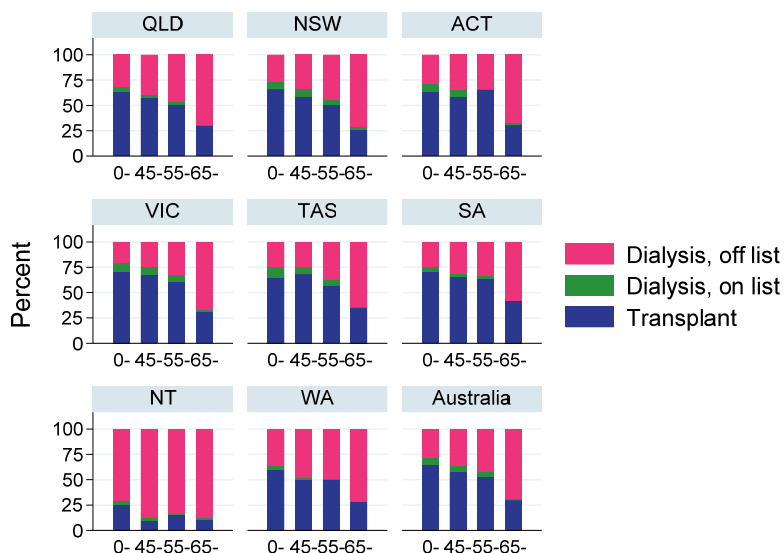
Blood Group	Event	2011	2012	2013	2014	2015	2016
A	Active start of year	358	294	309	325	327	310
	Made active	242	291	290	311	300	301
	Taken off list	60	44	39	56	40	29
	DD graft	217	218	212	225	254	320
	LD graft	25	11	20	25	19	18
	Overseas graft	0	0	0	0	1	0
	Died on list	4	3	3	3	3	2
	Active end of year	294	309	325	327	310	242
AB	Active start of year	11	23	20	21	24	16
	Made active	36	29	24	37	36	32
	Taken off list	2	2	3	2	2	0
	DD graft	22	27	20	32	41	25
	LD graft	0	3	0	0	1	0
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	0	0
	Active end of year	23	20	21	24	16	23
B	Active start of year	169	161	179	178	210	187
	Made active	92	111	102	128	97	117
	Taken off list	27	27	23	19	32	23
	DD graft	64	63	77	66	83	98
	LD graft	7	3	3	10	3	7
	Overseas graft	2	0	0	0	0	0
	Died on list	0	0	0	1	2	2
	Active end of year	161	179	178	210	187	174
O	Active start of year	643	608	567	549	581	554
	Made active	338	315	362	378	332	370
	Taken off list	110	82	76	70	82	83
	DD graft	229	244	272	250	254	314
	LD graft	29	27	31	21	19	12
	Overseas graft	0	0	1	0	1	1
	Died on list	5	3	0	5	3	5
	Active end of year	608	567	549	581	554	509

Proportion of patients transplanted or on waiting list

Figure 6.1 shows the proportion of prevalent renal replacement therapy patients who were either transplanted or actively wait-listed at the end of 2016, by state and age group. In all states and all age groups, the majority of dialysis patients were not actively wait-listed at the end of 2016.

Younger patients are more likely to be transplanted or wait-listed, and the proportion of dialysis patients wait-listed varies substantially by state.

Figure 6.1 - Proportion of Patients Transplanted or on Waiting List - By State or Territory and Age, Dec 2016

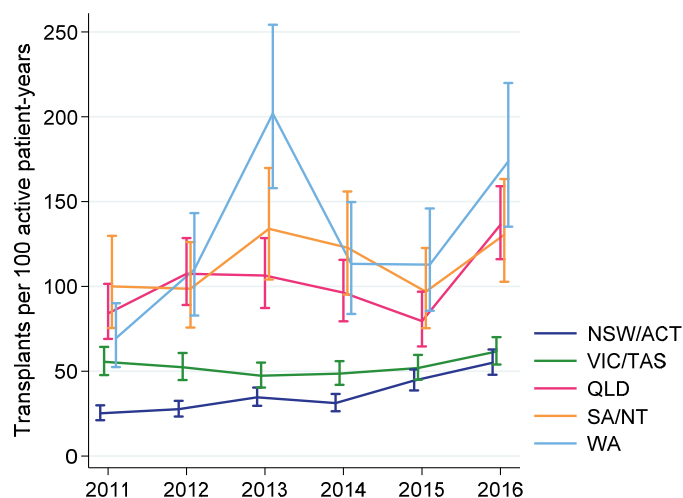


Transplant rate

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 6.2-6.5 show the transplant rate by state, age, ethnicity and blood group respectively.

The transplant rate is typically highest in WA (figure 6.2).

Figure 6.2 - Deceased Donor Transplant Rate by Transplanting Region - Per 100 Active Patient-Years



Paediatric patients are preferentially allocated kidneys and so have historically had a higher transplant rate than adult patients. This gap has narrowed in recent years, which is likely to represent a change in acceptance practices in favour of waiting for well-matched grafts for paediatric patients, along with a rise in the overall transplant rate due to increased donor numbers. Since the allocation system otherwise ignores age, patients in other age groups have similar transplant rates (figure 6.3), as do indigenous patients compared with non-indigenous patients (figure 6.4).

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

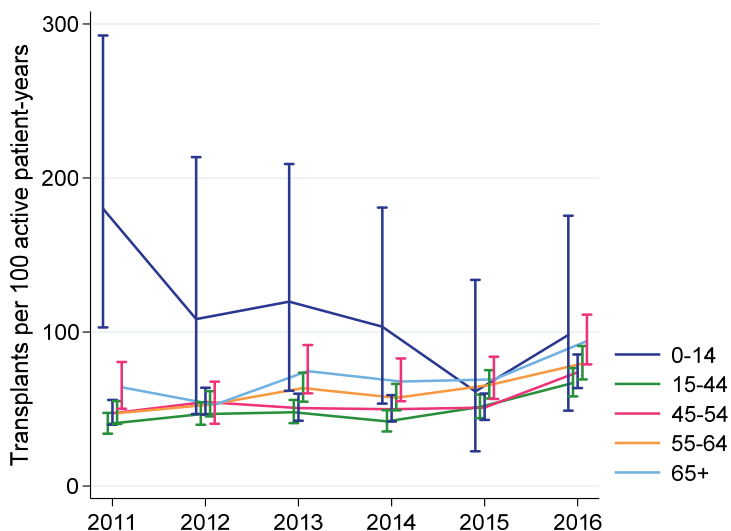
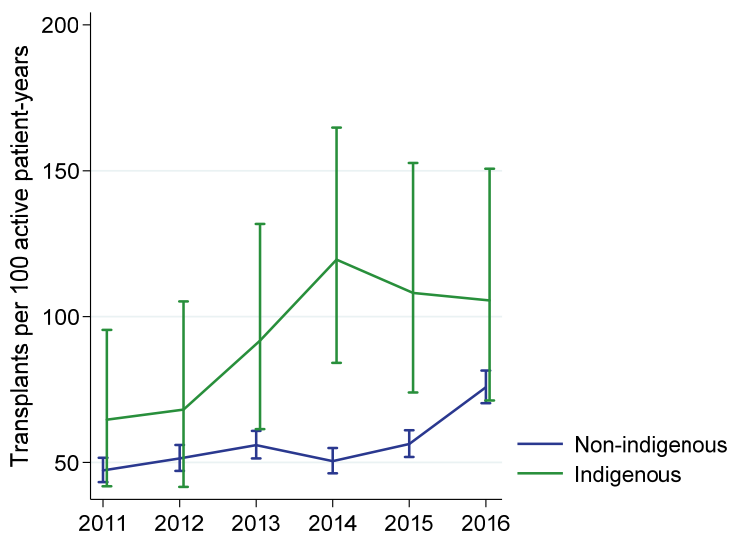
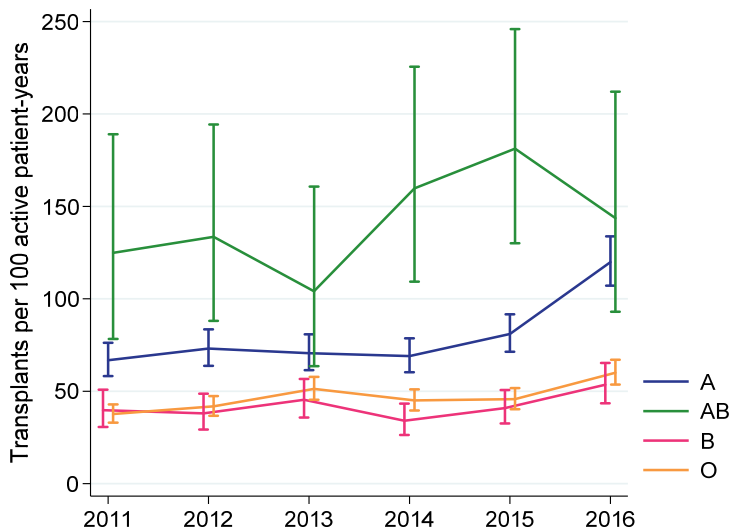


Figure 6.4 - Deceased Donor Transplant Rate by Race - Per 100 Active Patient-Years



Blood group AB patients have the highest transplant rate due to their compatibility with all donors (Figure 6.5).

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



Waiting list demographics

Table 6.6 shows the demographic characteristics of actively wait-listed patients over 2011-2016. In general, the demographics are very stable. However, there has been a slight increase in the proportion of highly sensitised patients (historical peak PRA \geq 80%, from 11% in 2011 to 17% in 2016) and in the proportion of patients with diabetes (from 18% in 2011 to 24% in 2016).

Note that the peak PRA data presented here are calculated as the highest class I PRA ever recorded, whereas for the purposes of kidney allocation the peak PRA is the PRA of the peak serum still available for testing. Thus, the values reported here are slightly higher than those reported by NOMS and used for allocation.

Table 6.6 Demographics of the Australian Kidney Transplant Waiting List 2011-2016

Factor	2011	2012	2013	2014	2015	2016
N	1086	1075	1073	1142	1067	948
Waiting time (years), median (IQR)	2.8 (1.5, 4.5)	2.8 (1.5, 4.5)	2.6 (1.4, 4.5)	2.6 (1.4, 4.4)	2.4 (1.3, 4.1)	2.4 (1.4, 3.9)
Historical peak PRA (%)						
0-19	734 (67.6%)	724 (67.3%)	724 (67.5%)	743 (65.2%)	687 (65.2%)	440 (62.1%)
20-39	99 (9.1%)	88 (8.2%)	88 (8.2%)	100 (8.8%)	98 (9.3%)	68 (9.6%)
40-59	60 (5.5%)	61 (5.7%)	60 (5.6%)	74 (6.5%)	61 (5.8%)	38 (5.4%)
60-79	74 (6.8%)	72 (6.7%)	72 (6.7%)	72 (6.3%)	63 (6.0%)	45 (6.4%)
80-100	119 (11.0%)	130 (12.1%)	128 (11.9%)	151 (13.2%)	145 (13.8%)	117 (16.5%)
Blood group						
A	294 (27.1%)	309 (28.7%)	325 (30.3%)	327 (28.6%)	310 (29.1%)	242 (25.5%)
AB	23 (2.1%)	20 (1.9%)	21 (2.0%)	24 (2.1%)	16 (1.5%)	23 (2.4%)
B	161 (14.8%)	179 (16.7%)	178 (16.6%)	210 (18.4%)	187 (17.5%)	174 (18.4%)
O	608 (56.0%)	567 (52.7%)	549 (51.2%)	581 (50.9%)	554 (51.9%)	509 (53.7%)
Previous grafts						
0	856 (78.8%)	827 (76.9%)	800 (74.6%)	837 (73.3%)	771 (72.3%)	686 (72.4%)
1	194 (17.9%)	213 (19.8%)	233 (21.7%)	253 (22.2%)	241 (22.6%)	215 (22.7%)
2	28 (2.6%)	28 (2.6%)	33 (3.1%)	45 (3.9%)	49 (4.6%)	41 (4.3%)
3	6 (0.6%)	7 (0.7%)	7 (0.7%)	7 (0.6%)	6 (0.6%)	6 (0.6%)
4	2 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Age (years)						
0-44	362 (33.3%)	346 (32.2%)	364 (33.9%)	356 (31.2%)	358 (33.6%)	293 (30.9%)
45-54	288 (26.5%)	281 (26.1%)	276 (25.7%)	304 (26.6%)	260 (24.4%)	243 (25.6%)
55-64	319 (29.4%)	303 (28.2%)	293 (27.3%)	308 (27.0%)	292 (27.4%)	255 (26.9%)
65+	117 (10.8%)	145 (13.5%)	140 (13.0%)	174 (15.2%)	157 (14.7%)	157 (16.6%)
Gender						
Male	632 (58.2%)	628 (58.4%)	652 (60.8%)	709 (62.1%)	659 (61.8%)	592 (62.4%)
Ethnicity						
Caucasian	768 (70.7%)	756 (70.3%)	753 (70.2%)	767 (67.2%)	707 (66.3%)	585 (61.7%)
Aboriginal/Torres Strait Islander	33 (3.0%)	34 (3.2%)	36 (3.4%)	32 (2.8%)	31 (2.9%)	32 (3.4%)
Asian	202 (18.6%)	204 (19.0%)	199 (18.5%)	237 (20.8%)	208 (19.5%)	215 (22.7%)
Māori	19 (1.7%)	14 (1.3%)	13 (1.2%)	10 (0.9%)	8 (0.7%)	8 (0.8%)
Pacific	28 (2.6%)	29 (2.7%)	32 (3.0%)	35 (3.1%)	34 (3.2%)	31 (3.3%)
Other	34 (3.1%)	35 (3.3%)	35 (3.3%)	48 (4.2%)	62 (5.8%)	58 (6.1%)
Not reported	2 (0.2%)	3 (0.3%)	5 (0.5%)	13 (1.1%)	17 (1.6%)	19 (2.0%)
Primary renal disease						
Diabetic Nephropathy	123 (11.3%)	131 (12.2%)	146 (13.6%)	147 (12.9%)	138 (12.9%)	126 (13.3%)
Glomerulonephritis	502 (46.2%)	471 (43.8%)	436 (40.6%)	486 (42.6%)	452 (42.4%)	421 (44.4%)
Hypertension	66 (6.1%)	89 (8.3%)	87 (8.1%)	81 (7.1%)	77 (7.2%)	75 (7.9%)
Polycystic Disease	144 (13.3%)	149 (13.9%)	141 (13.1%)	140 (12.3%)	135 (12.7%)	109 (11.5%)
Reflux Nephropathy	85 (7.8%)	79 (7.3%)	85 (7.9%)	92 (8.1%)	80 (7.5%)	66 (7.0%)
Other	116 (10.7%)	113 (10.5%)	135 (12.6%)	148 (13.0%)	144 (13.5%)	113 (11.9%)
Uncertain	49 (4.5%)	42 (3.9%)	41 (3.8%)	45 (3.9%)	35 (3.3%)	28 (3.0%)
Not reported	1 (0.1%)	1 (0.1%)	2 (0.2%)	3 (0.3%)	6 (0.6%)	10 (1.1%)
Comorbidities						
Diabetes	193 (17.8%)	205 (19.1%)	226 (21.1%)	229 (20.1%)	228 (21.5%)	222 (23.6%)
Coronary artery disease	220 (20.3%)	198 (18.4%)	198 (18.5%)	177 (15.6%)	148 (13.9%)	155 (16.5%)
Peripheral vascular disease	110 (10.1%)	97 (9.0%)	108 (10.1%)	104 (9.1%)	84 (7.9%)	73 (7.7%)
Cerebrovascular disease	59 (5.4%)	65 (6.1%)	55 (5.1%)	63 (5.5%)	52 (4.9%)	47 (5.0%)
Chronic lung disease	86 (7.9%)	91 (8.5%)	96 (9.0%)	98 (8.6%)	86 (8.1%)	86 (9.1%)

Survival after wait-listing

Figure 6.6 shows the survival of patients who commenced dialysis in Australia over 2011-2016 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). The mortality rate of this highly selected patient group was low at 2.1 deaths per 100 patient-years (95% CI 1.6-2.6).

Figure 6.6 - Survival After Wait-listing - Australian Incident Dialysis Patients 2011-2016 Censored at Transplantation

