



Australia &
New Zealand Dialysis
& Transplant Registry

Chapter 7

Transplant Waiting List

ANZDATA gratefully acknowledges the contributions of Professor Jeremy Chapman, Ms Jenni Wright and Mr Paul Slater of the National Organ Matching System (NOMS) of Australia

Contents:

Transplant Waiting List	7-1
Stock and Flow	7-2
Proportion of Patients Transplanted or on the Waiting List	7-7
Transplant Rate	7-8
Waiting List Demographics	7-10
Survival on the Waiting List	7-12

Suggested Citation:

ANZDATA Registry. 38th Report, Chapter 7: Transplant Waiting List. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2016. Available at: <http://www.anzdata.org.au>

Stock and Flow

The waiting list data reported here are derived from the Australian National Organ Matching System (NOMS) and ANZDATA. Waiting list data refers to waiting 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, DD and 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 7.1 shows the basic stock and flow tables for Australia for each year. Due to the recent increase in organ donor numbers, the number of patients waiting for a kidney transplant has been falling over time despite

In the tables below, the rows describe:

- Number on the active list at the beginning of the year
- Number added to the active list during the year
- Number removed from the active list during the year
- Number of deceased donor (DD) transplants to people on the waiting list
- Number of living donor (LD) transplants to people on the waiting list
- Number of transplants performed outside Australia / New Zealand to people on the waiting list
- Number who died while on the active waiting list
- Number on the waiting list at the end of the year

increasing numbers of patients being listed each year. However, in 2014 large numbers of listings led to a rise in the number waiting.

Table 7.1. Australian Kidney Transplant Waiting List Stock and Flow 2009-2014

Event	2009	2010	2011	2012	2013	2014
Active start of year	1252	1266	1185	1087	1075	1071
Made active	671	630	706	746	776	838
Taken off list	178	149	199	153	141	147
DD graft	401	499	532	554	581	574
LD graft	64	58	62	45	54	56
Overseas graft	4	1	2	0	1	0
Died on list	10	4	9	6	3	9
Active end of year	1266	1185	1087	1075	1071	1123

Table 7.2 shows these data for non-indigenous and indigenous patients respectively.

Table 7.2. Australian Kidney Transplant Waiting List Stock and Flow by Race 2009-2014

Race	Event	2009	2010	2011	2012	2013	2014
Non-indigenous	Active start of year	1206	1221	1136	1054	1041	1036
	Made active	643	592	677	716	740	794
	Taken off list	167	141	180	145	137	137
	DD graft	384	474	507	534	552	537
	LD graft	63	58	61	45	53	56
	Overseas graft	4	1	2	0	1	0
	Died on list	10	3	9	5	2	9
	Active end of year	1221	1136	1054	1041	1036	1091
Indigenous	Active start of year	46	45	49	33	34	35
	Made active	28	38	29	30	36	44
	Taken off list	11	8	19	8	4	10
	DD graft	17	25	25	20	29	37
	LD graft	1	0	1	0	1	0
	Overseas graft	0	0	0	0	0	0
	Died on list	0	1	0	1	1	0
	Active end of year	45	49	33	34	35	32

The numbers of both dialysis patients and transplants vary with age; in table 7.3 the stock and flow for the years 2010-14 is shown by broad age groups. As

expected, older patients are less likely to be listed than younger patients, and the proportion removed from the list is higher.

Table 7.3. Australian Kidney Transplant Waiting List Stock and Flow by Age 2009-2014

Age Group	Event	2009	2010	2011	2012	2013	2014
0-14	Active start of year	2	5	6	5	10	14
	Made active	11	10	14	17	23	23
	Taken off list	0	0	0	1	0	2
	DD graft	8	9	15	9	18	20
	LD graft	0	0	0	2	1	2
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	0	0
	Active end of year	5	6	5	10	14	13
15-44	Active start of year	288	331	341	358	359	395
	Made active	197	187	232	232	272	283
	Taken off list	35	38	40	33	38	48
	DD graft	92	113	142	171	173	170
	LD graft	23	26	30	24	24	30
	Overseas graft	2	0	1	0	0	0
	Died on list	2	0	2	3	1	1
	Active end of year	331	341	358	359	395	429
45-54	Active start of year	323	335	300	288	289	284
	Made active	161	149	182	204	189	216
	Taken off list	30	36	45	37	39	42
	DD graft	99	140	135	157	142	145
	LD graft	17	7	10	8	12	10
	Overseas graft	2	1	0	0	1	0
	Died on list	1	0	4	1	0	2
	Active end of year	335	300	288	289	284	301
55-64	Active start of year	400	390	368	319	302	289
	Made active	206	190	202	217	221	251
	Taken off list	64	43	72	57	38	42
	DD graft	126	152	160	167	179	183
	LD graft	21	14	15	8	16	10
	Overseas graft	0	0	1	0	0	0
	Died on list	5	3	3	2	1	5
	Active end of year	390	368	319	302	289	300
65+	Active start of year	239	205	170	117	115	89
	Made active	96	94	76	76	71	65
	Taken off list	49	32	42	25	26	13
	DD graft	76	85	80	50	69	56
	LD graft	3	11	7	3	1	4
	Overseas graft	0	0	0	0	0	0
	Died on list	2	1	0	0	1	1
	Active end of year	205	170	117	115	89	80

Differences between states (combined into transplanting regions) are shown in table 7.4. Approximately half of all patients on the waiting list are in NSW. Waiting list

numbers in each state are reflective of both listing practices and donation rates, both current and historical.

Table 7.4. Australian Kidney Transplant Waiting List Stock and Flow by State 2009-2014

State	Event	2009	2010	2011	2012	2013	2014
NSW	Active start of year	667	615	550	517	531	474
	Made active	218	200	249	267	226	287
	Taken off list	107	71	110	80	75	70
	DD graft	118	163	131	143	167	152
	LD graft	34	28	32	28	38	36
	Overseas graft	2	1	2	0	0	0
	Died on list	9	2	7	2	3	3
	Active end of year	615	550	517	531	474	500
VIC	Active start of year	327	353	354	323	340	383
	Made active	203	212	212	247	268	277
	Taken off list	38	38	44	43	45	55
	DD graft	119	155	180	172	166	192
	LD graft	18	17	19	12	13	16
	Overseas graft	2	0	0	0	1	0
	Died on list	0	1	0	3	0	5
	Active end of year	353	354	323	340	383	392
QLD	Active start of year	139	163	141	127	106	112
	Made active	123	101	116	112	128	125
	Taken off list	18	22	15	12	14	10
	DD graft	75	94	109	120	108	114
	LD graft	6	7	5	1	0	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	1	0	0	0
	Active end of year	163	141	127	106	112	112
SA	Active start of year	58	51	52	57	56	64
	Made active	62	61	72	77	81	79
	Taken off list	7	5	8	10	2	9
	DD graft	57	50	56	64	68	67
	LD graft	4	5	3	3	3	2
	Overseas graft	0	0	0	0	0	0
	Died on list	1	0	0	1	0	1
	Active end of year	51	52	57	56	64	64
WA	Active start of year	61	84	88	63	42	38
	Made active	65	56	57	43	73	70
	Taken off list	8	13	22	8	5	3
	DD graft	32	37	56	55	72	49
	LD graft	2	1	3	1	0	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	1	1	0	0	0
	Active end of year	84	88	63	42	38	55

Table 7.5 shows the same data by blood group. Turnover is highest for blood group AB patients.

Table 7.5. Australian Kidney Transplant Waiting List Stock and Flow by Blood Group 2009-2014

Blood Group	Event	2009	2010	2011	2012	2013	2014
A	Active start of year	402	417	359	295	309	326
	Made active	259	233	242	291	291	306
	Taken off list	56	57	60	44	39	56
	DD graft	159	209	217	219	212	226
	LD graft	26	21	25	11	20	25
	Overseas graft	1	0	0	0	0	0
	Died on list	2	4	4	3	3	3
	Active end of year	417	359	295	309	326	322
AB	Active start of year	9	17	11	22	20	21
	Made active	21	25	35	30	24	35
	Taken off list	0	2	2	1	3	2
	DD graft	13	29	22	28	20	32
	LD graft	0	0	0	3	0	0
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	0	0
	Active end of year	17	11	22	20	21	22
B	Active start of year	149	164	169	160	178	176
	Made active	89	80	92	111	101	127
	Taken off list	24	17	27	26	23	19
	DD graft	38	50	65	63	77	66
	LD graft	10	7	7	4	3	10
	Overseas graft	0	1	2	0	0	0
	Died on list	2	0	0	0	0	1
	Active end of year	164	169	160	178	176	207
O	Active start of year	692	668	646	610	568	548
	Made active	302	292	337	314	360	370
	Taken off list	98	73	110	82	76	70
	DD graft	191	211	228	244	272	250
	LD graft	28	30	30	27	31	21
	Overseas graft	3	0	0	0	1	0
	Died on list	6	0	5	3	0	5
	Active end of year	668	646	610	568	548	572

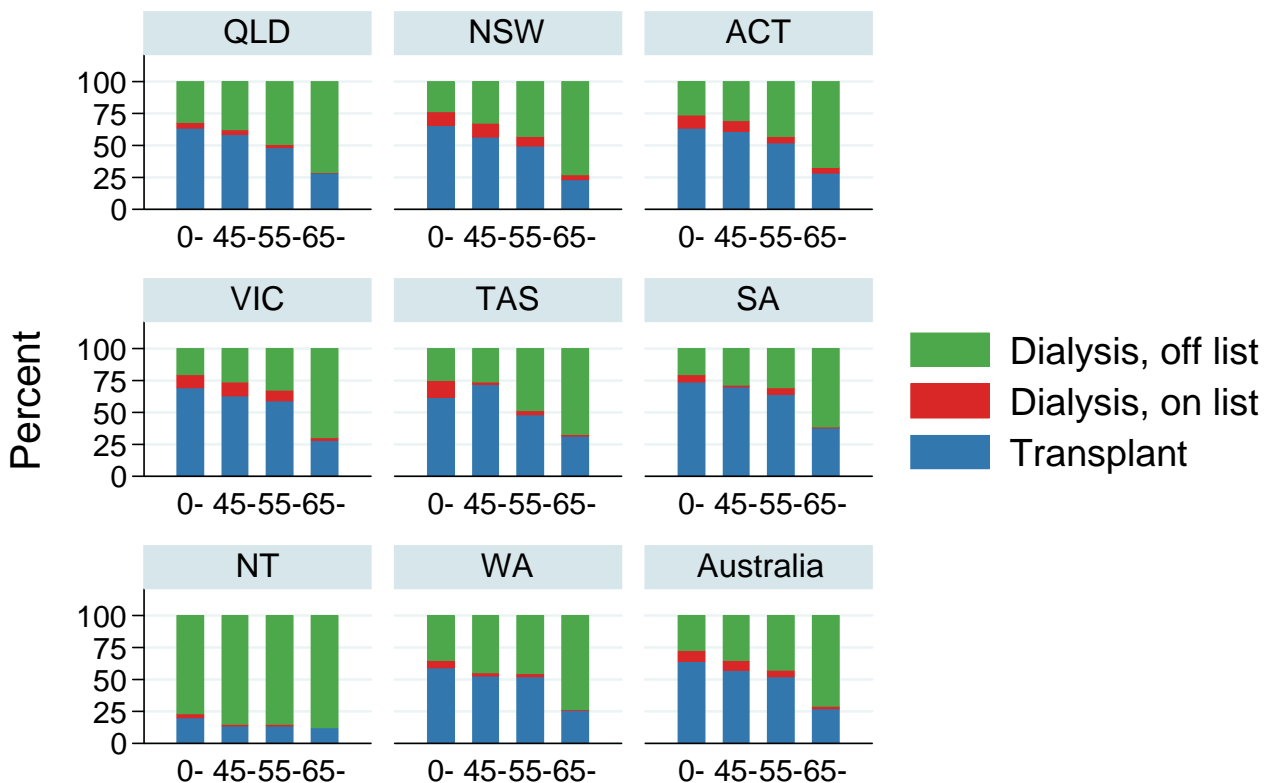
Proportion of patients transplanted or on waiting list

Figure 7.1 shows the proportion of prevalent RRT patients who were either transplanted or actively wait-listed at the end of 2014, 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 2014.

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

Figure 7.1

Proportion of patients transplanted or on waiting list By state and age, end 2014

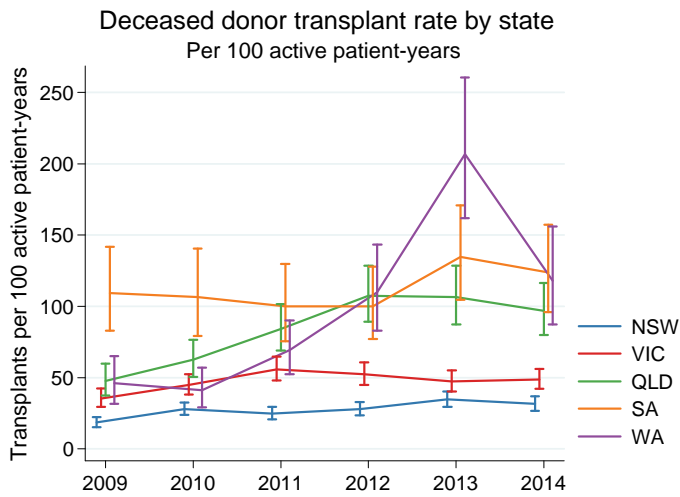


Transplant Rate

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

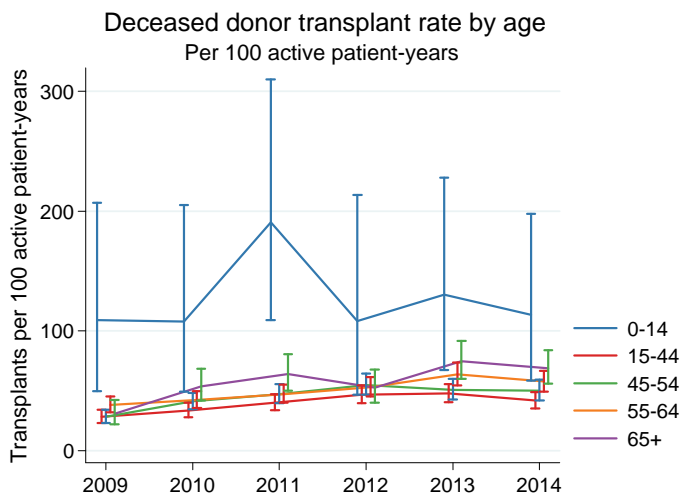
(denominator). The transplant rate depends on the number of organs available, the number of patients on the waiting list, and the kidney allocation system. Figures 7.2-7.5 show the transplant rate by state, age, race and blood group respectively.

Figure 7.2

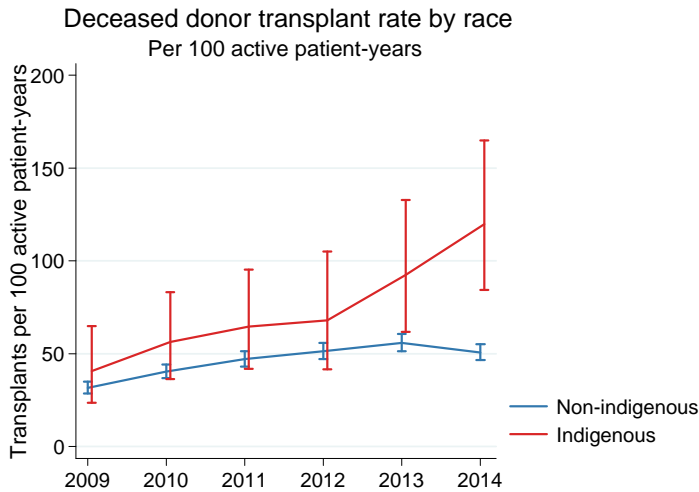


The transplant rate is typically highest in SA (figure 7.2).

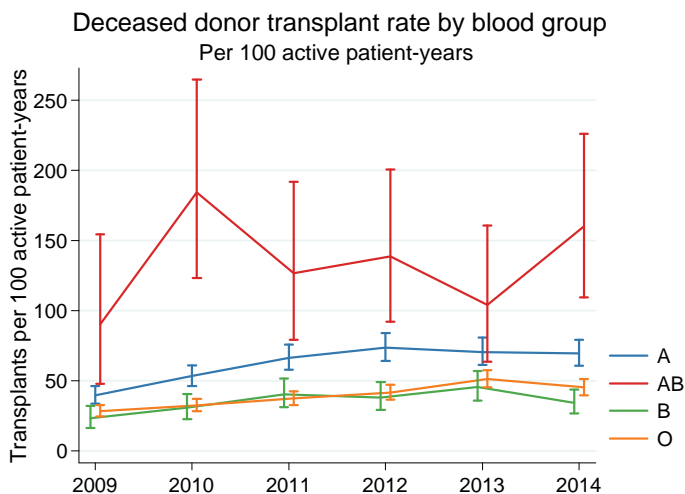
Figure 7.3



Paediatric patients are preferentially allocated kidneys and so have a higher transplant rate than adult patients; since the allocation system otherwise ignores age, patients in other age groups have the same transplant rate (figure 7.3).

Figure 7.4

Despite a slightly different HLA profile, indigenous patients do not have a lower transplant rate once actively wait-listed (figure 7.4).

Figure 7.5

Blood group AB patients have the highest transplant rate due to their compatibility with all donors (Figure 7.5)

Waiting List Demographics

Table 7.6 shows the demographic characteristics of actively wait-listed patients over 2009-2014. 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 9% in 2009 to 13% in 2014) and in the proportion of patients with diabetes (from 15% in 2009 to 21% in 2014).

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 7.6. Demographics of the Australian Kidney Transplant Waiting List 2009-2014

Factor	2009	2010	2011	2012	2013	2014
N	1266	1185	1087	1075	1071	1123
Waiting time (years), median (IQR)	2.8 (1.6, 4.6)	2.9 (1.7, 4.7)	2.8 (1.6, 4.5)	2.8 (1.5, 4.5)	2.6 (1.4, 4.5)	2.6 (1.5, 4.4)
Historical peak PRA (%)						
0-19	917 (72.4%)	825 (69.6%)	734 (67.5%)	724 (67.3%)	722 (67.5%)	735 (65.9%)
20-39	105 (8.3%)	100 (8.4%)	100 (9.2%)	88 (8.2%)	88 (8.2%)	93 (8.3%)
40-59	67 (5.3%)	60 (5.1%)	60 (5.5%)	61 (5.7%)	60 (5.6%)	74 (6.6%)
60-79	68 (5.4%)	80 (6.8%)	74 (6.8%)	72 (6.7%)	72 (6.7%)	68 (6.1%)
80-100	109 (8.6%)	120 (10.1%)	119 (10.9%)	130 (12.1%)	128 (12.0%)	146 (13.1%)
Blood group						
A	417 (32.9%)	359 (30.3%)	295 (27.1%)	309 (28.7%)	326 (30.4%)	322 (28.7%)
AB	17 (1.3%)	11 (0.9%)	22 (2.0%)	20 (1.9%)	21 (2.0%)	22 (2.0%)
B	164 (13.0%)	169 (14.3%)	160 (14.7%)	178 (16.6%)	176 (16.4%)	207 (18.4%)
O	668 (52.8%)	646 (54.5%)	610 (56.1%)	568 (52.8%)	548 (51.2%)	572 (50.9%)
Previous grafts						
0	1042 (82.3%)	942 (79.5%)	857 (78.8%)	827 (76.9%)	798 (74.5%)	818 (72.8%)
1	185 (14.6%)	201 (17.0%)	194 (17.8%)	213 (19.8%)	233 (21.8%)	253 (22.5%)
2	31 (2.4%)	34 (2.9%)	28 (2.6%)	28 (2.6%)	33 (3.1%)	45 (4.0%)
3	8 (0.6%)	8 (0.7%)	6 (0.6%)	7 (0.7%)	7 (0.7%)	7 (0.6%)
4	0 (0.0%)	0 (0.0%)	2 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Table 7.6. Demographics of the Australian Kidney Transplant Waiting List 2009-2014 continued

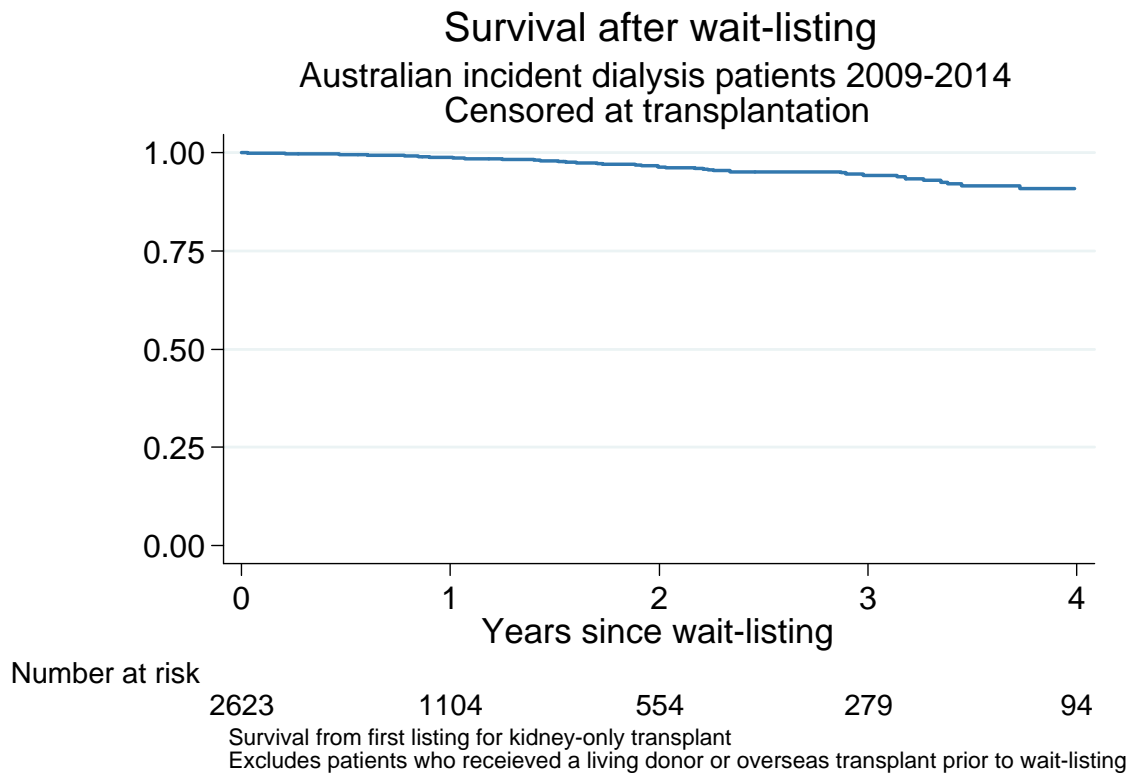
Factor	2009	2010	2011	2012	2013	2014
Age (years)						
0-44	380 (30.0%)	363 (30.6%)	363 (33.4%)	347 (32.3%)	363 (33.9%)	351 (31.3%)
45-54	374 (29.5%)	320 (27.0%)	288 (26.5%)	280 (26.0%)	275 (25.7%)	299 (26.6%)
55-64	365 (28.8%)	371 (31.3%)	319 (29.3%)	303 (28.2%)	293 (27.4%)	301 (26.8%)
65+	147 (11.6%)	131 (11.1%)	117 (10.8%)	145 (13.5%)	140 (13.1%)	172 (15.3%)
Male	749 (59.2%)	680 (57.4%)	632 (58.1%)	628 (58.4%)	650 (60.7%)	696 (62.0%)
Race						
Caucasian	954 (75.4%)	864 (72.9%)	770 (70.8%)	758 (70.5%)	755 (70.5%)	750 (66.8%)
Aboriginal/TSI	45 (3.6%)	49 (4.1%)	33 (3.0%)	34 (3.2%)	35 (3.3%)	32 (2.8%)
Asian	194 (15.3%)	193 (16.3%)	200 (18.4%)	202 (18.8%)	193 (18.0%)	222 (19.8%)
Māori	11 (0.9%)	16 (1.4%)	19 (1.7%)	14 (1.3%)	13 (1.2%)	8 (0.7%)
Pacific	25 (2.0%)	28 (2.4%)	25 (2.3%)	26 (2.4%)	29 (2.7%)	32 (2.8%)
Other	37 (2.9%)	35 (3.0%)	39 (3.6%)	40 (3.7%)	43 (4.0%)	63 (5.6%)
Not reported	0 (0.0%)	0 (0.0%)	1 (0.1%)	1 (0.1%)	3 (0.3%)	16 (1.4%)
Primary Renal Disease						
Glomerulonephritis	606 (47.9%)	536 (45.2%)	503 (46.3%)	471 (43.8%)	437 (40.8%)	473 (42.1%)
Analgesic	13 (1.0%)	9 (0.8%)	5 (0.5%)	3 (0.3%)	5 (0.5%)	5 (0.4%)
Polycystic	165 (13.0%)	171 (14.4%)	144 (13.2%)	149 (13.9%)	140 (13.1%)	138 (12.3%)
Reflux	108 (8.5%)	103 (8.7%)	85 (7.8%)	79 (7.3%)	85 (7.9%)	89 (7.9%)
Hypertension	94 (7.4%)	76 (6.4%)	66 (6.1%)	89 (8.3%)	86 (8.0%)	78 (6.9%)
Diabetic nephropathy	121 (9.6%)	131 (11.1%)	123 (11.3%)	131 (12.2%)	145 (13.5%)	145 (12.9%)
Other	112 (8.8%)	110 (9.3%)	111 (10.2%)	111 (10.3%)	130 (12.1%)	140 (12.5%)
Uncertain	47 (3.7%)	49 (4.1%)	49 (4.5%)	42 (3.9%)	41 (3.8%)	45 (4.0%)
Not reported	0 (0.0%)	0 (0.0%)	1 (0.1%)	0 (0.0%)	2 (0.2%)	10 (0.9%)
Diabetes	188 (14.9%)	196 (16.6%)	199 (18.4%)	208 (19.4%)	226 (21.2%)	234 (21.0%)
Coronary artery disease	250 (19.8%)	241 (20.4%)	227 (20.9%)	220 (20.5%)	225 (21.1%)	208 (18.6%)
Peripheral vascular disease	133 (10.5%)	119 (10.1%)	118 (10.9%)	108 (10.1%)	121 (11.4%)	130 (11.6%)
Cerebrovascular disease	77 (6.1%)	74 (6.3%)	61 (5.6%)	69 (6.4%)	62 (5.8%)	76 (6.8%)
Chronic lung disease	107 (8.5%)	89 (7.5%)	88 (8.1%)	101 (9.4%)	110 (10.3%)	108 (9.7%)

Survival on the Waiting List

Figure 7.6 shows the survival of patients who commenced dialysis in Australia over 2009-2014 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 1.8 deaths per 100 patient-years (95% CI 1.4-2.4).

Figure 7.6



Suggested Citation:

ANZDATA Registry. 38th Report, Chapter 7: Transplant Waiting List. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2016. Available at: <http://www.anzdata.org.au>

ANZDATA Registry

C-\ Royal Adelaide Hospital
East Wing 9th Floor
North Terrace, Adelaide
South Australia
Australia

www.anzdata.org.au

2016 ©