



Australia &  
New Zealand Dialysis  
& Transplant Registry

# Chapter 7

## Transplant Waiting List

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

### Contents:

<b>Transplant Waiting List</b>	<b>7-1</b>
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	

### Suggested Citation:

ANZDATA Registry. 37th Report, Chapter 7: Transplant Waiting List. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2015. 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.

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

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 increasing numbers of patients being listed each year.

**Table 7.1**

**Australian Kidney Transplant Waiting List Stock and Flow 2008 - 2013**

Event	2008	2009	2010	2011	2012	2013
Active start of year	1334	1252	1266	1185	1087	1073
Made active	653	671	630	707	744	762
Taken off list	182	178	149	199	153	140
DD graft	417	401	499	533	554	581
LD graft	122	64	58	62	45	54
Overseas graft	2	4	1	2	0	1
Died on list	12	10	4	9	6	3
Active end of year	1252	1266	1185	1087	1073	1056

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 Indigenous Status 2008 - 2013**

Race	Event	2008	2009	2010	2011	2012	2013
<b>Non-indigenous</b>	Active start of year	1282	1206	1221	1136	1054	1040
	Made active	621	643	592	678	715	726
	Taken off list	174	167	141	180	145	136
	DD graft	393	384	474	508	534	552
	LD graft	118	63	58	61	45	53
	Overseas graft	2	4	1	2	0	1
	Died on list	10	10	3	9	5	2
	Active end of year	1206	1221	1136	1054	1040	1022
<b>Indigenous</b>	Active start of year	52	46	45	49	33	33
	Made active	32	28	38	29	29	36
	Taken off list	8	11	8	19	8	4
	DD graft	24	17	25	25	20	29
	LD graft	4	1	0	1	0	1
	Overseas graft	0	0	0	0	0	0
	Died on list	2	0	1	0	1	1
	Active end of year	46	45	49	33	33	34

The numbers of both dialysis patients and transplants vary with age; in table 7.3 the stock and flow for the years 2008-13 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 Category 2008 - 2013**

Age Group	Event	2008	2009	2010	2011	2012	2013
0-14	Active start of year	2	2	6	8	8	11
	Made active	4	12	11	17	19	25
	Taken off list	1	0	0	0	1	0
	DD graft	3	8	9	17	12	18
	LD graft	0	0	0	0	3	1
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	0	0
	Active end of year	2	6	8	8	11	17
15- 44	Active start of year	352	310	351	355	375	376
	Made active	172	207	193	243	244	283
	Taken off list	49	36	40	42	38	40
	DD graft	114	101	122	148	177	179
	LD graft	49	24	27	30	25	25
	Overseas graft	1	3	0	1	0	0
	Died on list	1	2	0	2	3	1
	Active end of year	310	351	355	375	376	414
45-54	Active start of year	362	336	355	320	292	301
	Made active	162	170	157	186	212	189
	Taken off list	41	34	41	51	34	38
	DD graft	113	96	143	147	161	151
	LD graft	31	18	6	12	7	15
	Overseas graft	0	1	1	0	0	1
	Died on list	3	2	1	4	1	0
	Active end of year	336	355	320	292	301	285
55-64	Active start of year	413	410	382	370	321	296
	Made active	207	198	197	198	207	209
	Taken off list	48	68	38	71	58	41
	DD graft	127	133	153	157	164	179
	LD graft	28	20	16	15	8	13
	Overseas graft	1	0	0	1	0	0
	Died on list	6	5	2	3	2	2
	Active end of year	410	382	370	321	296	270
65+	Active start of year	205	194	172	132	91	89
	Made active	108	84	72	63	62	56
	Taken off list	43	40	30	35	22	21
	DD graft	60	63	72	64	40	54
	LD graft	14	2	9	5	2	0
	Overseas graft	0	0	0	0	0	0
	Died on list	2	1	1	0	0	0
	Active end of year	194	172	132	91	89	70

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. The fall in the number of wait-listed patients has predominantly occurred in NSW, and to a lesser extent WA.

**Table 7.4**

**Australian Kidney Transplant Waiting List Stock and Flow by Transplant Region 2008 - 2013**

State	Event	2008	2009	2010	2011	2012	2013
NSW	Active start of year	701	668	616	551	518	532
	Made active	248	218	200	250	267	223
	Taken off list	105	107	71	110	80	75
	DD graft	110	118	163	132	143	167
	LD graft	59	34	28	32	28	38
	Overseas graft	1	2	1	2	0	0
	Died on list	6	9	2	7	2	3
	Active end of year	668	616	551	518	532	472
VIC	Active start of year	348	326	352	353	322	339
	Made active	169	203	212	212	247	263
	Taken off list	43	38	38	44	43	44
	DD graft	114	119	155	180	172	166
	LD graft	33	18	17	19	12	13
	Overseas graft	0	2	0	0	0	1
	Died on list	1	0	1	0	3	0
	Active end of year	326	352	353	322	339	378
QLD	Active start of year	128	139	163	141	127	106
	Made active	123	123	101	116	112	127
	Taken off list	10	18	22	15	12	14
	DD graft	87	75	94	109	120	108
	LD graft	12	6	7	5	1	0
	Overseas graft	1	0	0	0	0	0
	Died on list	2	0	0	1	0	0
	Active end of year	139	163	141	127	106	111
SA	Active start of year	67	58	51	52	57	55
	Made active	74	62	61	72	76	78
	Taken off list	3	7	5	8	10	2
	DD graft	67	57	50	56	64	68
	LD graft	12	4	5	3	3	3
	Overseas graft	0	0	0	0	0	0
	Died on list	1	1	0	0	1	0
	Active end of year	58	51	52	57	55	60
WA	Active start of year	90	61	84	88	63	41
	Made active	39	65	56	57	42	71
	Taken off list	21	8	13	22	8	5
	DD graft	39	32	37	56	55	72
	LD graft	6	2	1	3	1	0
	Overseas graft	0	0	0	0	0	0
	Died on list	2	0	1	1	0	0
	Active end of year	61	84	88	63	41	35

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

The totals are slightly lower than in table 7.1 due to a small number of patients with missing blood group data (24 in 2013).

**Table 7.5**

**Australian Kidney Transplant Waiting List Stock and Flow by Blood Group 2008 - 2013**

Blood Group	Event	2008	2009	2010	2011	2012	2013
A	Active start of year	447	401	417	359	295	308
	Made active	222	259	233	242	290	284
	Taken off list	63	56	57	60	44	39
	DD graft	162	158	209	217	219	212
	LD graft	41	26	21	25	11	20
	Overseas graft	0	1	0	0	0	0
	Died on list	2	2	4	4	3	3
	Active end of year	401	417	359	295	308	318
AB	Active start of year	19	9	17	11	22	19
	Made active	18	21	25	35	29	23
	Taken off list	2	0	2	2	1	3
	DD graft	23	13	29	22	28	20
	LD graft	3	0	0	0	3	0
	Overseas graft	0	0	0	0	0	0
	Died on list	0	0	0	0	0	0
	Active end of year	9	17	11	22	19	19
B	Active start of year	165	149	164	169	160	178
	Made active	71	89	80	92	111	97
	Taken off list	26	24	17	27	26	23
	DD graft	50	38	50	65	63	77
	LD graft	9	10	7	7	4	3
	Overseas graft	0	0	1	2	0	0
	Died on list	2	2	0	0	0	0
	Active end of year	149	164	169	160	178	172
O	Active start of year	701	692	668	646	610	568
	Made active	342	302	292	338	314	358
	Taken off list	91	98	73	110	82	75
	DD graft	181	191	211	229	244	272
	LD graft	69	28	30	30	27	31
	Overseas graft	2	3	0	0	0	1
	Died on list	8	6	0	5	3	0
	Active end of year	692	668	646	610	568	547

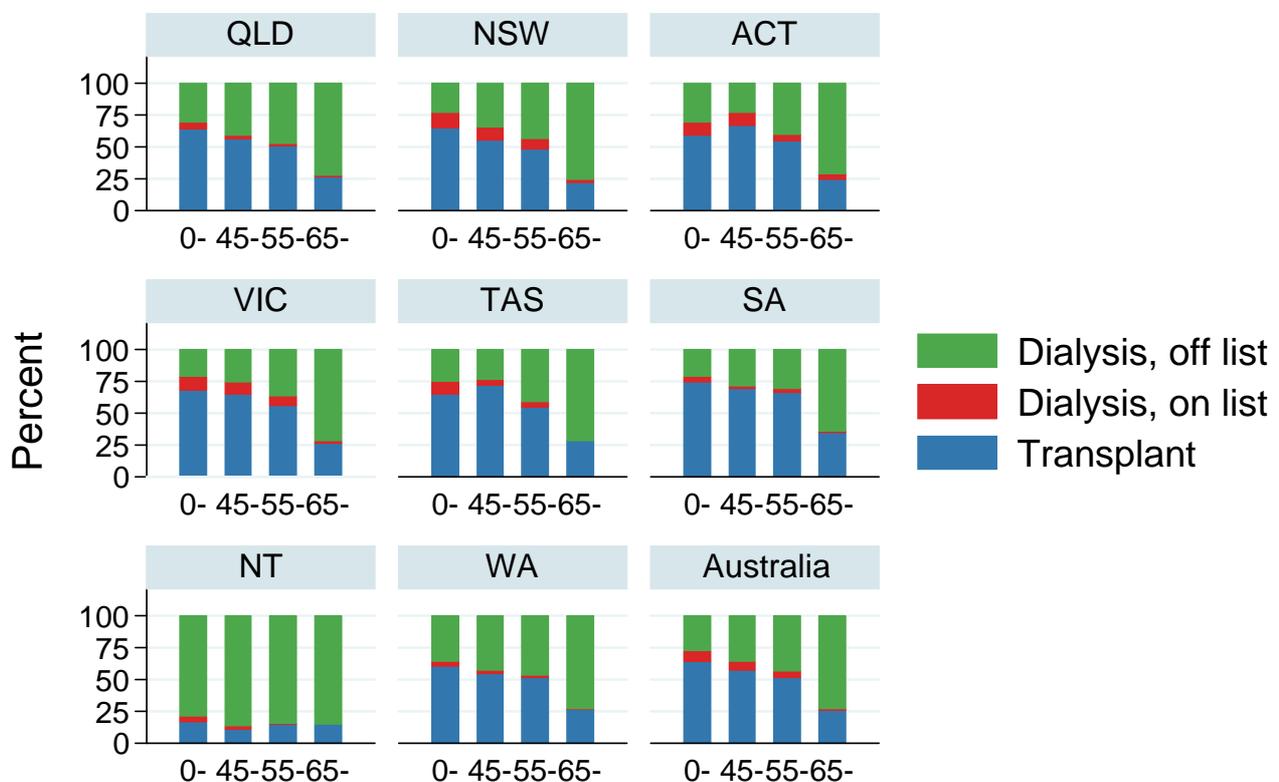
## Proportion of patients transplanted or on waiting list

Figure 7.1 shows the proportion of prevalent RRT patients who were either transplanted or actively wait-listed at the end of 2013, 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 2013.

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 2013

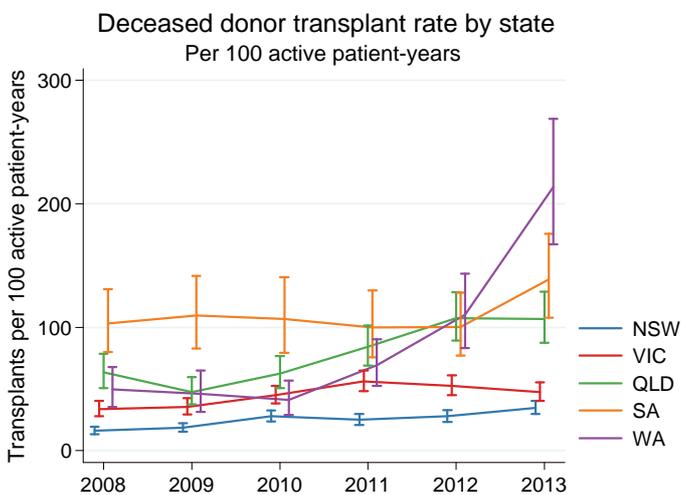


## Transplant Rate

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

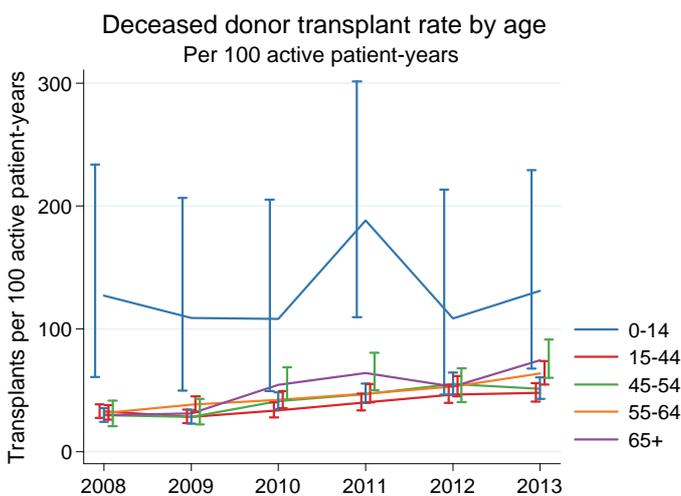
(denominator). The transplant rate depends on the number of organs available, the number of patients on the waiting list, and the kidney allocation system. Figures 7.2-7.5 show the transplant rate by state, age, race and blood group respectively.

**Figure 7.2**

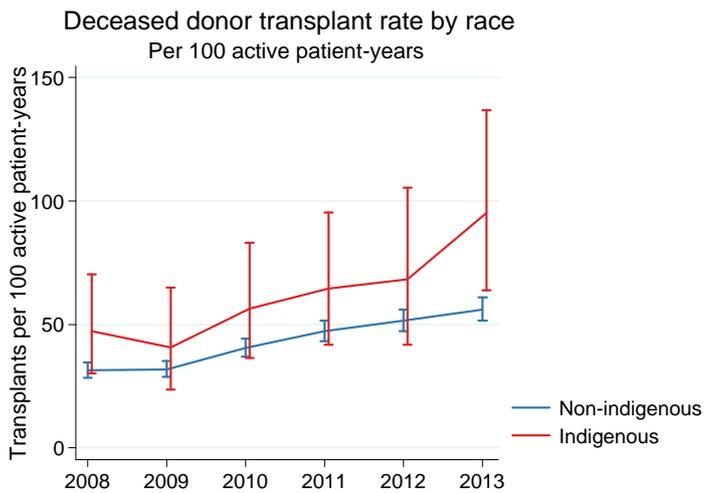


The transplant rate was highest in South Australia until 2012, but is now in Western Australia (figure 7.2). Note that in part this high rate reflects the very small number of patients wait-listed in Western Australia, leading to a low denominator (figure 7.1).

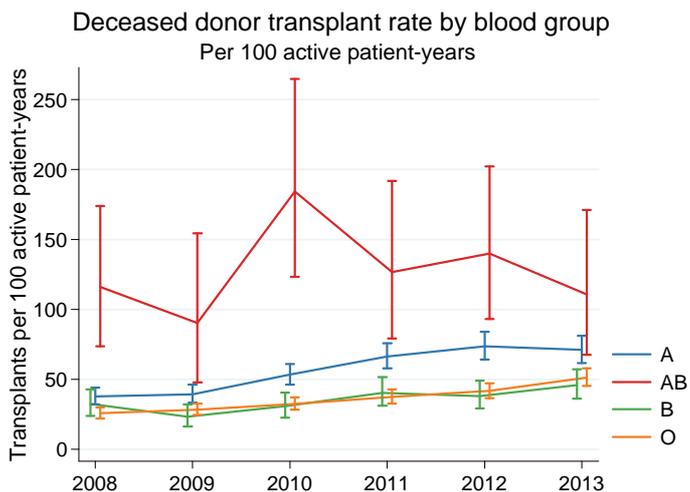
**Figure 7.3**



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 2008-2013. 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 7% in 2008 to 12% in 2013) and in the proportion of patients with diabetes (from 16% in 2008 to 21% in 2013).

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**

**Demographic Breakdown of the Australian Kidney Transplant Waiting List 2008 - 2013**

Factor	2008	2009	2010	2011	2012	2013
N	1252	1266	1185	1087	1073	1056
Waiting time (years), median (IQR)	2.9 (1.6, 4.8)	2.8 (1.6, 4.6)	2.9 (1.7, 4.7)	2.8 (1.6, 4.5)	2.8 (1.5, 4.5)	2.7 (1.5, 4.5)
Historical peak PRA (%)						
0-19	908 (72.5%)	918 (72.5%)	826 (69.7%)	735 (67.6%)	723 (67.4%)	709 (67.6%)
20-39	107 (8.5%)	105 (8.3%)	100 (8.4%)	100 (9.2%)	88 (8.2%)	87 (8.3%)
40-59	71 (5.7%)	67 (5.3%)	60 (5.1%)	61 (5.6%)	61 (5.7%)	57 (5.4%)
60-79	74 (5.9%)	68 (5.4%)	80 (6.8%)	74 (6.8%)	73 (6.8%)	70 (6.7%)
80-100	92 (7.3%)	108 (8.5%)	119 (10.0%)	117 (10.8%)	128 (11.9%)	126 (12.0%)
Blood group						
A	402 (32.1%)	417 (32.9%)	359 (30.3%)	295 (27.1%)	308 (28.7%)	318 (30.1%)
AB	9 (0.7%)	17 (1.3%)	11 (0.9%)	22 (2.0%)	19 (1.8%)	19 (1.8%)
B	149 (11.9%)	164 (13.0%)	169 (14.3%)	160 (14.7%)	178 (16.6%)	172 (16.3%)
O	692 (55.3%)	668 (52.8%)	646 (54.5%)	610 (56.1%)	568 (52.9%)	547 (51.8%)
Previous grafts						
0	1037 (82.8%)	1042 (82.3%)	942 (79.5%)	857 (78.8%)	826 (77.0%)	785 (74.3%)
1	180 (14.4%)	185 (14.6%)	201 (17.0%)	194 (17.8%)	212 (19.8%)	231 (21.9%)
2	32 (2.6%)	31 (2.4%)	34 (2.9%)	28 (2.6%)	28 (2.6%)	33 (3.1%)
3	3 (0.2%)	8 (0.6%)	8 (0.7%)	6 (0.6%)	7 (0.7%)	7 (0.7%)
4	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.2%)	0 (0.0%)	0 (0.0%)

Table 7.6 contd.

## Demographic Breakdown of the Australian Kidney Transplant Waiting List 2008 - 2013

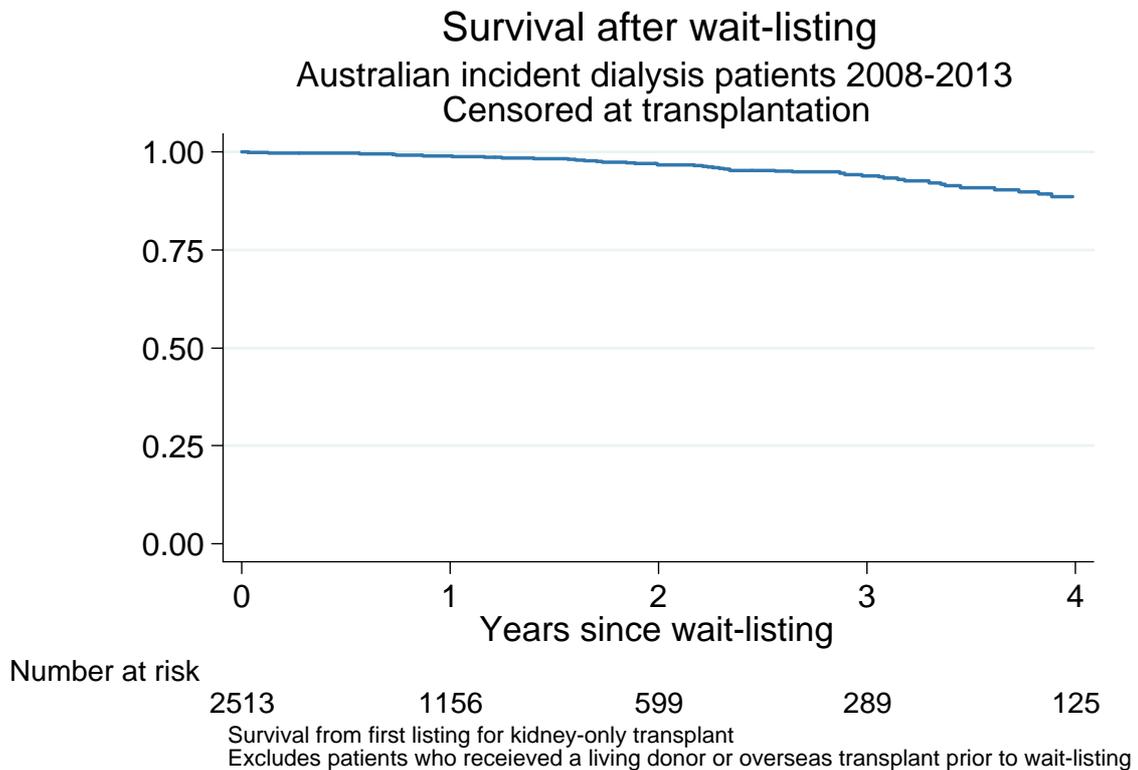
Factor	2008	2009	2010	2011	2012	2013
Age (years)						
0-44	361 (28.8%)	380 (30.0%)	363 (30.6%)	363 (33.4%)	346 (32.2%)	358 (33.9%)
45-54	376 (30.0%)	374 (29.5%)	320 (27.0%)	288 (26.5%)	279 (26.0%)	272 (25.8%)
55-64	387 (30.9%)	366 (28.9%)	371 (31.3%)	319 (29.3%)	304 (28.3%)	286 (27.1%)
65+	128 (10.2%)	146 (11.5%)	131 (11.1%)	117 (10.8%)	144 (13.4%)	140 (13.3%)
Male	756 (60.4%)	750 (59.2%)	681 (57.5%)	633 (58.2%)	628 (58.5%)	639 (60.5%)
Race						
Caucasian	936 (74.8%)	953 (75.3%)	864 (72.9%)	771 (70.9%)	756 (70.5%)	746 (70.6%)
Aboriginal/TSI	46 (3.7%)	45 (3.6%)	49 (4.1%)	33 (3.0%)	33 (3.1%)	34 (3.2%)
Asian	199 (15.9%)	194 (15.3%)	192 (16.2%)	199 (18.3%)	201 (18.7%)	189 (17.9%)
Māori	14 (1.1%)	11 (0.9%)	16 (1.4%)	19 (1.7%)	14 (1.3%)	13 (1.2%)
Pacific	25 (2.0%)	25 (2.0%)	28 (2.4%)	25 (2.3%)	26 (2.4%)	29 (2.7%)
Other	32 (2.6%)	37 (2.9%)	35 (3.0%)	39 (3.6%)	40 (3.7%)	42 (4.0%)
Not reported	0 (0.0%)	1 (0.1%)	1 (0.1%)	1 (0.1%)	3 (0.3%)	3 (0.3%)
Primary Renal Disease						
Glomerulonephritis	566 (45.2%)	605 (47.8%)	535 (45.1%)	502 (46.2%)	469 (43.7%)	433 (41.0%)
Analgesic	14 (1.1%)	13 (1.0%)	9 (0.8%)	5 (0.5%)	3 (0.3%)	5 (0.5%)
Polycystic	189 (15.1%)	165 (13.0%)	171 (14.4%)	144 (13.2%)	149 (13.9%)	135 (12.8%)
Reflux	112 (8.9%)	108 (8.5%)	103 (8.7%)	85 (7.8%)	78 (7.3%)	84 (8.0%)
Hypertension	89 (7.1%)	94 (7.4%)	76 (6.4%)	66 (6.1%)	89 (8.3%)	85 (8.0%)
Diabetic nephropathy	130 (10.4%)	121 (9.6%)	131 (11.1%)	124 (11.4%)	132 (12.3%)	145 (13.7%)
Other	102 (8.1%)	112 (8.8%)	110 (9.3%)	111 (10.2%)	111 (10.3%)	128 (12.1%)
Uncertain	50 (4.0%)	47 (3.7%)	49 (4.1%)	49 (4.5%)	42 (3.9%)	39 (3.7%)
Not reported	0 (0.0%)	1 (0.1%)	1 (0.1%)	1 (0.1%)	0 (0.0%)	2 (0.2%)
Diabetes	205 (16.4%)	189 (15.0%)	198 (16.8%)	200 (18.5%)	209 (19.5%)	225 (21.3%)
Coronary artery disease	283 (22.7%)	251 (19.9%)	241 (20.4%)	227 (20.9%)	218 (20.4%)	224 (21.2%)
Peripheral vascular disease	129 (10.3%)	135 (10.7%)	120 (10.2%)	119 (11.0%)	109 (10.2%)	121 (11.5%)
Cerebrovascular disease	72 (5.8%)	77 (6.1%)	75 (6.4%)	61 (5.6%)	70 (6.5%)	63 (6.0%)
Chronic lung disease	108 (8.6%)	106 (8.4%)	90 (7.6%)	88 (8.1%)	100 (9.3%)	108 (10.2%)

## Survival on the Waiting List

Figure 7.6 shows the survival of patients who commenced dialysis in Australia over 2008-2013 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 1.9 deaths per 100 patient-years (95% CI 1.5-2.4).

**Figure 7.6**



**Suggested Citation:**

ANZDATA Registry. 37th Report, Chapter 7: Transplant Waiting List. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2015. 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](http://www.anzdata.org.au)

2014 ©